Allison ABRASIVES

Quality Abrasive Cut-off Wheels

PRODUCTS

- Foundry Cut-off Wheels
- High Temperature Alloy Cut-off Wheels
- Metallurgical Test Specimen Cut-off Wheels
- Metal Tubing Cut-off Wheels
- Railroad Rail Cut-off Wheels
- Specialty Steel Cut-off Wheels
- Thin Slotting & Disc Cutting Wheels
- Titanium Cut-off Wheels

Harvey Allison (ALLISON ABRASIVES FOUNDER)

While working as a physicist in Thomas A. Edison's research laboratory in New Jersey, Harvey Allison recognized the need for a rapid method of cutting very hard materials, such as tungsten filaments for the newly invented light bulb. In 1919, he started Allison Abrasives on Park Avenue in New York City, and developed a thin rubber bonded abrasive, cutting wheel. The operation grew and migrated from New York to Connecticut until 1987.

In 1936, the Allison Company and the Campbell Machine Division of American Chain and Cable Company, manufacturers of dry abrasive cutting machines, collaborated to develop machines and wheels suitable for wet abrasive cutting. This association led to tremendous growth of wet production cutting in the US. In 1955, the Allison Company and the Campbell Machine Division were combined to form Allison-Campbell Division of American Chain and Cable. The Division pioneered the development and use of thin cutting wheels for industry. In 1977, the Campbell machine division was sold to W.J. Savage co. of Knoxville, TN. In 1986, the Allison-Campbell Division was purchased by Allison Abrasives Incorporated, a closely held, independent company.

In late 1987, Allison Abrasives relocated its corporate headquarters from Shelton, CT to a 125,000 SF manufacturing facility in Garrard County, Lancaster, KY. Allison employs approximately 100 people and sells to US customers and internationally to customers in over 20 countries. This catalog is being published to celebrate with our devoted customers and employees the 100 years of success that Allison has enjoyed.

Allison Abrasives develops engineered cutoff wheels to meet specific customer needs and produces cutoff wheels in rubber, resin rubber and resin bonded types. When an application requires a fast, optimum quality of cut, and a cost effective solution, Allison is the supplier of choice. Products range from cutting titanium and high temperature alloy in a steel factory to cutting foundry castings to slicing very thin sections of metal to be mounted and polished and analyzed under a microscope in a metallurgical laboratory. The ranges of exotic alloys cut with Allison products include nickel and titanium alloys, waspalloy, hastelloy, and other unique metals. Major industry applications include primary metals, foundries, investment casting, railroad rails, metal tube and pipe, wire, rod, and bar. Allison produces wheels ranging in diameter from 3" to 67".

In a business where the product is consumable, the formulation of the product is critical to the number of cuts obtained from a wheel. Allison's expertise in providing the "right" wheel for the job can result in significant cost savings for the user.

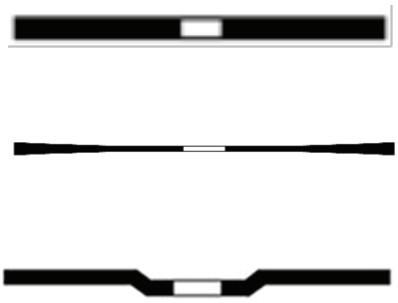
In order to best serve the customer's needs for abrasive cutting, a direct sales and service force of experts is located in all of the major market areas. One of the finest distributor organizations in the world is available to serve your needs.

Celebrating 100 Years ANNIVERSARY

How to Understand a Specification

	Abrasive Tpye	Grain Size	Grain Combination	Grade Hardiness	Structure	Bond Type	Reinforcement and Strength	Rough Sides
Example	TA	24	2	Z	6	8050	K7	A
Explanation	Type of grain used	Predominate grain size	Number of Grains Used	Relative Hardiness	Openness of Bond	Manufacturer's Variation	Reinforcement Construction	Surface Treatment
Examples of	A-Aluminum	16 Coarse	Blank -	G-Soft	4-Dense	B-Resinoid	L-External	A-Abrasives
Symbols Used	Oxide	24	Nominal	H	6	R-Ruber or	H-Hubs	Sides
	C-Silicon	30	1	-	8-Open	Rubber Resin	K-Double Internal	
	Carbide	-	2	-			with Hubs	
	NZ-Zirconia	-	3	-		Manufactucturer's		
	Alumina	90		X		Variation		
	TA-More	120 Fine		Z-Hard		8045		
	Durable					8050		
	Aluminum							
	Oxide							

Allison Product Capabilities



	Pressed Resin	Pressed Rubber Resin	Rubber	Hot Pressed
Minimum Diameter	9″	9″	2″	16″
	230mm	230mm	50mm	400mm
Maximum Diameter	67″	67″	26″	
	1700mm	1700mm	660mm	760mm
Grit Sizes	<120	<120	<240	<30
Shapes Available	S, T	S, T	S	S, D
Reinforcing Types	All	All	None	All
Grain Types	A, C, Z, V	A, C	A, C	A, C, Z, V

S Straight
T Tapered
D Depressed Center

A Aluminum Oxide & Treated Aluminum Oxide
C Silicon Carbide
Z Zirconia Aluminia
V Various Blends

Allison Wheel Selection Chart

The specifications listed on the following page are for non-reinforced wheels except where reinforcing is always required. These recommendations should be adjusted to include reinforcing when the individual circumstances warrant it. Reinforcing should be specified when the machines are not fully guarded, when clamping is not secure, when machines are not in good condition, when wheels are subjected to side pressure, when speeds are higher than standard, and when competitive wheels are reinforced.

The choices for reinforcing include:

H	=	1/2 Diameter Side Reinforcing
L	=	Full Side Reinforcing
T	=	Single Internal Reinforcing
O	=	Double Internal Reinforcing
C	=	Single Internal with 1/2 External
K	=	Double Internal with 1/2 Flange
S	=	Single Internal with Full External

Additionally, the strength of the reinforcing can be varied. The standard for most applications is our disignation 6.

Examples of completed wheel specifications would be:

TA241-X- 8050A	NO REINFORCING	ROUGH SIDES
TA241-X-8050HA	1/2 DIAMETER REINFORCING	ROUGH SIDES
TA241-X-8050L6A	FULL SIDE REINFORCED	ROUGH SIDES

Allison Abrasive Wheels for WET CUTTING OF METALLURGICAL TEST SPECIMENS

Because they are specifically designed for use with coolant Allison abrasive wheels provide unsurpassed quality of cut for metallurgical specimens. They quickly produce cross-sections that require little or no further treatment before metallographic examination. The structure and metallurgical characteristics of the specimens are not disturbed.

The Allison wheels listed on the next page should be used on abrasive cut-off machines that provide abundant flow of coolant to the wheel and to the specimen being cut.

Wheel speeds of 5,000 to 10,000 feet per minute (25-50 m/s) are commonly used for this type of cutting. However, the maximum rpm marked on each wheel should not be exceeded.

Allison wet abrasive cutting wheels are recognized as the standard for excellence by metallurgical test labs in the following industries.

- Aircraft
- Automotive
- Farm Equipment
- Machine Tool
- Primary Metal Producers
- Heat Treating
- Technical Universities

Parts commonly cut are:
Forgings, axles, gears, camshafts, test slices from metal billets.

Recommended *Allison* Wheel Specification & Maximum RPM for WET CUTTING OF METALLURGICAL TEST SPECIMENS

Wheel Diameter & Thickness	9" x 1/16"	10" x 1/16"	12" x 1/16"	12" x 100"	14" x 1/16"	14" x 3/32"	16" x 3/32"	20" x 1/8"
Maximum Diameter of Cross Section to be Cut	1"	1"	2"	2"	2"	2"	2"	3"
Material Type & Rockwell Hardness								
Steel - R_C62	A601-H6-RN4A	A601-O6-RN4		BA601-G6-RN4A				
	4030 RPM	5420 RPM		4520 RPM				
R_C55	A601-I6-RN4	A601-J6-RN4		A601-H6-RN4		A601-G6-RN4	A601-G6-RN4	A601-G6-RN4A
	4030 RPM	5420 RPM		4520 RPM		3870 RPM	3390 RPM	2290 RPM
R_C40	A601-J6-RN4	WA90-K-RA	WA90-K-RA			WA90-K-RA	WA90-K-RA	WA90-K-RA
	4030 RPM	3810 RPM	3180 RPM			2720 RPM	2720 RPM	1900 RPM
Soft	VA602-Q-RG9	VA602-Q-RG9	VA602-Q-RG9			VA602-Q-RG9	XA602-M-RA	XA602-M-RA
	5090 RPM	4580 RPM	3810 RPM			3270 RPM	2500 RPM	1520 RPM
Copper, Brass	C90-N-RW3	C90-N-RW3		C90-N-RW3		C60-N-RW3	C60-N-RW3	C60-N-RW3
	4240 RPM	3810 RPM		3180 RPM		2720 RPM	2380 RPM	1900 RPM
Titanium	C120-J-RA	C120-J-RA	C120-J-RA		C90-K-RA		C90-K-RA	
	3390 RPM	3050 RPM	2540 RPM		2180 RPM		1900 RPM	

The 16" and 20" diameter wheels listed above may be used to cut sheet and plate material as well as bar stock.

When ordering, identify wheel specification, diameter, thickness, arbor hole size and location of any required drive pin holes.

Use wheels only on well-guarded machines that will prevent personal injury if a wheel should break.

DO NOT EXCEED the maximum RPM marked on each wheel.

To convert RPM to meters per second (m/s):
m/s = (.0013299) (Wheel Diameter in Inches) (RPM)

Allison Rubber Bonded Abrasive Wheels for THIN SLOTTING and DISC CUTTING

The cutting of electrical contact disc from tungsten rod is commonly done wet with rubber bonded wheels 6 or 7 inches in diameter and from .013 to .017 inches thick, held to thickness tolerance of plus or minus one-thousandth of an inch. Similar wheels are used for accurate cutting of very small rod and tube sections and for cutting thin slots in various materials.

Special thin wheels are also available in diameters up to 26". They save money by reducing kerf loss. This is especially important when cutting very expensive materials, or when kerf loss represents a significant portion of the original material cost.

Special thin wheels are commonly used by:

Automotive Parts Manufacturers to cut or slot:
- Piston Rings
- Pistons
- Transmission Parts

Medical and Veterinarian Equipment Manufacturers to cut:
- Stainless Steel Capillary Tubing
- (Hypodermic Needles)
- Prosthetic Devices (Stainless Steel and
- Titanium

Producers of Dental Alloys to cut:
- Cast Chrome-Cobalt-Nickel Alloys

Machine Tool Manufactures

Electrical and Electronics Industry to cut or slot:
- Tungsten and/or Molybdenum contact discs
- Tungsten Lamp Filaments
- Alnico or Ceramic Magnets
- Transformer Cores

Slotting and disc cutting operations may be done wet or dry. Wet cutting will usually provide better quality cuts and more cuts per wheel, but dry cutting may sometimes be necessary. In either case, rubber bonded wheels are generally used since they can be held to the close tolerances required. These wheels are commonly run at approximately 10,000 surface feet per minute (50 m/s); however, the best speed is dependent on the individual job conditions and requirements.

Due to the thinness of the wheels, wheel guides are a necessity for this type of operation. The guides are rigid brackets with carbide-tipped fingers which can be accurately adjusted close to each side of the wheel.

Wheel Diameter	2"-3"	2"-3"	4"-5"	4"-5"	6"		6"	7"
Wheel Thicknes	.013"- .019"	.020" - .030"	.013"- .019"	.020" - .030"	.013"- .019"	.020" - .030"	.031" - .045"	.015" - .019"
Thin Disc Cutting Up to 3/4" Diameter								
Standard Quality Cut	A1802-R-RK7 14,000 sfm	A1802-R-RK7 14,000 sfm	A1802-R-RK7 14,000 sfm	A1802-R-RK7 14,000 sfm	A1802-R-RK7 14,000 sfm	A1802-R-RK7 14,000 sfm	VA1202-M-RA 12,000 sfm	A1802-R-RK7 14,000 sfm
Better Quality Cut	XA1803-P-RR5 14,000 sfm	XA1803-P-RR5 14,000 sfm	XA1803-P-RR5 14,000 sfm	XA1803-P-RR5 14,000 sfm	XA1803-P-RR5 14,000 sfm	XA1803-P-RR5 14,000 sfm	WA90-K-RA 10,000 sfm	XA1803-P-RR5 14,000 sfm
More Cuts per Wheel	VA1202-Q-RA6 14,000 sfm	VA1202-Q-RA6 14,000 sfm	VA1202-Q-RA6 14,000 sfm	VA1202-Q-RA6 14,000 sfm	VA1202-Q-RA6 14,000 sfm	VA1202-Q-RA6 14,000 sfm	A120-Q-RW4 14,000 sfm	VA1202-Q-RA6 14,000 sfm
3/8" to 1" Diameter								
Stardard Quality Cut		A80-P-RA6 14,000 sfm		A80-P-RA6 14,000 sfm		A80-P-RA6 14,000 sfm	TA602-M-RL 12,000 sfm	
Better Quality Cut		A1802-R-RK7 14,000 sfm		A1802-R-RK7 14, 000 SFM		A1802-R-RK7 14,000 sfm	A80-P-RA6 14,000 sfm	
More Cuts per Wheel		A804-P-RR6 14,000 sfm		A804-P-RR6 14,000 sfm		A804-P-RR6 14,000 sfm	A804-P-RR6 14,000 sfm	
Capillary Tubing (Hypodermic Needles)	A240-O-RJ3 14,000 sfm	A240-O-RJ3 14,000 sfm	A240-O-RJ3 14,000 sfm	A240-O-RJ3 14,000 sfm	A240-O-RJ3 14,000 sfm	A240-O-RJ3 14,000 sfm		A240-O-RJ3 14,000 sfm
Piston Rings (Wet Cutting Only)								
Transformer Cores (Wet Cutting Only)								
Non-ferrous Materials (brass, Copper, Plastic, Carbon)	C1803-O-R55 12,000 sfm	A120-M-RA3 12,000 sfm	C1803-O-RR5 12,000 sfm	C120-M-RA3 12,000 sfm	C1803-O-RR5 12,000 sfm	C120-M-RA3 12,000 sfm	C1204-M-RA 12,000 sfm	C1803-O-RR5 12,000 sfm
Titanium (Wet Cutting Only)	C1803-O-R55 12,000 sfm	C120-K-RA 10,00 sfm	C1803-O-RR5 12,000 sfm	C120-K-RA 10,000 sfm	C1803-O-RR5 12,000 sfm	C120-K-RA 10,000 sfm	C120-N-RA3 12,000 sfm	C1806-O-RR5 12,000 sfm

Wheel Diameter	7" - 8"	8" - 9"	10"	10"	10"	12"	14"
Wheel Thicknes	.020" - .030"	.031" - .045"	.020" - .030"	.031" - .040"	.040" - .098"	.031" - .098"	.040" - .098"
Thin Disc Cutting Up to 3/4" Diameter							
Standard Quality Cut	A1802-R-RK7 14,000 sfm	VA1202-M-RA 12,000 sfm	A120-M-RA3 12,000 sfm	A80-P-RA6 14,000 sfm	VA902-M-RA 12,000 sfm	A80-P-RA6 14,000 sfm	VA902-M-RA 14,000 sfm
Better Quality Cut	XA1803-P-RR5 14,000 sfm	WA90-K-RA 10,000 sfm	XA1803-P-RR5 14,000 sfm	A120-M-RA3 12,000 sfm	VA1202-M-RA 12,000 sfm	A120-M-RA3 12,000 sfm	A150-P-RAG6 10,000 sfm
More Cuts per Wheel	VA1202-Q-RA6 14,000 sfm	A120-Q-RW4 14,000 sfm	VA1202-Q-RA6 14,000 sfm	A804-P-RR6 14,000 sfm	A120-Q-RW4 14,000 sfm	A804-P-RR6 14,000 sfm	A80-R-RA6 14,000 sfm
3/8" to 1" Diameter							
Stardard Quality Cut	A80-P-RA6 14,000 sfm	VA1202-M-RA 12,000 sfm	A120-M-RA3 12,000 sfm	A80-P-RA6 14,000 sfm	TA602-M-RL 12,000 sfm	A80-P-RA6 14,000 sfm	VA902-M-RA 14,000 sfm
Better Quality Cut	A1802-R-RK7 14,000 sfm	WA90-K-RA 10,000 sfm	A1802-R-RK7 14,000 sfm	A120-M-RA3 12,000 sfm	A80-P-RA6 14,000 sfm	A120-M-RA3 12,000 sfm	A150-P-RAG6 10,000 sfm
More Cuts per Wheel	A804-P-RR6 14,000 sfm	A120-M-RA3 12,000 sfm	VA1202-Q-RA6 14,000 sfm	A804-P-RR6 14,000 sfm	A60-P-RA6 14,000 sfm	A804-P-RR6 14,000 sfm	A80-R-RA6 14,000 sfm
Capillary Tubing (Hypodermic Needles)	A240-O-RJ3 14,000 sfm						
Piston Rings (Wet Cutting Only)				A804-P-RR6 14,000 sfm	A80-P-RA6 14,000 sfm	A120-M-RA3 12,000 sfm	A150-P-RAG6 10,000 sfm
Transformer Cores (Wet Cutting Only)					VA603-T-RG9Y 12,000 sfm	A80-P-RA6 14,000 sfm	VA902-M-RA 12,000 sfm
Non-ferrous Materials (brass, Copper, Plastic, Carbon)	C120-M-RA3 12,000 sfm	C1204-M-RA 12,000 sfm	C120-M-RA3 12,000 sfm	C1204-M-RA 12,000 sfm	C1204-M-RA 12,000 sfm	C1204-M-RA 12,000 sfm	C1204-M-RA 12,000 sfm
Titanium (Wet Cutting Only)	C120-K-RA 10,000 sfm	C120-N-RW3 12,000 sfm		C120-K-RA 10,000 sfm	C120-N-RW3 12,000 sfm	C120-K-RA 10,000 sfm	C120-K-RA 10,000 sfm

Allison Abrasives Wheels for Wet or Dry Cutting of THIN-WALL METAL TUBING

Rubber bond, fine abrasive particles, and filler materials selected to maintain a square or slightly concave cutting face make Allison abrasive cutting wheels ideal for cutting thin-wall metal tubing with bsolute minimum burr. Most Allison rubber bonded heels can be used with or without coolant. Cutting with coolant provides the best cut quality, and greatest number of cuts per wheel. However, cutting with coolant provides the best quality and greatest number of cuts per wheel.

Allison also offers resinoid bonded wheels formulated especially for the fast, clean, dry cutting of heavier wall metal tube and metal pipe.

For the cleanest cuts, clamp tubing securely on both sides o f the cut.

Thinner wheels will generally provide less burr than thicker wheels.

For the maximum number of cuts per wheel, and elimination of all external burr, hold the tubing securely in a chuck or similar device and rotate it while cutting. This permits wearing the wheel down to a much smaller diameter than is possible with a simple “chopper” machine and reduces wheel cost per cut.

Allison abrasive cutting wheels provide cuts with little or no burr on round or square thinwall tubing for many industries, including manufacturers of:

- Truck and Trailer Bodies
- Tubular Steel Furniture
- Aircraft Frames
- Industrial Shelving
- Automotive Mufflers
- Tubular Heating Elements
- Chemical Apparatus
- Food Processing Machinery
- Medical Equipment (Hypodermic Needles)
- Electronic/Computer Parts
- Fluid Power Components

Recommended *Allison* Wheel Specification & Maximum RPM of THIN-WALL METAL TUBING

Wheel Diameter		6"	7"	8"	9"	10"	12"	14"	16"
Wheel Thcikness		.040"-1/16"	.040" - 1/16"	.040" - 1/16"	1/16" - 3/32"	1/16" - 3/32"	3/32"	3/32"	3/32"
Thickness of Tubing Wall									
WET CUTTING	Less than 1/16"	**R-536A** 8910 RPM	**R-536A** 7630 RPM	**R-536A** 6680 RPM	**A150-R-RW4** 5340 RPM	**A150-R-RW4** 4450 RPM	**A150-R-RW4** 4450 RPM	**A150-R-RW4** 3810 RPM	**R-660** 2860 RPM
	1/16"	**A120-Q-RW4** 8910 RPM	**A120-Q-RW4** 7630 RPM	**A120-Q-RW4** 6680 RPM	**A120-Q-RW4** 5940 RPM	**A120-Q-RW4** 5340 RPM	**A120-Q-RW4** 4450 RPM	**A120-Q-RW4** 3810 RPM	**A120-Q-RW4** 2860 RPM
	1/16" - 1/8"	**TA902-Q-RW4** 8910 RPM	**TA902-Q-RW4** 7630 RPM	**TA902-Q-RW4** 6680 RPM	**TA902-Q-RW4** 5940 RPM	**TA902-Q-RW4** 5340 RPM	**TA902-Q-RW4** 4450 RPM	**TA902-Q-RW4** 3810 RPM	**TA902-Q-RW4** 2860 RPM
	1/8" - 1/4"	**TA60-Q-RW4** 8910 RPM	**TA60-Q-RW4** 7630 RPM	**TA60-Q-RW4** 6680 RPM	**TA60-Q-RW4** 5940 RPM	**TA60-Q-RW4** 5340 RPM	**TA60-Q-RW4** 4450 RPM	**TA60-Q-RW4** 3810 RPM	**TA60-Q-RW4** 2860 RPM
DRY CUTTING	Less than 1/16"	**R-599** 8910 RPM	**R-599** 7630 RPM	**R-599** 6680 RPM	**TA90-P-RH8F** 5940 RPM	**TA90-P-RH8F** 5340 RPM	**TA90-P-RH8F** 4450 RPM	**TA90-P-RH8F** 3810 RPM	**A120-Q-RW4** 2860 RPM
	1/16"	**A120-P-RH8F** 8910 RPM	**A120-P-RH8F** 8910 RPM	**A120-P-RH8F** 8910 RPM	**TA1202-X6-B6** 6020 RPM	**TA1202-X6-B6** 5420 RPM	**TA1202-X6-B6** 4520 RPM	**TA1202-X6-B6** 3870 RPM	**TA1202-X6-B6** 3390 RPM
	1/16" - 1/8"	**TA90-P-RH8F** 8910 RPM	**TA90-P-RH8F** 7630 RPM	**TA90-P-RH8F** 6680 RPM	**TA90-P-RH8F** 6020 RPM	**TA90-P-RH8F** 5420 RPM	**TA90-P-RH8F** 4520 RPM	**TA90-P-RH8F** 3870 RPM	**TA90-P-RH8F** 3390 RPM
	1/8" - 1/4"	**TA60-P-RH8F** 8910 RPM	**TA60-P-RH8F** 7630 RPM	**TA60-P-RH8F** 6680 RPM	**TA602-X6-B6** 6020 RPM	**TA602-X6-B6** 5420 RPM	**TA902-X6-B6A** 4520 RPM	**TA602-X6-B6A** 3870 RPM	**TA602-X6-B6A** 3390 RPM

SPECIAL WHEELS FOR CUTTING CAPILLARY TUBING (HYPODEMIC NEEDLES)					
Wheel Diameter		3" - 4"	5"- 6"	7"	8"
Wheel Thickness		.015"	.015"	.015"	.020"
Wet or Dry Cutting	Fine Quality Cuts or Very Thin Tubing	A240-O-RJ3	A240-O-RJ3	A240-O-RJ3	A240-O-RJ3
		XA1803-P-RR5	XA1803-P-RR5	XA1803-P-RR5	XA1803-P-RR5
	More Cuts/Wheel or Heavier Wall Tube	VA1202-R-RH7	VA1202-R-RH7	VA1202-R-RH7	A804-P-RR6
Maximum Operating Speed for these Wheelsis 14,000 sfm, or 70 m/s					

When ordering, identify wheel specification, Diameter, thickness, and arbor hole size.

Use wheels only on well-guarded machines that will prevent personal injury if a wheel should break.

DO NOT EXCEED the maximum RPM marked on each wheel.

To convert RPM to meters per second (m/s):

m/s = (.0013299) (Wheel Diameter in Inches) (RPM)

To convert from meters per second to RPM:

$$\text{RPM} = \frac{(751{,}936)\ (\text{m/s})}{(\text{Wheel Diameter in Inches})}$$

Allison Abrasive Cutting Wheels for Wet Cutting of LARGE CROSS-SECTIONS OF SPECIALTY STEELS & TITANIUM

Wet abrasive cutting provides the finest quality cuts and lowest cost per cut on large cross-sections of specialty steels and titanium alloys.

Allison abrasive cutting wheels combine the right types of abrasives with compatible bond variations to give outstanding performances at the slower wheel speeds that are essential to efficient wet cutting – 7,000 to 8,500 sfm (35 to 43 m/s). Primary metal producers and forge shops in the United States and Europe choose Allison Wheels for wet cutting of their stainless steels, high temperature and corrosion resistant alloys, and titanium alloys.

Allison wheels are suitable for cutting billets, bars, pipe, or plates.

Solids up to 16" round or square are commonly cut on oscillating, chop-stroke type machines, where the wheel must pass completely through the material to sever the piece.

Solids larger than 16" diameter are cut by rotating the workpiece in a device similar to the head of a cylindrical grinder. When cutting by the rotary method, the wheel need only cut to the center of the workpiece to complete the cut. Rotary cutting is also used to increase the number of cuts per wheel when cutting smaller diameter solids (8" to 12") or large diameter pipe. When cutting pipe, the wheel need only pass through the wall thickness to complete the cut.

This permits using the wheel until it has worn down to a very small diameter, thus increasing wheel economy. Plates, slabs or flat shapes are cut by the Horizontal method, in which the wheel traverses through the work.

For relatively thin plates, the cut is completed in a single pass. Thicker plates are generally cut by the increment cutting technique, in which each traverse of the wheel cuts a fraction of an inch deeper until the plate is completely severed. As a general rule, wheels used for plate cutting should be somewhat thicker to assure straight cuts.

In situations where the cutting of a billet or plate relieves internal stresses that cause binding and side pressure on the wheel, reinforced wheels should be used to reduce the possibility of wheel breakage. In other situations, full reinforcing of the cut-off wheel in not required. However, whether the wheel is reinforced or not, abrasive cutting should be done only on machines equipped with a wheel guard what will assure the operator's safety if the wheel should break.

Allison wheels are available with full diameter fiberglass reinforcing, partial reinforcing, or without reinforcing. Non-reinforced wheels will provide optimum cutting performance if binding and side pressures are ot present.

Recommended *Allison* Wheel Specification for Wet Cutting of SPECIALTY STEELS AND TITANIUM ALLOYS

			Wheel Diameter and Standard Thickness					
Material	Machine Type	Material Size	30" 5/32"-3/16"-7/32"	34" 7/32"-1/4	36" 7/32"-1/4"	40" 1/4"-5/16"	44" 5/16"-3/8"	48" 5/16-3/8"
Stainless Steel	Chop	Small	A361-N4-RN4	A361-N4-RN4	A361-N4-RN4	T-969HA	W4A361-N6-RFO6L4A	W4A361-N6-RFO6L4A
			1520 RPM	1340 RPM	1270 RPM	1140 RPM	1040 RPM	950 RPM
		Meduim	T-1499HA	T-1499HA	T-1499HA	T-1499HA	T-1499L4A	T-1499L4A
			1520 RPM	1340 RPM	1270 RPM	1140 RPM	1040 RPM	950 RPM
		Large	T1500HA	T-1498HA	T-1498HA	T-1497HA	T-1224L4A	T-1224L4A
			1520 RPM	1340 RPM	1270 RPM	1140 RPM	1040 RPM	950 RPM
	Rotary	All Sizes	T-1499HA	T-1499HA	T-1497HA	T-1497HA	T-1497L4A	T-1497L4A
			1010 RPM	890 RPM	1270 RPM	1140 RPM	1040 RPM	950 RPM
	Plate	All Sizes	T-749HA	A-2059HA	T-969HA	T-969HA	TF-969L4A	TF-969L4A
			1520 RPM	1340 RPM	1270 RPM	1140 RPM	1040 RPM	950 RPM
HIGH TEMPERATURE ALLOYS	Chop	Small	T-1104HAQ	T-1287H	T-1133H	T-969HA	TF-969L4A	W4A361-N6-RFO6L4A
			1520 RPM	1340 RPM	1270 RPM	1140 RPM	1040 RPM	950 RPM
		Meduim	BA602-M4-RO6	BA602-M4-RO6	T-1499HA	T-1499HA	T-1497L4A	T-1497L4A
			1520 RPM	1340 RPM	1270 RPM	1140 RPM	1040 RPM	950 RPM
		Large	T-1225HA	T-1225HA	T-1500HA	T-1500HA	T-1224L4A	T-1224L4A
			1520 RPM	1340 RPM	1270 RPM	1140 RPM	1040 RPM	950 RPM
	Rotary	All Sizes	T-1499HA	T-1499HA	T-1499HA	T-1499HA	T-1497L4A	T-1497L4A
			1010 RPM	890 RPM	1270 RPM	1140 RPM	1040 RPM	950 RPM
TITANIUM	Chop	Small	PC361-N4-RN4HA	PC361-N4-RN4HA	U-177HA	U-177HA	PC301-N6-RFO6L4A	PC301-N6-RFO6L4A
			1520 RPM	1340 RPM	1270 RPM	1140 RPM	1040 RPM	950 RPM
		Meduim	U-76H	U-76H	U-88HA	U-88HA	U-88L4A	U-88L4A
			1520 RPM	1340 RPM	1270 RPM	1140 RPM	1040 RPM	950 RPM
		Large	U-129H	U-129H	U-129H	U-120HA	U-120L4A	U-120L4A
			1520 RPM	1340 RPM	1270 RPM	1140 RPM	1040 RPM	950 RPM
	Rotary	All Sizes	U-88H	U-88H	U-88H	U-88H	U-88L4A	U-88L4A
			1520 RPM	1340 RPM	1270 RPM	1140 RPM	1040 RPM	950 RPM
	Plate	All Sizes	U-76H	7-76H	U-88H	U-88H	U-88L4A	U-88L4A
			1520 RPM	1340 RPM	1270 RPM	1140 RPM	1040 RPM	950 RPM

Most of these wheels are available without reinforcing, with "hubs" (partial diameter external reinforcing), or with full diameter external reinforcing.

When ordering, identify wheel specification, diameter, thickness, arbor hole size and location of any required drive pin holes. **Also identify size and position of reinforcing desired.**

Use wheels only on well-guarded machines that will prevent personal injury if a wheel should break.

DO NOT EXCEED the maximum RPM marked on each wheel.

To convert RPM to meters per second (m/s):
m/s = (.0013299) (Wheel Diameter in Inches) (RPM)

Recommended *Allison* Abrasive Wheel Selections for Dry Cutting of Specialty Steels

Material	Material Size	Free Cutting	Medium	Long Life
Stainless Steel	Small	RA361-P6-8045HA	TA362-R6-8045HA	TA302-T6-8045HA
	Medium	WRA462-P6-8045HA	RA361-Q6-8045HA	RA361-T6-8045HA
	Large	WA462-P6-8025HA	WRA361-P6-8045HA	WRA362-R6-8045HA
High Temperature Alloys	Small	RA462-Q6-8045HA	TA361-R6-8045HA	TA361-T6-8045HA
	Medium	WRA461-P6-8045HA	RA461-Q6-8045HA	RA462-T6-8045HA
	Large	WA461-P6-8025HA	WRA461-P6-8045HA	WRA461-R6-8045HA

Material Size

SMALL = UP TO 1/3 OF MACHINE CAPABILITY
MEDIUM = UP TO 2/3 OF MACHINE CAPABILITY
LARGE = OVER 2/3 OF MACHINE CAPABILITY

SPEEDS

ALL WHEELS ARE RATED FOR 14,200 SFPM (72 M/S).

ALL FULLY REINFORCED WHEELS CAN BE RATED FOR 16,000 SFPM (80M/S) ON REQUEST.

REQUEST K9 REINFORCED FOR 100 M/S OPERATION.

Challenger Hot Pressed Resinoid Wheels For Foundry Cut-Off Applications – DRY CUTTING OF GATES & RISERS

Provide efficient cutting of gates and risers

Challenger hot pressed reinforced abrasive cut-off wheels provide outstanding performance for most foundry cut-off applications, but especially for the cutting of large gates and risers where heavy feed pressures or heat build-up within the cut make cold pressed wheels unsuitable.

Rilled (record grove) sides for cool, free-cutting action give less operator fatigue and more cuts per hour.

High-strength fiberglass molded into the Challenger wheel provides high resistance to breakage.

Challenger hot pressed straight (type) and depressed center (type 27) wheels are available in popular sizes for swing-frame and chop-stroke machines, with diameters ranging from 16 to 30 inches.

Recommended *Challenger* Type 1 Hot Pressed Reinforced Resinoid Abrasive Wheels for FOUNDRY CUT-OFF APPLICATIONS – DRY CUTTING OF GATES & RISERS

Wheel Diameter		16"	16"	20"	24"	30"
Wheel Thickness		1/8"-5/32"	5/32"-3/16"	5/32"-3/16"	3/16"	1/4"
Maximum Operating Speed		3810 RPM	3810 RPM	2710 RPM	2260 RPM	1810 RPM
MATERIAL DESCRIPTION						
Carbon Steel						
	Small to Medium Sections	HF1247C	HF1247K	HF1247K	HF1247K	
	Medium to Large Sections	HF1255C	HF1255K	HF1255K	HF1428K	
Stainless Steel						
	Small to Medium Sections	HF1247C	HF1247K	HF2489K	HF2489K	HF2489K
	Medium to Large Sections	HF1255C	HF1255K	HF1255K	HF1255K	HF1255K
Ductile Iron						
	Small to Medium Sections	HF1255C	HF1247K	HF1247K	HF1255K	HF1255K
	Medium to Large Sections	HF1428C	HF1255K	HF1255K	HF1428K	HF1428K
Gray Iron		HF3389C	HF3389C	HF3389C	HF3389C	HF3389C
High Temperature & Exotic Alloys						
	Small to Medium Sections	HF1247C	HF1247K	HF1247K	HF1247K	HF1255K
	Medium to Large Sections	HF1673C	HF1673K	HF1673K	HF1673K	HF1673K
Brass & Bronze		HF2489C	HF2489K	HF3835K	HF3835K	HF3835K
Copper & Copper Alloys		HF2820C	HF2820K	HF2820K	HF2820K	HF2820K

Note: Suffix "C" indicates wheel has one full diameter internal and 2 partial diameter external plies of reinforcing. Suffix "K" indicates wheel has two full diameter internal and 2 partial diameter external plies of reinforcing.

For Type 27 wheels (available in 20" x 5/32" or 3/16" and 24" x 3/16") and 30 x ¼" add "27" to the end of the Type 1 wheel specification.

For Example:
Type 1 HF1255K
Type 27 HF1255K27

When ordering, identify wheel specification, wheel type (#1 or #27), diameter, thickness, arbor hole size, and the size and location of any required drive pin holes.

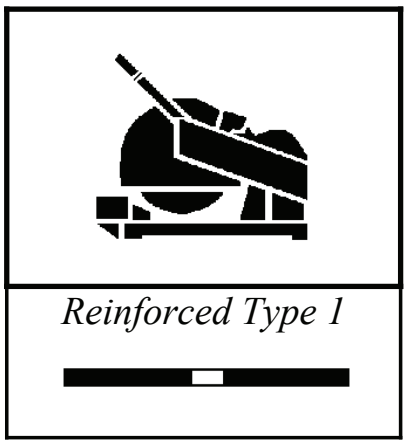
Use wheels only on well-guarded machines that will prevent personal injury if a wheel should break.

DO NOT EXCEED the maximum RPM marked on each wheel.

To convert RPM to meters per second (m/s):
m/s = (.0013299) (Wheel Diameter in Inches) (RPM)

Allison ABRASIVES has been known since 1919 as a premier manufacturer of cut-off wheels. Our Foundry line of cut-off wheels is designed for the demanding foundry environment. They provide fast, clean, and economical cutting.

Use Fast Cut for aluminum or for free cutting action on hard steels. Use Zirconia Alumina for long life on stainless and erospace alloys.



Reinforced Type 1

Thickness	Commodity Code	Wheel Specification	Maximum Rpm	Box Quanity
Foundry Long-Life Zirconia Alumina Reinforced * - Stationary Saws				
14 x 1/8 x 1	04970-14175	Z30TBFE	4,360	10
16 x 1/8 x 1	04970-16176	Z30TBFE	3,810	10
20 x 5/32 x 1	04970-20177	Z24VBFE	2,710	10
20 x 5/32 x 1	06970-20178	Z24VBFI	2,710	10
24 x 7/32 x 1-3/4	08970-24179	Z24VBFI	2,260	5
Foundry Extra Long-Life Zirconia Alumina Reinforced * - Statinary Saws				
16 x 1/8 x 1	04970-1676F	Z24XBFE	3,810	10
20 x 5/32 x 1	04970-20769F	Z24XBFE	2,710	10
20 x 5/32 x 1	06970-20770F	Z24XBFI	2,710	10
24 x 7/32 x 1-3/4	08970-24109	Z24XBFI	2,260	5
Fast- Cut Aluminum Oxide Reinforced * - Stationary Saws				
12 x 1/8 x 1	64970-12111	A30QBFE	5,090	10
14 x 1/8 x 1	64970-14112	A30QBFE	4,360	10
16 x 1/8 x 1	34970-16784	A30QBFE	4,360	10
20 x 5/32 x 1	36970-20114	A30QBFI	3,810	10
20 x 5/32 x 1	34970-20115	A24QBFE	2,710	10
24 x 7/32 x 1-3/4	38970-24115	A24QBFE	2,260	5
Foundry Long-Life Aluminum Oxide Reinforced * - Stationary Saws				
12 x 1/8 x 1	34970-12180	A30TBFE	5,090	10
14 x 1/8 x 1	34970-14181	A30TBFE	4,360	10
16 x 1/8 x 1	34970-16182	A24VBFE	3,810	10
16 x 1/8 x 1	36970-16185	A24VBFI	3,810	10
20 x 5/32 x 1	34970-20183	A24VBFE	2,710	10
20 x 5/32 x 1	36970-20184	A24VBFE	2,710	10
24 x 7/32 x 1-3/4	38970-24114	A24VBFI	2,260	5

Call for Availability

BFE = Externally Reinforced, BFI = Internally Reinforced

Allison Abrasive Wheels for Wet or Dry Cutting of RAILROAD RAIL

Maintenance of railroad track includes cutting away the worn ends of used rails, and reinstalling these same rails on the same roadbed; or cutting the ends of newly rolled rails at the mill or yard before welding them together for new continuous rail installation.

For "on track" repair of bolted-assembly rails, cutting is usually done dry on mobile gasoline powered abrasive cutting machines using 26" diameter abrasive wheels. ***Allison*** Abrasives, Inc. has developed abrasive wheels specifically for this operation – strong, reinforced wheels, formulated for fast, free-cutting action and more cuts per wheel. They make it possible for an experienced track crew to relay more track per day than with other abrasive cut-off wheels.

In the steel mill or railroad yard, stationery electrically powered abrasive cutting machines are used to trim ends prior to welding them together. Allison wheels, for wet or dry cutting on these machines, provide fast, clean cuts and high life. They produce straight, flat cuts, ready for welding with little or no additional preparation. For dry cutting, wheels are generally reinforced. For wet cutting, if the rail is straight and

Dimension	Wheel Specification	Commodity Code	Maximum Rpm	Box Quanity
Railroad				
14 x1/8 x 1	14 ALL-TRAK	34700-14325	5,400	10
16 x 1/8 x 1	16 ALL TRAK	34700-16325	4,800	10
26 x 7/32 x 1-3/4	TA302 X 8050K7AF	38020-26351	2,100	5
28 X 1/4 X 1-3/4	A24 T 8050K7AF	38040-28330	2,100	5
Zirconia Aluminum for Railroad				
14 x 1/8 x 1	ALL TRAK Z	04980-14325	5,400	10
16 x 1/8 x 1	ALL TRAK Z	04701-16325	4,800	10

When to Use Reinforced or Non-Reinforced Wheels

Reinforced Economiser wheels are recommended for most dry cutting applications, especially those where side pressure on the cutting wheel is a factor. Always use reinforced wheels for foundry cut-off operations.

Non-reinforced Economiser wheels provide faster, cleaner cuts and lower costs per cut. They should be used only on well-guarded machines and the material being cut should be securely clamped.

Easy Wheel Selection

- Refer to the dry or wet cutting section of the Economiser wheel chart according to the type of cut-off machine to be used.
- Decide if a reinforced or non-reinforced wheel is required.
- Choose the proper wheel dimensions to fit the machine.
- Move to the right to find the wheel specifications recommended for the material, shape and size you wish to cut.

			Material Description					
			Solid Bar Stock				Tube & Pipe	
			Diameter				Wall Thickness	
			1/8" to 3/8"	1/2" to 1"	1" to 2"	1" to 4"	Up to 1/16"	Over 1/16"
Wheel Dimensions								
DRY CUTTING								
Fully Reinforced								
Diameter	**Thickness**	**Hole**						
10" x	3/32"	x 5/8"		10-DBFL-3	10-DBFL-3	----------		
12" x	3/32"	x 1"		12-DBF-2	12-DBF-2	----------		
14" x	1/8"	x 1"		14-DBF-2	14-DBF-2	----------		
16" x	1/8"	x 1"		16-DBF-2	16-DBF-2	----------		
20" x	1/8"	x 1"		20-DBF-3	20-DBF-3	20-DBF-2		
*20" x	5/32"	x 1"		----------	----------	20-DBF-5		
Non-Reinforced								
10" x	1/16"	x 5/8"	10-DT-4	10-DB-3	10-DB-3	----------	10-DT-4	----------
10" x	3/32"	x 5/8"	10-DT-5	10-DB-6	10-DB-6	----------	----------	10-DT-5
12" x	3/32"	x 1"	12-DT-5	12-DB-2	12-DB-2	----------	12-DT-2	12-DT-5
14" x	1/8"	x 1"	14-DT-5	----------	----------	----------	14-DT-5	14-DT-5
16" x	3/32"	x 1"	16-DT-5	----------	----------	----------	16-DT-5	16-DT-5
16" x	1/8"	x 1"	----------	16-DB-2	16-DB-2	----------	----------	----------
20" x	1/8"	x 1"	----------	20-DT-3	20-DB-3	20-DB-2	----------	20-DT-3
WET-CUTTING								
Non-Reinforced								
12" x	3/32"	x1"	----------	12-WB-2	12-WB-2	----------	----------	----------
14" x	3/32"	x1"	----------	14-WB-2	14-WB-2	----------	----------	----------
16" x	3/32"	x1'D	----------	16-WB-2	16-WB-2	----------	----------	----------
20" x	1/8"	x1"D	----------	20-WB-2	20-WB-2	20-WB-2	----------	----------

* This item has 3 full layers of fiber glass reinforcing and is suitable for foundry cut-off applications

Simplified Wheel Markings

A	Rough Side
B	Bar Stock
D	Dry Cutting
F	Internal Reinforced
FL	Full External Reinforced
FO	Double Internal Reinforced
T	Tubing
W	Wet Cutting
1 or 4	Free Cutting
2 or 5	Medium Life
3 or 6	Long Lasting

Example: 10 DBFL3

10 - 10 Inch Wheel
D - Dry Cutting
B - Bar Stock
FL - Full External Reinforcing
3 - Long Lasting

Type "DBF": Reinforced Dry Cutting Wheels for Solid Bar Stock

Dimension	Wheel Specification	Commodity Code	Maximum Rpm	Box Quanity
10 x 3/32 x 5/8	10 DBFL3	34879-10210	6,110	10
12 x 3/32 x 1	12 DBF2	35860-12225	5,090	10
14 x 3/32 x 1	14 DBFL2	64856-14225	4,360	10
14 x 1/8 x 1	14 DBF2	35855-14325	4,360	10
16 x 1/8 x 1	16 DBF2	36855-16325	3,810	10
16 x 1/8 x 1	16 DBFL2	34872-16325	3,810	10
16 x 1/8 x 1	16 DBFL3	34869-16325	3,810	10
20 x 1/8 x 1	20 DBF2	36875-20306	2,710	10
20 x 1/8 x 1	20 DBF3	36870-20325	2,710	10
20 x 1/8 x 1	20 DBFL2	34872-20325	2,710	10
20 x 1/8 x 1	20 DBFL3	34840-20325	2,710	10
20 x 5/32 x 1	20 DBF5	37780-20525	2,710	10
24 x 1/4 x 1-3/4	24 DBFO3A	39800-24771	2,260	5
26 x 1/4 x 1-1/4	26 DBFO3A	39801-26766	2,080	5

Call for availability

Type "DT": Non-Reinforced Dry Cutting Wheels for Tubing

Dimension	Wheel Specification	Commodity Code	Maximum Rpm	Box Quanity
10 x 1/16 x 5/8	A 10 DT4	30825-10160	5,420	10
10 x 3/32 x 5/8	A 10 DT5	30811-10210	5,420	10
12 x 3/32 x 1	A 12 DT5	30811-12225	4,520	10
14 x 1/8 x 1	A 14 DT5	30811-14325	3,870	10
16 x 1/8 x 1	A 16 DT5	30811-16325	3,390	10
20 x 1/8 x 1	A 20 DT3**	32850-20329	2,710	10

Call for availability

** Flange reinforced

Type "DT": Non-Reinforced Dry Cutting Wheels for Solid Bar Stock

Dimension	Wheel Specification	Commodity Code	Maximum Rpm	Box Quanity
10 x 1/16 x 5/8	10 DB2	30830-10160	5,420	10
10 x 1/16 x 5/8	10 DB3	30835-10160	5,420	10
10 x 3/32 x 5/8	10 DB5	30840-10210	5,420	10
10 x 3/32 x 5/8	10 DB6	30835-10210	5,420	10
12 x 3/32 x 1	12 DB2	30830-12225	4,520	10
16 x 1/8 x 1	16 DB2	31825-16325	3,390	10
20 x 1/8 x 1	20 DB2**	32845-20325	2,710	10

Call for availability

** Flange reinforced

Type "WB": Non-Reinforced Wet Cutting Wheels for Solid Bar Stock

Dimension	Wheel Specification	Commodity Code	Maximum Rpm	Box Quanity
12 x 3/32 x 1	12 WB2	20810-12225	4,520	10
14 x 3/32 x 1	14 WB2	20810-14225	3,870	10
16 x 3/32 x 1	16 WB2	20810-16226	2,380	10
20 x 1/8 x 1D	20 WB2	20810-20326	1,910	10

Allison Abrasive has been known since 1919 as a premier manufacturer of cut-off wheels.

- The Fast Cut ® lines are designed for providing fast, clean, efficient cutting at an economical value.
- The Fast Cut ® wheel provides excellent fast cutting on a wide range of metal and alloyed steels.
- The Z style is a is faster and more aggressive cut using premium zirconia grain.
- The HD line are larger heavy duty wheels for large applications.
- All are designed for high speed stationary chop saw applications.
- The Fast Cut ® R line are high speed blades for metal and alloyed steels in any configuration including rail.
- They perform excellent in fixed cutting gas and hydraulic saws.

Product Code	Wheel Size	Allison Spec	MAX RPM	Description
6417010012	10 x 3/32 x 5/8	A3579 L6A	6112	Fast Cut
6416012092	12 x 1/8 x 1	A5231 L6A	5092	Fast Cut
6416012093	12 x 1/8 x 1	A5230 L6A	5092	Fast Cut Z
6416014681	14 x 1/8 x 1	A5681 L7A	5400	Fast Cut R
6416014093	14 x 1/8 x 1	A5685 L7A	5400	Fast Cut RZ
6416016091	16 x 1/8 x 1	A6681 L7A	4800	Fast Cut R
6416016094	16 x 1/8 x 1	A6685 L7A	4800	Fast Cut RZ
6616016861	16 x 5/32 x 1	A6861 C7A	3820	Fast Cut HD
6616020242	20 x 3/16 x 1	A9242 C7A	3066	Fast Cut HD

Call for availability

COOLANT

Metals Capability	All Ferrous (Up to 5% non-ferrous)
Dilution	Up to 30:1
Rust Control	Good
Nitrite	No
Safe (OSHA)	Yes
Abrasive Cut-off	Yes
Double Disc	Yes
Blanchard	Yes
Gen. Mill Drill	Yes
Appearance	Clear Blue
Tramp Oil	Floats for Skimming
Foam Control	Good
Disposal	Never Goes Bad
Hard Water	No Problem
Residue	Light Honey - Invisible on Parts
Bacteria Resistance	Excellent

Application:
Cambellene Cool-Blue coolant concentrate is recommended for use with all wet abrasive cutting and most wet grinding of ferrous metals and titanium (except those cutting and grinding operations involving aluminum).

Description:
Because Campbellene coolant concentrate is chemical in nature, it will not support bacterial growth or turn rancid. Campbellene coolant concentrate contains no oily or greasy substances, providing even more safety to your shop personnel and work areas. Offensive odors are minimized by the inclusion of an exclusive scenting agent – Odormask.

Campbellene coolant concentrate retards rust and minimizes the build-up of hard deposits thereby keeping the machine and parts clean and assuring a faster, straighter cut. This feature also promotes longer wheel life and better quality cuts. Recirculation of metal chips is reduced to a minimum because of extremely rapid chip setting.

Non-foaming, Campbellene coolant concentrate allows close contact of coolant with the cutting wheel and work for maximum cooling. Cooler cutting will add to the life of the wheel.

Campbellene coolant is available in handy container sizes, from convenient five-gallon plastic containers to the large 55-gallon drums. Because it used in extreme dilutions this solution is exceptionally economical.

Campbellene Cool-Blue coolant concentrate measures up as the finest coolant for the price.

Campbellene Cool Blue Order No.	
5 Gallon	**55 Gallon**
78077-05000	78077-55000

Allison Rubber Bonded REGULATING WHEELS

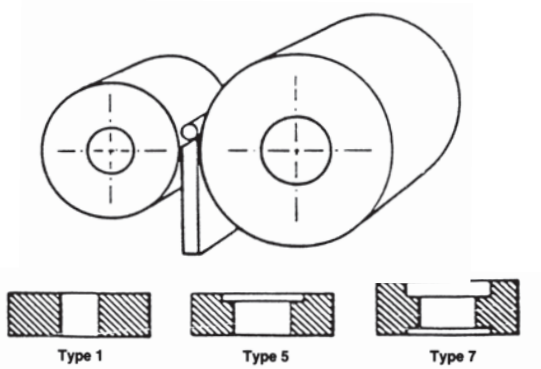
Allison Calendered Rubber Regulating Wheels are produced by the calender process. This process produces a regulating wheel with higher traction and a resilient toughness that reduces dressing, has good shape retention, and tolerates a greater variance in the stock going into the grinding operation. These characteristics provide a significant savings in overall grinding and maintenance expense.

CONTROL . . .

Size . . . Geometr y. . . RPM . . . Traverse!

Centerless Grind with Positive Work Control

- Maximum in-feed
- Specified dimenisons and tolerances
- Longer Life
- Fewer Dressings
- Maximum thru feed



Dimensions Diameter	Type 1-R Grade-80 Grit Thickness	5"	6"	RPM
12	1			600
	1-1/2			600
	2			600
	2-1/2			600
	3			600
	4			600
	6			600
	8			600
	10			600
	12			600
	20			600
14	1			600
	1-1/2			600
	2			600
	2-1/2			600
	3			600
	4			600
	6			600
	8			600
	10			600
	12			600
	20			600

Call for availability

Also Available

- Type 5
- S and T Grades
- Type 7
- Grain sizes from 60 to 220

Proper Care

- Proper care of abrasive wheels will result in efficient cutting.
- ***Unpack*** immediately.
- Do not leave in shipping box.
- Store ***flat*** on a smooth, rigid surface in a dry room.
- Do not hang on wall.
- Do not store on edge.
- Do not store in damp area.

Safety Rules of Use of Abrasive Cut-Off Wheels

- Read machine operating instructions.
- Check proper wheel mounting procedure.
- Check wheel flanges.
- Check general machine operation.
- Check condition of machine guards.
- Keep machine clean.
- Operate within rated machine capacity.
- Clamp work securely.
- Close door before starting.
- Do not open wheel access door while machine is running.
- Wear appropriate personal safety items.

Warning:

Comply with ANSI B7.1 safety requirements and OSHA. Failure to comply can result in serious physical injury.

A copy of ANSI B7.1 safety requirements will be sent to you if requested on your purchase order for Allison abrasive cutting wheels.

Blotters

It is recommended that blotters ***not be used*** for wet cutting applications because wet pieces of blotter may adhere to the machine flanges. This will cause uneven contact with the wheel breakage.

Recommended Operating Speeds

For the most efficient performance for wet, dry or submerged cutting applications:

Applications	Recommended Operating Speed Surface Feet Per Minute*
Dry Cutting	10,000 to 16,000
Wet Cutting	5,000 to 9,500
Submerged Cutting	4,500 t0 6,000

*Never exceed maximum speed recommended by manufacturer.

The table below will enable you to convert wheel speeds from surface feet per minute to revolutions per minute.

WHEEL DIAMETER	Surface Feet Per Minute – Peripheral Speed					
	4,500	5,000	6,000	9,500	10,000	14,200
	Revolutions Per Minute					
6″	2,865	3,180	3,820	6,045	6,365	9,040
7″	2,455	2,730	3,275	5,180	5,455	7,740
8″	2,150	2,385	2,865	4,540	4,775	6,780
9″	1,910	2,125	2,550	4,030	4,245	6,020
10″	1,720	1,910	2,290	3,630	3,820	5,420
12″	1,435	1,590	1,910	3,025	3,185	4,520
14″	1,230	1,365	1,635	2,590	2,730	3,870
16″	1,075	1,195	1,430	2,270	2,385	3,390
18″	955	1,060	1,275	2,015	2,120	3,010
20″	860	955	1,145	1,815	1,905	2,710
24″	715	795	955	1,510	1,590	2,260
26″	660	735	880	1,395	1,470	2,080
34″	505	560	675	1,070	1,125	1,590
44″	390	435	520	825	870	1,230
48″	360	400	480	755	795	1,130

WET CUTTING			MATERIAL	DRY CUTTING		
SOFT (FREE CUTTING)	MEDIUM (GENERAL-PURPOSE)	HARD (LONGER-LASTING)		SOFT (FREE CUTTING)	MEDIUM (GENERAL-PURPOSE)	HARD (LONGER-LASTING)
VA1202-M-RA	A80-P-RA6	A804-P-PR6	ALNICO	A601-P6-B2	A461-R6-B2	TA361-R6-8045A
TA463-S-RL8 VA1202-M-RA	TA461-Q6-RN4 A804-P-RR6	TA-241-Q6-RN4 TA902-Q-RW4	ALUMINUM (HARD): BAR TUBING	A461-R6-B2 TA902-Q-RW4	A361-R6-B4A TA902-S6-RN4	TA361-R6-8045A TA902-X6-B6
C120-K-RA	C90-N-RW3	C60-N-RW3	BERYLLIUM			
	TA46-Q-RW4	TA461-Q6-RN4	BITS (MINE/DRILL)	A461-R6-B4	A361-R6-B4A	TA301-T6-8045A
			BRASS &BRONZE (HARD)			
VA902-M-RA	TA463-S-RL9Z	TA461-Q6-RN4	BARS	A601-N6-B2	A461-R6-B2	A361-R6-B4A
VA1202-M-RA	A804-P-PR6		TUBING	TA902-Q-RW4	TA902-S6-RN4	TA902-X6-B6
	C241-J6-B1A		BRICK: COMMON FACE	C201-P6-8045L4 C302-P6-8015L4	C201-T6-8045-L6 C302-T6-8015-L6	C201-X-8050-L6 C302-V8015-L6
A120-Q-RW4	TA90-P-RH8F	TA461-Q6-RN4	CABLE (STEEL)	TA902-Q-RW4	TA902-X6-B6	TA362-X-8050A
			CARBON	C-461-L6-B1	C461-N6-B1	C361-P6-B1A
	TA46-Q-RW4	TA241-Q6-RN4	CAST IRON PIPE	A361-R6-B2A	A361-R6-B4A	A301-R6-8045A
TA902-Q-RW4	TA463-S-RL8	TA241-Q6-RN4	CHANNERL IRON	A301-R6-B4A	TA241-T6-B6A	TA241-X-8050A
	C241-J6-BF2L4	C241-L6-BF2L4	CONCRETE & CINDER BLOCK	C241-P6-8045L4	C201-T6-8045-L6	C201-X-8050-L6
VA902-M-RA VA1202-M-RA	TA463-S-RL9Z A804-P-PR6	TA46-Q-RW4 TA902-Q-RW4	COPPER (HARD): BAR TUBING	A601-N6-B2 TA902-Q-RW4	A461-R6-B2 TA902-S6-RN4	A1361-R6-8045 TA902-X6-B6
A804-P-PR6	TA463-S-RLS	TA463-S-RL9Z	DRILL ROD	A601-P6-B2	A461-R6-B4A	TA361-R6-8045A
VA602-Q-RG9	TA461-O6-RN4	TA461-Q6-RN4	DRILLS, TWIST	A461-N6-B1N	A361-R6-B2	TA361-R6-8045A
	C602-K-RA	C602-M-RA	FIBRE: TUBING	C461-L6-B1	A461-N6-B1	C361-P6-B1A
C60-K-RA	C602-M-RA		SOLIDS	C461-L6-B1	C461-N6-B1	C361-N6-B1
			GATES & RISERS: STEEL BRASS &BRONZE	 TA30-R6-804566 TA24-R6-8045L6	 HF2489K TA241-T6-8045K6A	 HF1247K TA241-X-8050K6A
			GERMANIUM:			
C120-K-RA	C120-P-RAG6	C120-N-RW3	LARGE SECTIONS			
	C240-P-PR7	C1803-ORR5	SMALL SECTIONS			
C120-H-RP	C90-K-RA C120-J-RA C120-H-RP	C120-K-RA C120-J-RP	GLASS: SOLIDS & HEAVY WALL TUBING TUBING & THIN WALL "PYREX" & "VYCOR"			
VA465-M-RA	BA602-R-RL6S	TA46-R-RL6	HIGH TEMP. ALLOYS	RA462-P6-8025A	RA361-R6-8045A	TA301-T6-8045A
			INVESTMENT CASTINGS		TA301-T6-8045	TA302-X-8050L6A 3AZ30-X-8050L6AZ
X602-M-RA	VA602-Q-RG9	A804-P-PR6	KNIVES (MACHINE)	A461-N6-B1N	A361-R6-B4A	TA301-T6-B6A
A601-G6-RN4A WA90-K-RA	WA90-K-RA VA1202-M-RA	VA602-M-RA A804-P-PR6	METALLOGRAPHIC SPECIMANS: LARGE SECTIONS SMALL SECTIONS		A601-L6-B1	
WA90-K-RA	VA465-M-RA	A96-Q-RL5	MOLYBDENUM			
VA465-M-RA	A96-Q-RL5	TA60-Q-RW4	NICKEL ALLOYS	WRA46-P6-8045A	RA361-R6-8045A	RA361-T6-8045A
DA46-Q-RL5	TA462-S-RL8	TA361-Q6-RN4	NICKEL ANODES	A361-R6-B4A	TA301-T6-B6A	TA241-V4-8050A
TA461-P6-RN4	TA461-Q6-RN4	TA241-Q6-RN4	PIPE (STEEL)	TA602-X6-B6A	TA241-Q6-RN4A	TA302-X6-8050A
			(THERMO SETTING)			
	C602-K-RA	C1204-M-RA	PLASTICS	C361-J6-B1	C301-L6-B1	C301-P6-B1A
	C90-J-RA	C60-J-RA	PORCELAIN		C461-L6-B1	C461-N6-B1
	C241-J6-BF2L4		REFRACTORY BRICK	C201-N6-BF1L4	C201-P6-BF1L4	C201-P6-BF2L4
	C60-J-RA	C602-M-RA	RUBBER (HARD)	C361-J6-B1	C301-L6-B1	C301-P6-B1A
T462-S-RG8	TA46-Q-RW4	TA461-Q6-RN4	STEEL: CARBON BARS	A361-R6-B2	A301-R6-8045	TA241-T6-8045A
VA602-M-RA	TA462-S-RL8	TA361-N4-RN4	ALLOY & TOOL BARS	A461-N6-B1N	A361-R6-8045	A301-R6-8045A
VA465-M-RA	A461-M6-RN4	TA461-P6-RN4	PLATE	TA241-P6-RN4	TA241-Q6-RN4	TA241-T6-8045A
A120-Q-RW4	TA902-Q-RW4	TA60-P-RH8F	TUBING (FLEXIBLE)	TA902-X6-B6	TA602-X6-B6A	TA462-V6-8045
			TUBING (CAPILLARY)		A240-O-RJ3	XA1803-R-PR5
A461-M6-RN4 A120-Q-RW4	TA461-O6-RN4 TA902-Q-RW4	TA361-N4-RN4 TA60-P-RH8F	STAINLESS STEEL: BARS TUBING (INC. FLEXIBLE)	A361-P6-B2A TA1202-X6-B6	A301-R6-8045 TA902-X6-B6	A301-X6-8050A TA602-V6-8045
XA602-M-RA	A461-M6-RN4	TA461-Q6-RN4	STELLITE		A301-R6-B4A	TA302-X6-8050A
	C241-H6-B1A		TILE	C241-J6-B1A	C241-J6-BF2A	C241-N6-B1A
			TITANIUM:			
C60-N-RW3	C461-M6-RN4	C361-M6-RN4	SMALL SECTIONS			
C240-P-RR7	C1204-M-RA	C120-N-RW3	LARGE SECTIONS			
VA902-M-RA	TA602-M-RL	TA60-Q-RW4	TOOLS (SALVAGE)		A361-P6-B2A	TA361-T6-8045A
VA603-T-RG9Y	A46-P-RA6	TA462-S-RL8	TRANSFORMER CORES			
XA1803-P-PR5 C120-K-RA	A1802-R-RK7 C120-P-RAG6	A1202-R-RA6 C120-N-RW3	TUNGSTEN: ROD LARGE SECTIONS (HIGH DENSITY)			
C120-K-RA	C1204-M-RA		URANIUM			
	TA46-Q-RW4	TA465-Q-RH4	VALVE STEMS	RA461-N6-B6A	A461-P6-B6A	A462-R6-B6A
C120-K-RA	C60-N-RW3	C461-M6-RN4	ZIRCONIUM			

NORMAL

ROUNDED edge is a sign of the right wheel properly applied to the cutting of solids up to 12" square.

SQUARE edge is retained on wheel well suited to cutting both solids and structurals or tubing of medium wall thickness.

CONCAVE edge is sign you're using the right wheel to cut light tubing or other thin-wall sections.

ABNORMAL

POINTED edge means wheel is too hard. Tapering effect can cause binding and wheel breakage, and burned cuts.

CHISEL edge is caused by improper application of coolant in wet cutting. Results: crooked cuts and shorter wheel life.

GLAZED edge occurs, and cutting efficiency is lost when abrasive grain on wheel edge wears smooth without being torn out. Cause: cutting too slowly, improper wheel.

USE

WARNING: Use wheels only on well-guarded machines. Do not exceed maximum operating speed (rpm) marked on wheel. Comply with ANSI B7.1-2000 Safety Requirements (copy available upon written request to Allison Abrasives, Inc.). Failure to comply can result in serious physical injury.

Typical Specifications for Large Diameter Cut-off Applications

Material	Application	Wheel Diameter 400-800 mm	Wheel Diameter 1000-1600 mm
Alloyed Steels and Nickel Alloys	Wet	A46 M6 RN4HA	A46 K6 RN4HA
	Cold	TA24 X6 3226 C7A	A20 B3565 K9A
	Hot	TA242 Z6 8050K7A	TA16 Z BAK9A
	Warm	TA302 XR 3226 L7A	TA20X6BAK9A
Titanium	Wet	C46 L6 RN4HA	C46 L6 RN4HA
	Cold	C24 X6 BAC7A	C24 X6 BAK9A
	Hot	C20 Z6 BAK7A	C16 Z6 BAK9A
Special Materials	For your specific applications, please contact your Allison representative.		

ABRASIVE CUT-OFF WHEEL TROUBLE SHOOTING

The finest abrasive cutting wheels may give unsatisfactory performance if abused, improperly applied, or used on poorly maintained machines. These trouble shooting suggestions will help you obtain optimum performance from your abrasive cutting wheels.

Symptom 1 – Wheels break as soon as the machine is started, or immediately upon beginning the first cut.

Possible Cause:

a. Wheels have been cracked as a result of rough handling by the delivering carrier.
b. Wheels have been cracked in the user's plant.
c. Machine wheel spindle speed is too high.

Suggested Action:

a. Flex wheels and look and listen for cracks. If cracked, check the shipping containers for damage. Call the delivering carrier to inspect the cracked wheels and containers, and send the inspection report to Allison so a claim can be filed. A credit adjustment will be made when the claim is paid by the carrier.
b. Use the proper methods of storing and handling wheels.
c. Reduce the spindle speed. Never operate a cut-off wheel at a speed in excess of the maximum operating speed marked on wheel.

Symptom 2 – Wheels bind or break just before a cut is completed.

Possible Cause:

a. Binding or pinching due to misalignment of the feed table with the work holder, or due to worn work holder surfaces.

Suggested Action:

a. Align the feed table with the work holder, and repair or replace worn work holder surfaces.

Symptom 3 – Wheels stall or break in the widest part of cut.

Possible Cause:

a. Work clamp does hot hold the material securely, allowing it to shift while the cut is in progress.
b. Wheel is too hard and its edge has become glazed.
c. Wheel flanges are worn.

Suggested Action:

a. Re-adjust, repair or replace the work holder.
b. Use a softer wheel grade.
c. Reface or replace the flanges

Symptom 4 – Wheels cut crooked and/or break

Possible Cause:

a. Unequal water application on each side of the cutting wheel (wheel edge is chisel shaped).
b. Wheel spindle bearings are bad.
c. Wheels are "dished" or warped.

Suggested Action:

a. Check for, and remove, broken wheel pieces and other materials that may be deflecting the water flow. Adjust the water flow to be equal on both sides of wheel.
b. Replace the bearings.
c. If wheel appears to be warped or "dished," notify the local distributor or factory representative. If wheels have been properly stored, and he finds that they are not within the normal flatness tolerance, he will request a Return Goods Order (RGO) from Allison.

Symptom 5 – Cut surface is burned.

Possible Cause:

a. Wheel grade is too hard.
b. Cutting rate is too slow.
c. Misalignment of feed table with work holder, or worn work holder surfaces, is causing binding.
d. Wheel spindle speed is too high.
e. Inadequate water application as a result of:
  1. Clogged coolant lines.
  2. Sludge and chips in coolant tank.
  3. Worn pump impellor.
  4. Pump running backwards.
  5. Improperly directed coolant.

Suggested Action:

a. Use a softer wheel grade.
b. Cut faster.
c. Re-align the feed table with the work holder, and repair or replace worn work holder surfaces.
d. Reduce the spindle speed. Never operate a cut-off wheel at a speed in excess of the maximum operating speed marked on the wheel.
e. Improve water application as follows:
  1. Clean the nozzle or water box, water lines, & tank.
  2. Removed sludge and chips from coolant tank.

3. Repair the pump.
4. Reverse 2 electrical leads on a 3-phase pump motor to reverse direction.
5. Adjust the water box or nozzles for material size so water is directed to the area where wheel and material are in contact.

Symptom 6 – Low wheel life.

Possible Cause:
a. Wheel grade is too soft.
b. Rate of cut is too fast.
c. Machine wheel spindle speed is too low.
d. Inadequate water application as a result of:
1. Clogged coolant lines.
2. Sludge and chips in coolant tank.
3. Worn pump impellor.
4. Pump running backwards.
5. Improperly directed coolant.
e. Wheel is much too hard and/or too fine in abrasive size. (Wheel edge looks charred and cracked. It "sloughs-off" around periphery.)

Suggested Action:
a. Use a harder wheel grade, unless wheel edge appears charred, cracked or is chipped out.
b. Cut at a slower rate.
c. Increase spindle speed, but do not exceed the maximum speed marked on the wheel.
d. Improve water application as follows:
1. Clean the nozzle or water box, water lines, & tank
2. Remove sludge and chips from coolant tank.
3. Repair the pump.
4. Reverse 2 electrical leads on a 3-phase pump motor to reverse direction.
5. Adjust the water box or nozzles for material size so water is directed to area where wheel and material are in contact.
If coolant application cannot be improved, use a wheel with a bond having greater heat resistance, (i.e. – RW4, RH8, or RN4 bond).
e. If wheel edge appears charred, cracked or is chipped out use a softer wheel grade and/or coarser abrasive

Symptom 7 – Excessive burr.

Possible Cause:
a. Abrasive grain in the wheel is too coarse.
b. Material is clamped on one side of cut only, permitting the cut-off pieces to move away as the cut is completed.

Suggested Action:
a. Use a wheel with finer abrasive.
b. Provide secure clamping of the material on both sides of the cut.

Symptom 8 – Wheel stalls in the cut and motor stalls.

Possible cause:
a. Wheel grade is too hard.
b. Rate of cut is too fast.
c. Full voltage is not reaching the motor.
d. Worn or misaligned feed table and/or work holder is causing wheel to bind in cut.

Suggested Action:
a. Use a softer wheel grade.
b. Reduce the rate of the cut.
c. Provide full voltage at motor by use of larger wires and/or independent power source.
e. Align and/or repair the feed table and work holder.

Symptom 9 – Any of the previously mentioned symptoms.

Possible Cause:
a. Wheel is incorrectly formulated or processed, or has some physical defect.

Suggested Action:
a. If previously mentioned causes do not explain the symptoms, send a wheel sample to:

Allison Abrasives
141 Industry Road
Lancaster, KY 4044

Please include a detailed report. If possible, send a sample of a "good" as well as a "bad" wheel. Allison will examine and/or analyze the sample wheels, and will advise if remaining wheels should be returned. An appropriate adjust will be made if the wheels are found to be defective.

Allison ABRASIVES

Quality Abrasive Cut-off Wheels

Celebrating 100 Years ANNIVERSARY

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