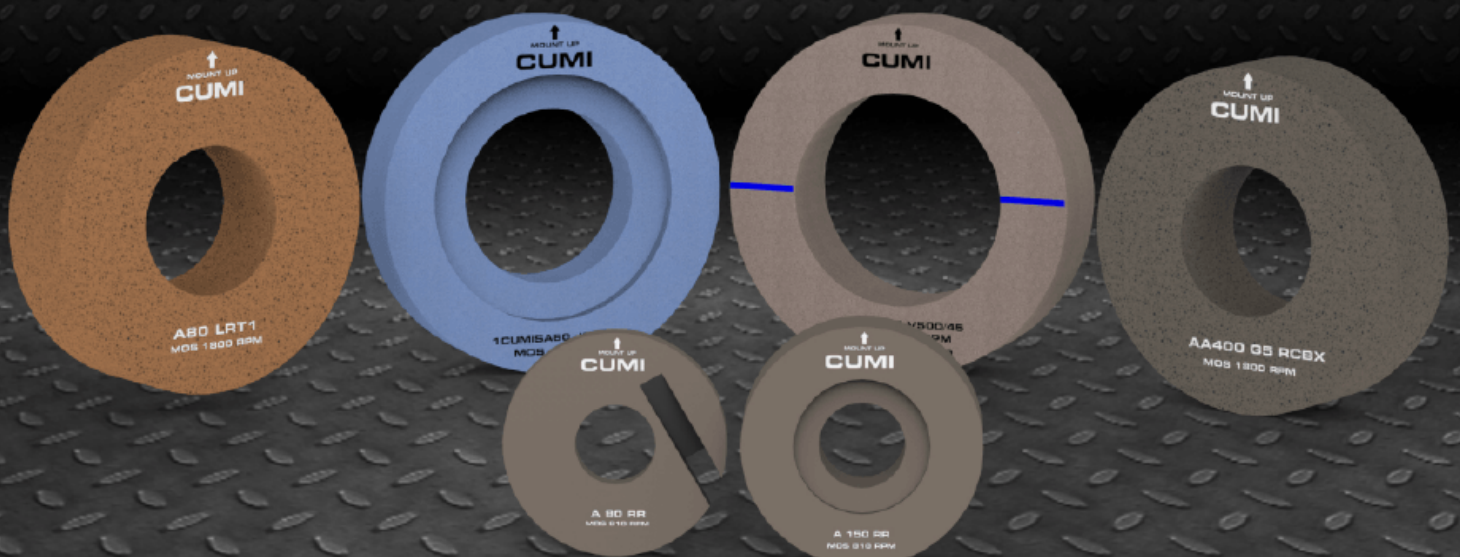


BONDED ABRASIVES

CENTERLESS GRINDING WHEELS



CENTERLESS GRINDING WHEELS

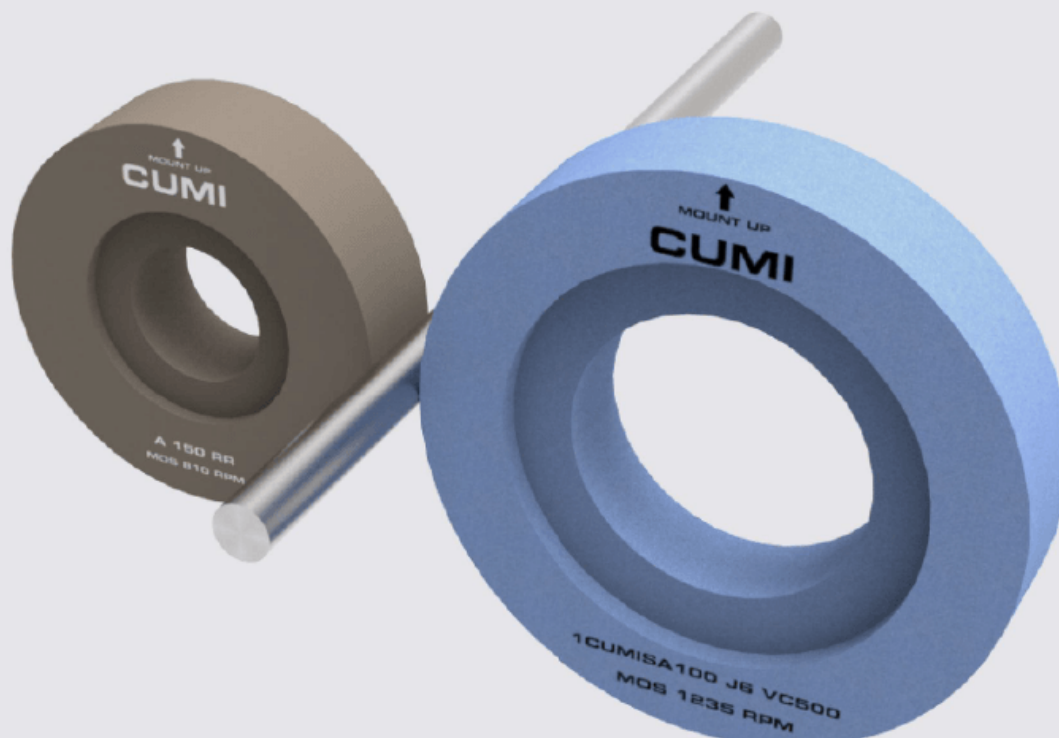
ABOUT CENTERLESS GRINDING WHEELS

An application which presents the most daunting challenges to any abrasive manufacturer. The range of requirements and priorities of this application varies from product to product which calls for an equally wide range of offerings to suit the same. Since in most of the Centerless applications, more than one wheel is mounted on the spindle, extremely tight tolerances need to be maintained in the geometry and densities of the wheels to ensure uniform wear patterns even if each wheel in the set is different.

CUMI has the expertise, when it comes to Centerless applications thanks to the advanced manufacturing process, premium Abrasive grains and specially designed Vitrified, Resin and Rubber bond systems to suit the application needs. Customized solutions are provided for every application and specific requirement. Be it through-feed, end-feed or in-feed, CUMI wheels ensure that components are finished to stringent quality requirements.

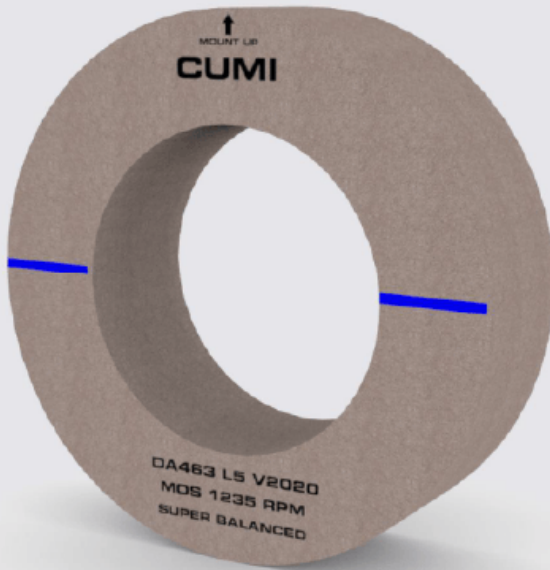
FEATURES:

- Unique set of combination wheels for higher stock removal, good surface roughness and higher productivity
- Unique grain combination for specific application
- Cork bond for superior surface roughness & luster
- Wide range of bond system to customize individual grinding needs



CENTERLESS GRINDING WHEELS

ADVANTAGES OF CUMI WHEELS



1. High stock removal
2. Lower dressing frequency
3. Burn free component
4. Better productivity
5. Excellent surface finish

WIDTH OF PRODUCT RANGE

CUMI Code	Grt Range	Diameter		Thickness		Hardness	Structure	Speed
		mm	Inch	mm	Inch			mps
CUMISA	46 - 120	350 - 610	14 - 24	100 - 250	4 - 10	I - N	6 & 8	35.50 & 63
50A / 50MA	46 - 120					I - N	7	35 & 50
65A	80-220					L	-	40
SA	46 - 120					I - N	5 - 7	35 & 50
9A	46 - 120					I - P	5 - 7	35 & 50
SBA	46 - 120					I - P	5 - 7	35 & 50
AA	46 - 120			I - N	5 - 7	35 & 50		
DA	46 - 120			100 - 300	4 - 12	I - P	5 - 7	35 & 50
A	46 - 120					I - P	5 - 7	35 & 50
C	46 - 120					I - N	5 - 7	35 & 50
GC	46 - 120	I - N	5 - 7			35 & 50		

SHAPES



COMMONLY USED MACHINES

- Cincinnati •WMW •Marcus •Lid koping •Micron

VALVE STEM

Type	Operation	Speed	Best	Better	Good
Mono Valve (Inlet Valve)	Rough	35	9A463 M3 V887	A463 P5 V2020	A463 M3 V2018
		50	9A463 M3 V887/50	A463 P5 V2020/50	A463 M3 V2018/50
	Semi Finish	35	9A60 L5 V887	DA60 V2016	A60 L5 V2016
		50	9A60 L5 V887/50	DA60 V2016/50	A60 L5 V2016/50
	Finish	35	9A100 S5 V887	DA100 J5 V2016	A100 J5 V10C
		50	9A100 S5 V887/50	DA100 J5 V2016/50	A100 J5 V10C/50
Bi - Metal (Exhaust Valve)	Rough	35	9A463 M3 V887		
		50	9A463 M3 V887/50		
	Semi Finish	35	9A60 L5 V887		
		50	9A60 L5 V887/50		
	Finish	35	9A100 J5 V887		
		50	9A100 J5 V887/50		

* Finishing Operation:

For Roughness 0.3 Ra --> Use Grit 100

For Roughness < 0.3 Ra --> Use Grit 150

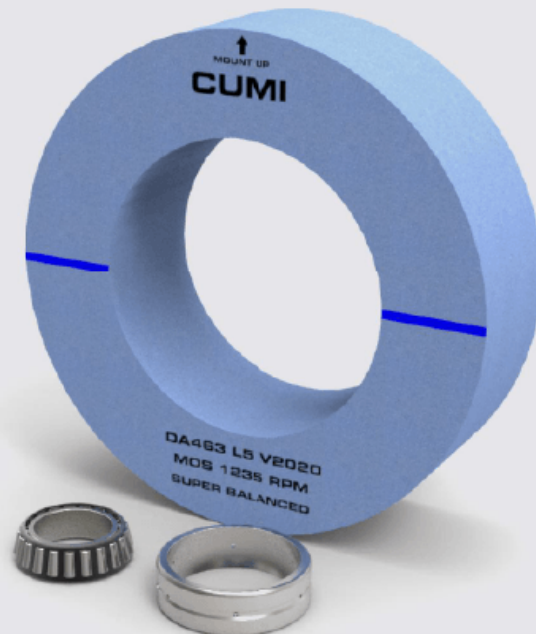


BEARING RING

Type	Operation	Speed	Best	Better	Good
Outer Diameter (TRB,SRB,CRB)	Rough & Finish	35			A463 L5 V10C
		50	55A54 I7 VC500/50 55A80 I7 VC500/50	DA54 I6 TDV876/50 DA80 I6 TDV876/50	A463 L5 V10C/50 A80 K5 V10C/50

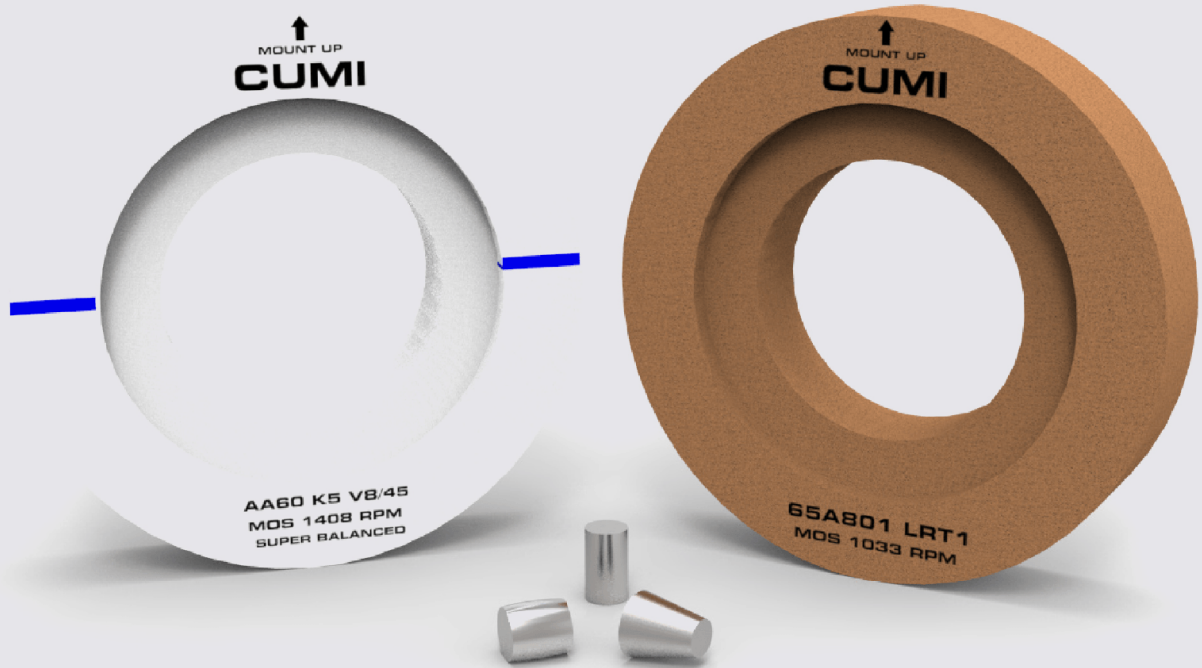
Note: Special Wheels

Wheel Dimension	Operation	Speed	Best	Better	Good
Outer Diameter (Ball Bearing) 610 X 610 X 304.8 508 X 610 X 304.8 610 X 508 X 304.8	Roughing & Finishing	50	53MA461 J7 VC500/50	1CUMISA461 J6 VCAE/50	DA60 I6 TDV876
			53MA541 J7 VC500/50	1CUMISA541 J6 VCAE/50	DA80 I6 TDV876
			53MA601 J7 VC500/50	1CUMISA601 J6 VCAE/50	-
			53MA801 J7 VC500/50	1CUMISA801 I6 VCAE/50	-
	Roughing & Finishing	63	53MA461 J7 VC500/63	1CUMISA461 J6 VCAE/63	-
			53MA541 J7 VC500/63	1CUMISA541 J6 VCAE/63	-
			53MA601 J7 VC500/63	1CUMISA601 J6 VCAE/63	-
			53MA801 J7 VC500/63	1CUMISA801 I6 VCAE/63	-
Outer Diameter (Railway Bearing) 610 X 864X 304.8	Roughing & Finishing	35	RAA60 J+4 V2016	-	-
			RAA80 J+4 V2016	-	-
			RAA100 I+4 V2016	-	-



BEARING ROLLER

Type	Operation	Speed	Best	Better	Good
Outer Diameter - Taper Roller	Rough	35	65A801 L RT1	A80 L RT3	A80 L RT1
		50	65A801 L RT45	A80 L RT45	-
		35	-	A80 MRT3	-
		50	For >1.5" roller	5SBA60 K5 V50	-
	Finish	35	65A100 M RT1	A120 M RT1	A100 M RT1; A120 L RT1
			65A120 L RT1		
	Fine Finish	50	For >1.5" roller	5SA80 K5 V50 DA80 J5 V2020/50	
			35	DA400 H7 RBCX	-
Outer Diameter - Cylindrical Rollers	Rough	35	1CUMISA60 J6 VCAE	53A60 J7 VC500	AA60 K5 V8
		50	1CUMISA60 J6 VC500/50	53A60 J7 VC500/50	AA60 K5 V50
	Finish	35	1CUMISA80 J6 VCAE	53A80 J7 VC500	AA80 K5 V8
		50	1CUMISA80 J6 VC500/50	53A80 J7 VC500/50	AA80 K5 V50
Needle Roller	Rough	35	GC120 M5 VG	-	-
		50	GC120 M5 VG/50	-	-
	Finish	35	GC1201 N5 VS2110M/50	A120 M RT1	A120 L RT1



PINS

Type	Operation	Speed	Best	Better	Good
Gudgeon Pin	Rough	35	1CUMISA461 K6 VCAE	AA463 L5 V2020	A463 L5 V10C
		50	1CUMISA461 K6 VC500/50	AA463 K5 V2020/50	A463 K5 V45C
	Semi Finish	35	1CUMISA601 K6 VCAE	AA60 L5 V2020	A60 L5 V10C
		50	1CUMISA601 K6 VC500/50	AA60 K5 V2020/50	A60 K5 V45C
	Finish	35	1CUMISA100 J6 VC500	AA100 J5 V2020	A100 J5 V10C
		50	1CUMISA100 J6 VC500/50	AA100 J5 V2020/50	A100 J5 V45C
	Fine Finish	35	-	A220 N5 VK12	-
	Super Finish	35	A400 F5 RABX	C320 P5 BYZ	-
		45	A400 G7 RBCX	-	-



SHOCK ABSORBER

Type	Operation	Speed	Best	Better	Good
Inner Tube / Fork Pipe	Rough	35	55A603 N7 B99 55A603 J7 B600	DA603 N7 B99	A80 N7 B310
		50	55A603 N7 B99/50 55A603 J7 B600/50	DA603 N7 B99/50	A80 N7 B310/50 A220 L RT1
	Semi Finish	35	65A220 L RT1	DA220 L RT1	A220 L RT1/50
		50	65A220 L RT1/50	DA220 L RT1/50	-
	Finish	35	DA4002/A5005 H7	-	-
		50	RBCZ/50	-	-
Piston Rod	Rough	35	55A603 N7 B99 55A603 J7 B600	A801 N7 B99	A60 K5 V10C
		50	55A603 N7 B99/50 55A603 J7 B600/50	DA603 N7 B99/50	-
	Semi Finish	35	65A220 L RT1	A220 L RT1	-
		50	65A220 L RT1/50 DA120/DA240/A400 H7 RBCZ/50	A220 L RT1/50	-
	Finish	35	AA 400/A500 G5 RBCZ DA400 H7 RBCZ/50	-	-
		50	A500 H7 RBCZ/50	-	-



BRIGHT BAR

Type	Operation	Speed	Best	Better	Good
BRIGHT BAR	Rough	35	C463 M5 VG	C/G463 M5 VPZ	DA463 L5 V600
		50	1CUMISA463 N5 B820/50	CA60 J5 B99S/50	-
	Finish	35	-	C601 M5 VG	DA60 L5 V600
		50	1CUMISA603 N5 B820/50	C603 N5 B820/50 CA60 J5 B99S/50	

Aerospace

Type	Component Material	CUMI Recommend	Speed
FASTENERS	Hard steel	A80 N5 /A120 P5 V2018	33mps
	Titanium	GC120 R5 VFG	33mps
	Inconel	3CSA120 P7 VF920	33mps



PISTONS & LINERS

Type	Operation	Speed	Best	Better	Good
Piston Ring	Rough	35	-	-	C463 L5 VG
		50	-	-	-
	Finish	35	-	-	C60 L5 VG
		50	-	-	-

Type	Operation	Speed	Best	Better	Good
Grey Cast Iron	Rough	35	C543 J7 B190K	-	C543 K5 B190
		50	C543 J7 B190K/50	-	C543 K5 B190/50
SG Iron	Rough	35	-	C543 K5 B903	-
		50	-	C543 K5 B903/50	-



DRILLS & TAPS

Type	Operation	Speed	Best	Better	Good
Drills & Taps	Rough	35	5SBA463 M5 V10C	A463 L5 V446C	A463 L5 V10C
		50	5SBA463 M5 V50C	A463 L5 V446C/50	A463 L5 V50C
	Semi Finish	35	DA60 M5 V10C	A60 L5 V446C	A60 L5 V10C
		50	DA60 M5 V50C	A60 L5 V446C/50	A60 L5 V50C
	Finish	35	DA80 K5 V10C	A80 K5 V446C	A80 K5 V10C
		50	DA80 K5 V50C	A80 K5 V446C/50	A80 K5 V50C



FEED/REGULATING WHEELS

ABOUT FEED/REGULATING WHEELS

CUMI's regulating wheels are the best in class in the world. These wheels are made using a distinct calendaring process, leading to superlative & consistent performance making it as the most preferred product in the industry. The controlled wear not only leads to highly precise components but also gives longer life.

FEATURES:

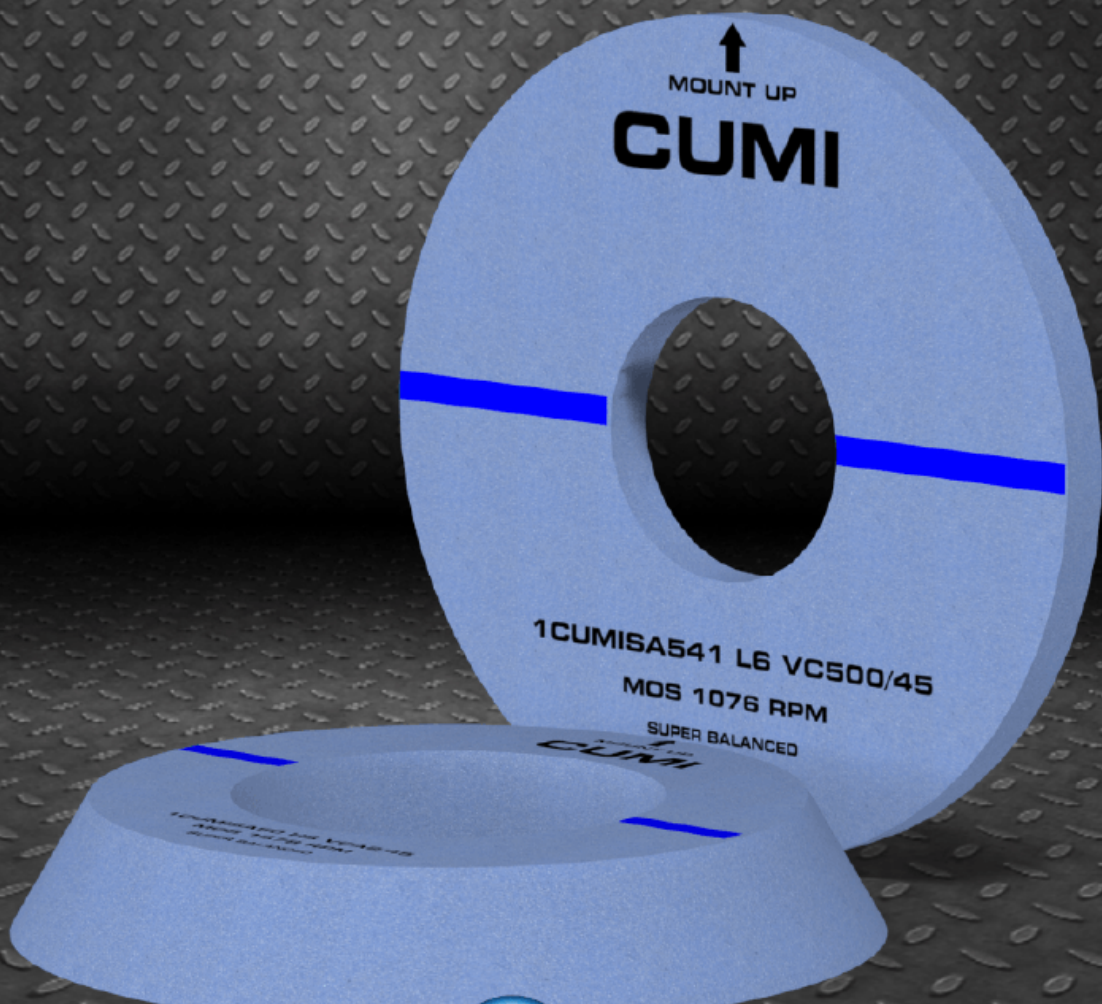
- Tough grains for long life
- Resilient rubber for better finish

PRODUCT RECOMMENDATION

For Rough	A80 RR
For Size Control	A120 RR
	A 150 RR
For Size Control & Better Finish	A180 RR A180 TR



BONDED ABRASIVES CYLINDRICAL GRINDING WHEELS



CYLINDRICAL GRINDING WHEELS

ABOUT CYLINDRICAL GRINDING WHEELS

CUMI's versatile range of cylindrical wheels are used for a variety of grinding operations that require size generation, fine surface finish and fast stock removal. Special wheels are also available for multiple diameters and shoulder grinding with pre-formed wheel faces.

CUMI's cylindrical grinding wheels find wide application in the grinding of valves, plunger pins, eye bolts, transmission shafts, cam shafts, crank shafts etc.,

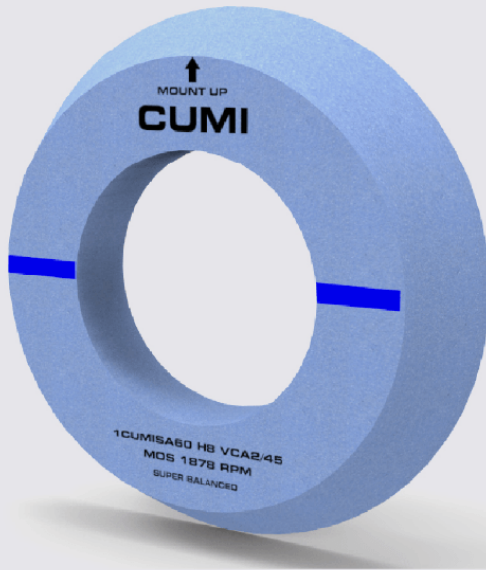
FEATURES:

- Best choice of abrasive grain wheels for higher stock removal, higher productivity and form retention
- Customizes sketches for every customer requirement
- Wide range of bond system to customize individual grinding needs



CYLINDRICAL GRINDING WHEELS

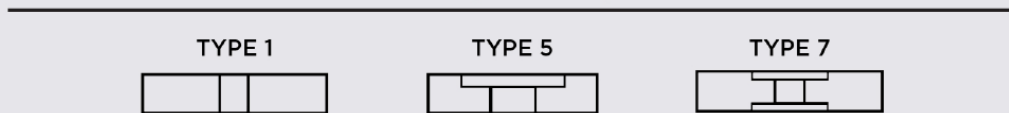
ADVANTAGES OF CUMI WHEELS



1. High stock removal
2. Better productivity
3. Excellent surface finish
4. Lower dressing frequency
5. Burn free component

CUMI Code	Grit Range	Diameter		Thickness		Hardness	Structure	Speed
		mm	inch	mm	inch			mps
CN	46 - 120	300 - 600	12 - 26	25-150	1 - 6	H - M	6 - 13	35, 50 & 63
CUMISA/CSA				25 - 150	1 - 6	H - M	6 - 13	35, 50 & 63
SBA				25 - 250	1 - 10	H - M	5 - 8	35 & 50
50A				25 - 150	1 - 6	H - M	6 - 13	35 & 50
RA				25 - 150	1 - 6	H - M	5 - 8	35 & 50
5SA				25 - 150	1 - 6	H - M	5 - 8	35, 50 & 63
AA				25 - 250	1 - 10	H - M	5 - 8	35, 50 & 63
DA				25 - 150	1 - 6	H - M	5 - 8	35 & 50
A				25 - 150	1 - 6	H - M	5 - 8	35 & 50
CGC				25 - 150	1 - 6	H - M	5 - 8	35 & 50
GC				25 - 150	1 - 6	H - M	5 - 8	35 & 50
C				25 - 150	1 - 6	H - M	5 - 8	35 & 50

SHAPES



COMMONLY USED MACHINES

- Schaudt • Landls • Paragon • Palmary • Studer
- Junker • NTC • Micromatic • T-Sugami • Shigya • Okamoto • Okuma



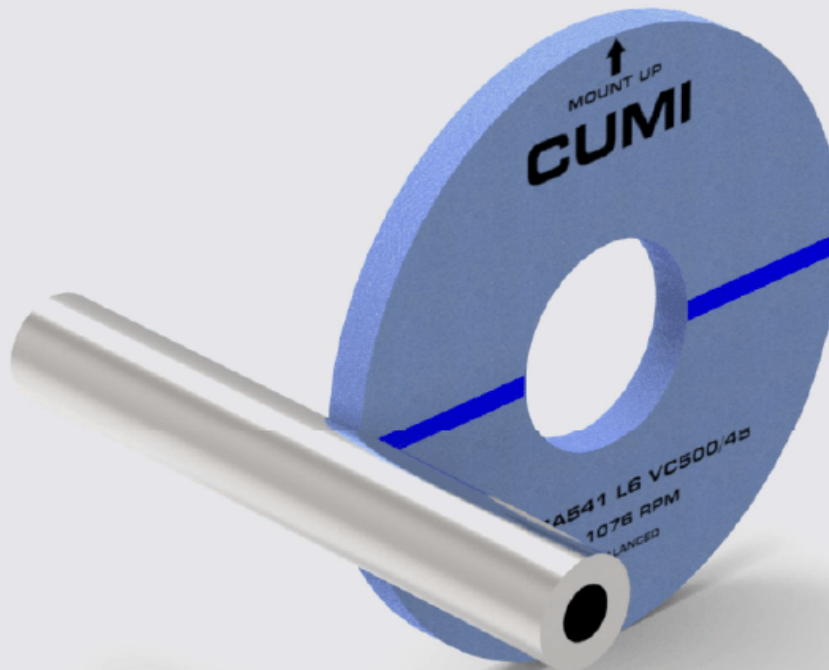
CYLINDRICAL GRINDING WHEELS

HIGH SPEED STEEL

Hardness	Speed	Best	Better	Good
Low content Vanadium & Molybdenum	35	1CUMISA60 J6 VC500	RAA60 J5 VF8	AA60 K5 V8
	50	1CN60 J6 VC500/50	RAA60 J5 VF8/50	AA60 K5 V50
High content Vanadium & Molybdenum	35	1CUMISA601 H12 VCA2	RAA601 H10 V736	AA601 H10 V736
	50	1CN601 G12 VCA2/50	RAA601 G10 V736/50	AA601 G10 V736/50

TUNGSTEN CARBIDE

Hardness	Speed	Best	Better	Good
For all HRc	35	GC60 K5 VG	CGC60 K5 VG	C60 K5 VG
	50	GC60 J5 VS2110/50	CGC60 J5 VS2110/50	C60 J5 VS2110/50



CYLINDRICAL GRINDING WHEELS

GENERAL PURPOSE

Hardness	Speed	Best	Better	Good
< 40 HRc	35	AA463 M5 V2016	DA463 M5 V10	A463 M5 V10
	50	1CUMISA541 L6 VC500/50	5SA463 L5 V500/50	DA463 M5 V50
	63	1CUMISA541 L6 VC500/60	AA463 L5 V60	5SA463 L5 V500/60
50 HRc to 60 HRc	35	AA463 K5 V2016	DA463 K5 V10	A463 K5 V10
	50	1CUMISA541 J6 VC500/50	5SA463 J5 V500/50	DA463 K5 V50
	63	1CN541 J6 VC500/60	AA463 J5 V60	5SA463 J5 V500/60

CAST IRON

Hardness	Speed	Best	Better	Good
< 40 HRc	35	GC463 N5 VG	-	-
	50	GC463 N5 VS2110/50	-	-
	63	-	-	-
50 HRc to 60 HRc	35	GC463 L5 VG	-	-
	50	GC463 L5 VS2110/50	-	-
	63	-	-	-

STEEL

Hardness	Speed	Best	Better	Good
< 40 HRc	35	AA463 M5 V2016	SBA463 M5 V10	A463 M5 V10
	50	1CUMISA541 K6 VC600/50	5SA463 L5 V500/50	DA463 M5 V50
	63	1CUMISA541 K6 VC600/60	5SA463 L5 V500/60	AA463 L5 V60
50 HRc to 60 HRc	35	53MA541 J7 VC500/50	5SA463 K5 V500	AA46/54 K5 V8
	50	53MA541 J7 VC500/50	5SA463 K5 V500/50	AA46/54 K5 V50
		1CUMISA541 J6 VC600/50	5SA463 J5 V500/60	AA54 J5 V60
60 HRc	63	53MA541 J7 VC500/60		
		1CN541 J6 VC600/60		

STAINLESS STEEL 300 SERIES

Operation	Speed	Best	Better	Good
Rough	35	GC463 K5 VG	CGC463 K5 VG	AC463 K5 VG
Finish		GC80 J5 VG	CGC80 J5 VG	C80 J5 VG
Rough	50	GC463 K5 VS2110/50	CGC463 K5 VS2110/50	C463 K5 VS2110/50
Finish		GC80 J5 VS2110/50	CGC80 J5 VS2110/50	C80 J5 VS2110/50
	Upto 35		GC60 J11 VR	
Rough	35	1CUMISA461 J6 VC500	RAA46/54 J5 VF8	AA46/54 K5 V8
Finish		1CUMISA801 J6 VC500	RAA80 J5 VF8	AA80 J5 V8
Rough	50	1CUMISA461 J6 VC500/50	RAA46/54 J5 VF8/50	AA46/54 K5 V50
Finish		1CUMISA801 J6 VC500/50	RAA80 J5 VF8/50	AA80 J5 V50
	Upto 50 MPS	1CUMISA461 H12 V736/50	RAA461 H10 V736/50	AA461 H10 V736/50



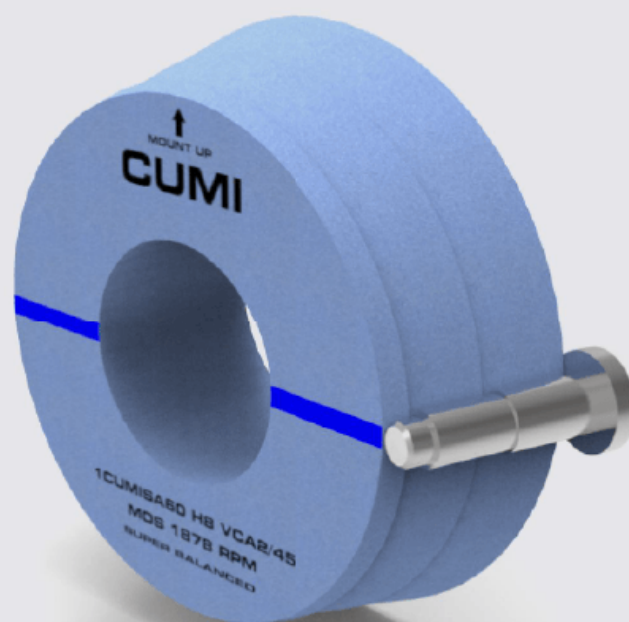
CYLINDRICAL GRINDING WHEELS

SOFT STEEL (< 40 HRC)

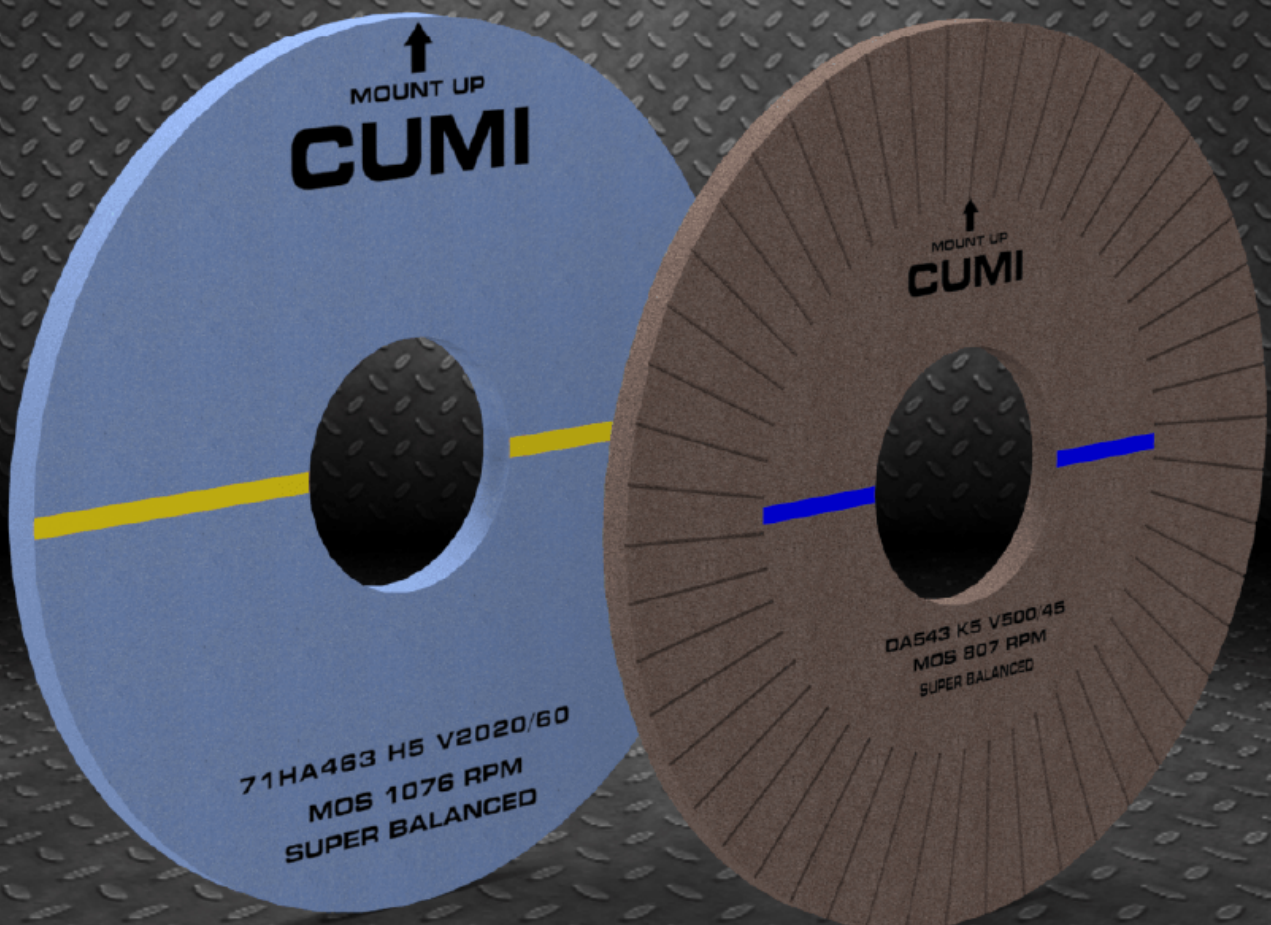
Operation	Speed	Area of Contact	Best	Better	Good
Rough	35	<= 10 mm	AA46/54 L5 V8	DA 463 K5 V10	A463 K5 V10
	50		AA46/54 L5 V50	DA 463 K5 V50	A463 K5 V50
	35	> 10 mm	AA46/54 J7 V8	DA463 J7 V10	A463 J7 V10
	50		AA46/54 J7 V50	DA463 J7 V50	A463 J7 V50
Finish	35	<= 10 mm	AA60 K5 V8	DA60 K5 V10	A60 K5 V10
	50		AA60 K5 V50	DA60 K5 V50	A60 K5 V50
	35	> 10 mm	AA60 I7 V8	DA60 I7 V10	A60 I7 V10
	50		AA60 I7 V50	DA60 I7 V50	A60 I7 V50

HARD STEEL (> 40 HRC)

Operation	Speed	Area of Contact	Best	Better	Good
Rough	35	<= 10 mm	1CUMISA60 H8 V736	53A60 H8 VCA2 RA60 K5 VF8	AA60 H8 V736
	50		1CN60 H8 V736/50	53A60 H8 VCA2/50 RA60 J5 VF8/50	AA60 H8 V736/50
	35	> 10 mm	1CUMISA60 H10 V736	53A60 H10 VCA2 RA60 K5 VF8	AA60 H10 V736
	50		1CN60 H12 V736/50	53A60 H12 VCA2/50 RA60 J5 VF8/50	AA60 H12 V736/50
Finish	35	<= 10 mm	1CUMISA80 H8 V736	53A80 H8 VCA2 RA80 K5 VF8	AA80 H8 V736
	50		1CN80 H10 V736/50	53A80 H10 VCA2/50 RA80 J5 VF88/50	AA80 H10 V736/50
	35	> 10 mm	1CUMISA80 H12 V736	53A80 H12 VCA2 RA80 K5 VF8	AA80 H12 V736
	50		1CN80 H13 V736/50	53A80 H13 VCA2/50 RA80 J5 VF8/50	AA80 H13 V736/50



BONDED ABRASIVES CRANKSHAFT GRINDING WHEELS



CRANKSHAFT GRINDING WHEELS

ABOUT CRANKSHAFT GRINDING WHEELS

What sets Crankshaft grinding apart from the other cylindrical grinding process is the extremely crucial function of the crankshaft in itself. Crankshaft design requires meticulous attention from material selection to the various hardening processes. Each part of the crankshaft is designed to have different hardness meeting specific demands of the application. Grinding of the shoulder region is a surface grinding operation, while the grinding of the pin is a cylindrical grinding operation. This poses a great challenge in designing a wheel that performs both these processes efficiently.

With the incorporation of the latest advances in Abrasive grains and Vitrified bond technology, CUMI provides Crankshaft grinding wheels that can face each of these challenges. The basic composition of the wheels are designed to give maximum life and excellent form holding while physical forms like slotted wheels, sandwich wheels, dual grade wheels etc. enable the wheels to grind without burns.

FEATURES:

- Sharp & friable aluminium oxide grains
- Low temperature fired fusible vitrified bond system
- Uniform density and hardness across wheel diameter
- Perfectly balanced
- Sandwich option for higher feed rates & improved form holding



CRANKSHAFT GRINDING WHEELS

ADVANTAGES OF CUMI WHEELS

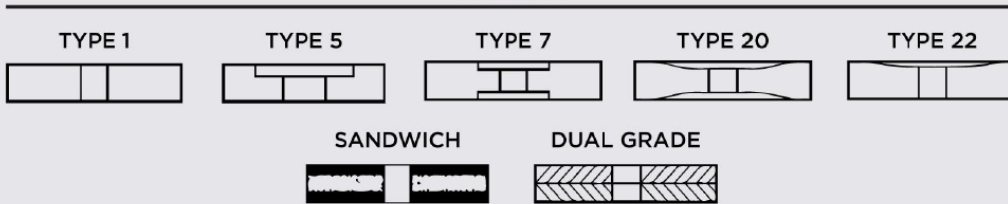


1. Lower BV (Barkhausenvalue)
2. Lower dressing depth
3. No surface cracks
4. Lower cost per component
5. Good form retention (for better radius profile)

WIDTH OF PRODUCT RANGE

CUMI Code	Grit	Diameter		Thickness		Speed	Hardness	Structure
		mm	inch	mm	inch			
11RA/51RA	46 - 100	600 - 1200	24 - 48	19 - 125	3/4 - 5	upto 60	J - M	5 - 8
12A								
AA								
DA								
A								

SHAPES



AUTO COMPONENTS

COMMONLY USED MACHINES

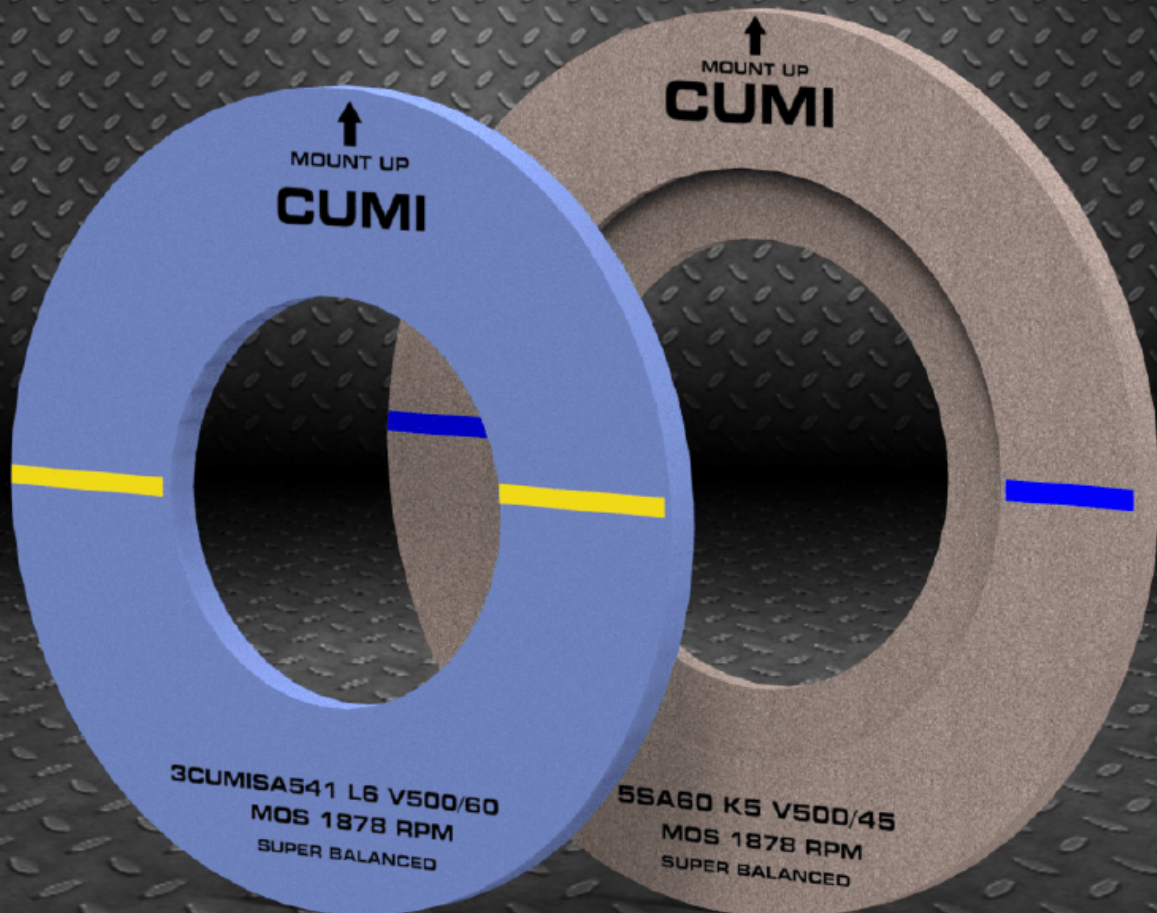
- Cincinnati • NTC • Landis • Tos • Churchill Naxos Union • Norton • Junker

Type	Operation	Speed	Best	Better	Good
Forged Steel	Soft	35	12A54/60 J7 V2020	AA463 K5 V2020	A463 L5 V10X
		50	12A54/60 I7 V2020/50	AA463 K5 V2020/50	A463 K5 V50X
		60	11RA54/60 J7 V2020/60	12A467 I7 V2020/60	AA463 K5 V2020/60
	Hard - PV	35	12A601 K5 V2020	SA601 K5 V2020	A601 K5 V10X
		50	12A601 K5 V2020/50	AA601 K5 V2020/50	DA601 K5 V2020/50
		60	11RA54/60 J7 V2020/60	12A601 K5 V2020/60	SA601 K5 V2020/60
	Hard - CV	35	12A467 J7 V2020	AA463 K5 V2020	A463 L5 V10X
		50	12A467 I7 V2020/50	AA463 K5 V2020/50	A463 K5 V50X
		60	11RA54/60 J7 V2020/60	12A467 I7 V2020/60	AA463 K5 V2020/60
	For Soft shoulder & Hard Center Grinding	60	2CUMISA542 J+6 V500/60 (sides) / AA602 J6 V500/60(Center)	5SA543 K5 V500/60	DA543 K5 V500/60 (sides)
5SA601 K5 V500/60				DA601 K5 V500/60 (center)	
Cast Iron		upto 50	AA46 K5 V2020/50	SA46 K5 V2018/50	DA46 K5 V50
Nodular Iron		upto 50	1CUMISA461 K6 V2020/50	5SA46 L5 V2020/50	AA46 L5 V2020/50



BONDED ABRASIVES

CAMSHAFT GRINDING WHEELS



CAMSHAFT GRINDING WHEELS

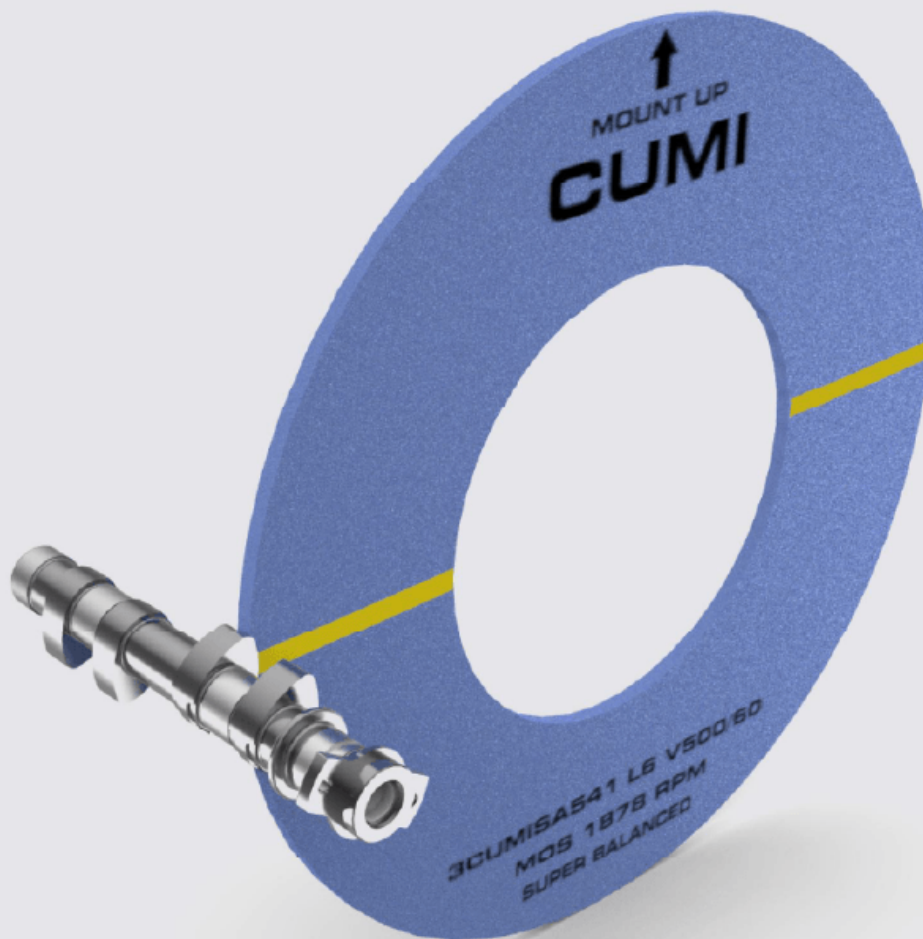
ABOUT CAMSHAFT GRINDING WHEELS

CUMI'S Camshaft wheels offer good form holding, free cutting ability while maintaining the stringent geometrical and surface finish requirement to maintain consistent and tight surface finish tolerances. CUMI's versatile camshaft wheels can grind materials like forged steel and chilled cast iron with highest amount of stock removal without thermal damage on the cam flank.

CUMI also offers single wheel for both roughing and finishing operations

FEATURES:

- Sharp & friable Aluminium Oxide grains
- Vitrified Krystal bond system(V500)
- Uniform density and hardness across wheel diameter
- Perfectly balanced



CAMSHAFT GRINDING WHEELS

ADVANTAGES OF CUMI WHEELS



1. High productivity
2. Excellent form retention
3. Dimensional accuracy
4. Surface finish
5. Form accuracy

WIDTH OF PRODUCT RANGE

CUMI Code	Grit Range	Diameter		Thickness		Speed	Hardness	Structure
		mm	inch	mm	inch	mps		
CUMISA/CN	54 - 80	500 - 610	20 - 24	25 - 40	1 - 1 1/2	60	J - M	5 - 8
SA								
AA								

SHAPES



AUTO COMPONENTS

COMMONLY USED MACHINES

- Landis
- Naxos Union
- NTC



Type	Operation	Speed	Best	Better	Good
Case Hardened Steel	Rough	upto 60	1CUMISA541 K6 VC500/60	5SA54 K5 V500/60	AA54 K5 V60
	Finish		1CUMISA801 J6 VC500/60	5SA80 J5 V500/60	AA80 I5 V60
	Rough & Finish		3CUMISA80 R20 BH99/60	1CUMISA80 R20 BH99/60	1CUMISA542 L6VC500/60
Nodular Iron	Rough	upto 60	3CUMISA461 L6 V500/60	5SA463 L5 V500/60	AA463 L5 V2020/60
	Finish		3CUMISA801 J6 VC500/60	5SA80 J5 V500/60	AA80 I5 V60
Chilled Cast Iron	For Base Circle Diameter \leq 25mm	upto 60	3CUMISA80 R20 BH99/60	5SA80 L5 V500/60	AA80 L5 V2020/60
	For Base Circle Diameter $>$ 25mm		3CUMISA80 R23 BH99/60	5SA801 J5 V500/60	AA801 J5 V2020/60

AUTO COMPONENTS



CAM JOURNAL

Type	Operation	Speed	Best	Better	Good
Case Hardened Steel	All Operations	upto 50	1CUMISA801 J6 VC500/50	5SA60 K5 V500/50	AA601 K5 V50
Nodular Iron	Rough & Finish	upto 50	1CUMISA80 K6 VC500/45	5SA801 K5 V500/50	AA80 L5 V50



BONDED ABRASIVES F TYPE GRINDING WHEELS



F TYPE GRINDING WHEELS

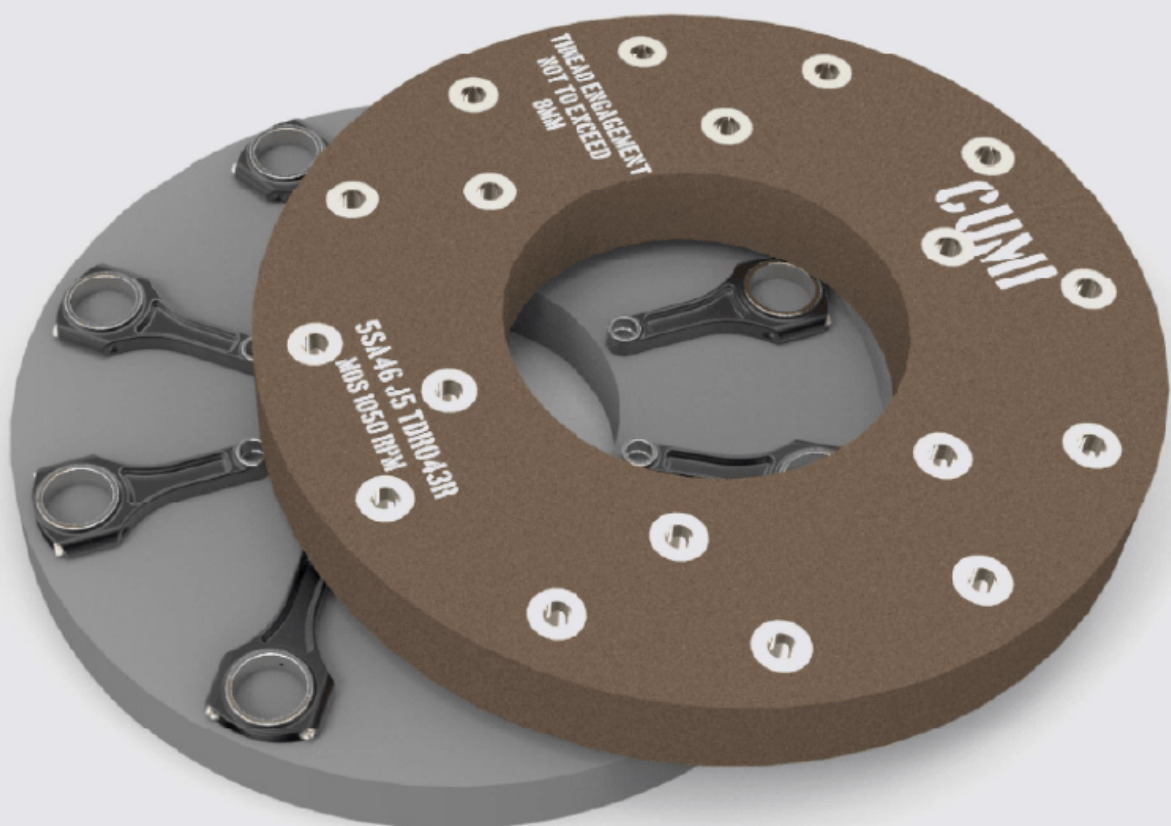
ABOUT F TYPE GRINDING WHEELS (DOUBLE DISC)

F type wheels or Fastening type wheels are resinoid wheels which are fastened to the back plates using bolts. The face of the wheel is used to grind components and generate flat and parallel surfaces. Used in various industries like Bearings, Auto etc. The applications usually demand high stock removal along with tight size tolerances and fine surface finishes. Since the area of grinding is very large, heat generation is high, provisions are made in the chemical and physical design of the wheel to ensure that there is enough scope for heat dissipation by effective utilization of coolants.

CUMI wheels are proven to perform at high feed rates and material removal applications while meeting stringent quality requirements in terms of size tolerances, heat generation and surface finishes, thanks to the special technology of grain-bond combination, which ensures free cutting. Physical features like coolant slots, through holes and honeycomb structure aid in taking the performance of the wheels to the next level.

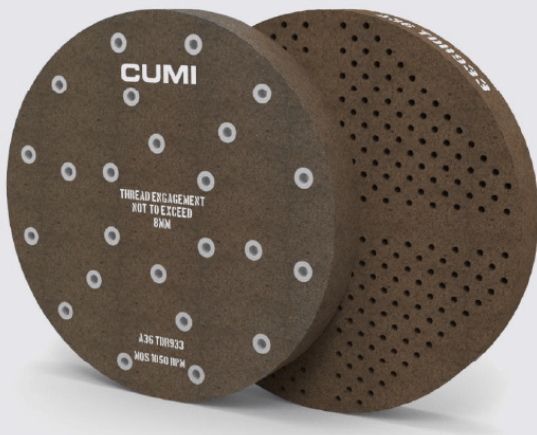
FEATURES:

- Wide range of bonds including phenolic and Epoxy
- Huge variety of high performance products using Aluminium oxide, Silicon carbide, micro-crystalline and mono crystalline grains
- Engineered design modifications comprising honey comb, slots



F TYPE GRINDING WHEELS

ADVANTAGES OF CUMI WHEELS



1. Free cutting action
2. Less dressing intervention
3. Good surface finish
4. Excellent feed rate
5. Excellent part geometry

WIDTH OF PRODUCT RANGE

CUMI Code	Grit Range	Diameter		Thickness		Speed mps	Hardness	Structure
		mm	inch	mm	inch			
CUMISA /CSA	16 - 150	150 - 1000	6 - 40	50 - 120	2 - 5	33	G - O	5 - 10
50A	24-220							
DA	24 - 220							
AA	20 - 500							
GC	24 - 500							
C	24 - 500							
A	24 - 600							

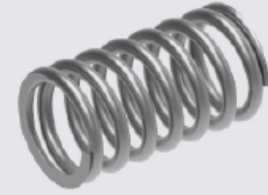
AUTO COMPONENTS



CONNECTING ROD



PISTON RING



SPRING

CONNECTING ROD

Type	Operation	Speed	Best	Better	Good
Forged steel	Rough	33	58AA46 J7 BR9	52AA46 J7 BR9	-
	Finish		58AA60 J7 BR9	52AA60 J7 BR9	-
Sintered	Rough	33	58AA46 J5 BR9	52AA46 J5 BR9	-
	Finish		58AA60 J5 BR9	52AA60 J5 BR9	-

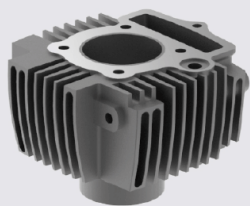
PISTON RING

Type	Operation	Speed	Best	Better	Good
Cast Iron	Rough	33	-	C46 J7 B10CS	CGC46/60 J5 TD1020M
	Semi Finish		1CE/C80 I5 B1286	C801 J5 B10CS	CGC80 J5 TD1020
	Finish		1CE/C120 K5 B1241	GC/RA120 H5 TDR845	GC120 TDR659
	Lapping		1CE/C1201 I+5 BRT	-	C150 J5 BRT

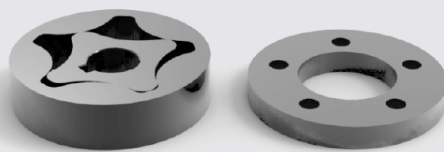
SPRING

Type	Operation	Speed	Best	Better	Good
Cast Iron	Rough	33	2CUMISA24 N7 B266	AA20 L7 TDV819M & A24 N7 B266	A24 L7 TDR085
	Finish		2CUMISA30 O7 B266	54AA30 N7 B266	DA30 N7 B266
	Rough & Finish - Single Head		2CUMISA24 N7 B266	A36 TDR933	DA24 TDR699

AUTO COMPONENTS



ENGINE BLOCK



SINTERED COMPONENT

ENGINE BLOCK

Type	Operation	Speed	Best	Better	Good
Cast Iron (For Passenger Car)	Rough - Rotary Table	33	-	C24 L5 SPL	C24 K5 BRT
	Finish - Rotary Table		-	C80 L6 SPL	C120 K5 BRT
Cast Iron (For Heavy Commercial Vehicle)	Rough & Finish		-	C16 TDR1358/ C24 TDR1399	C14 TDR312

SINTERED COMPONENT

Type	Operation	Speed	Best	Better	Good
Sintered	Rough	33	-	-	GC46 B056
	Finish		-	-	GC80 B056



BEARING INDUSTRY

PRODUCT RECOMMENDATION



BALL BEARING RING



TAPER ROLLER RING

BALL BEARING RING

Type	Operation	Best	Better	Good
Bearing Steel	Rough & finish	55A80 N7 BRT	D80 N7 BRT	A80 N7 BRT A80 M5 B14F

TAPER ROLLER BEARING RING

Type	Operation	Best	Better	Good
Bearing Steel	Big Face	53A46 G7 BRT	-	DA46 G7 BRT
	Small Face	53A60 M5 BRT	-	AA60 L5 BRT

TAPER ROLLER

Type	Operation	Best	Better	Good
Bearing Steel	Face Grinding	-	-	AA280 P19 BCC

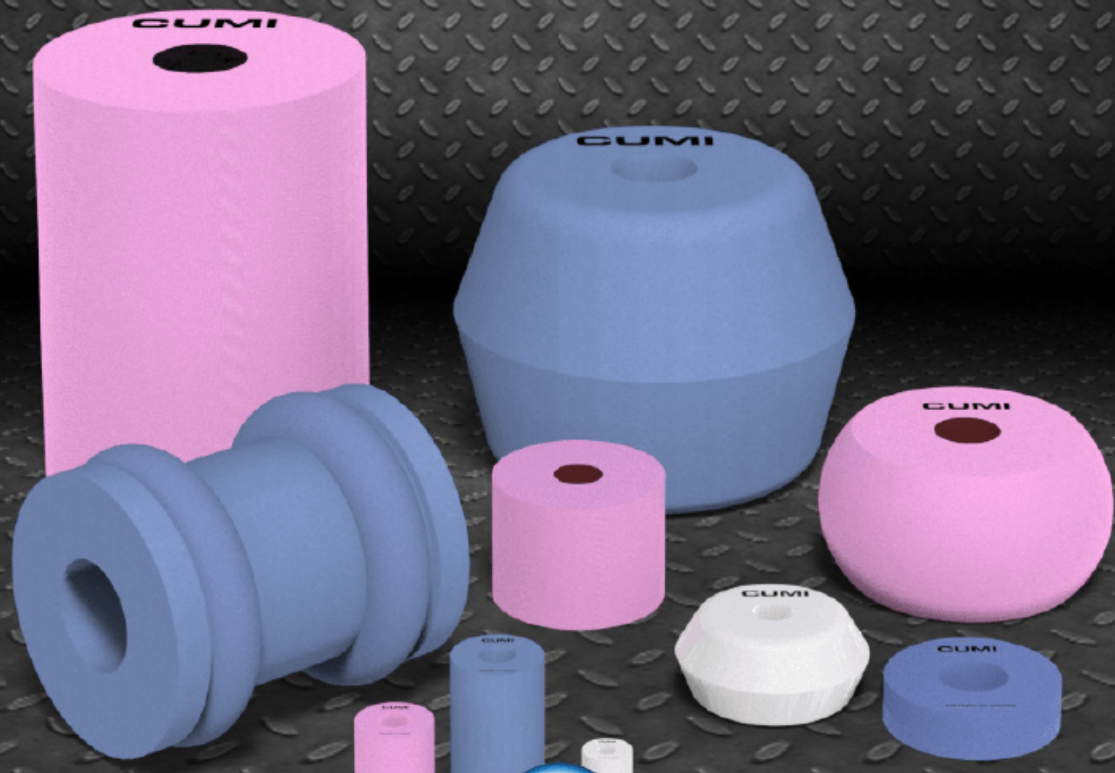
BEARING INDUSTRY

CYLLINDRICAL/ SPHERICAL ROLLER

Type	Operation	Best	Better	Good
Bearing Steel	soft stage	-	-	A60 O5 BRT
	Hard stage		5SA80 L5 B14F AA100 M5 BRT	AA80 K5 BRT



BONDED ABRASIVES BORE GRINDING WHEELS



BORE GRINDING WHEELS

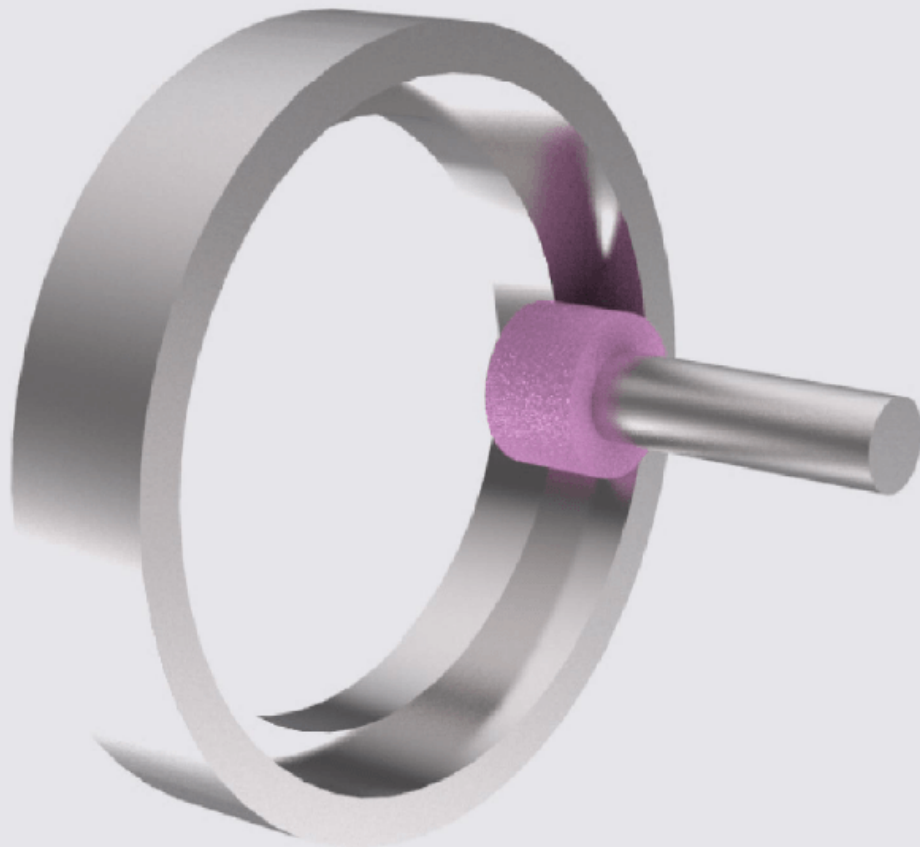
ABOUT BORE GRINDING WHEELS

Internal or Bore Grinding wheels are used for grinding inner diameter of bearing, gears & automobile components to an accurate size & desired finish.

CUMI's versatile range of bore grinding wheels are used for grinding a variety of components that require size generation, fine surface finish and fast stock removal. We also offer value added services like Special treatment for lubrication & cooler cutting action.

FEATURES:

- Sharp aluminium oxide grains for excellent cutting action
- Krystal bond for form holding(V500)
- Available in various shapes



BORE GRINDING WHEELS

ADVANTAGES OF CUMI WHEELS



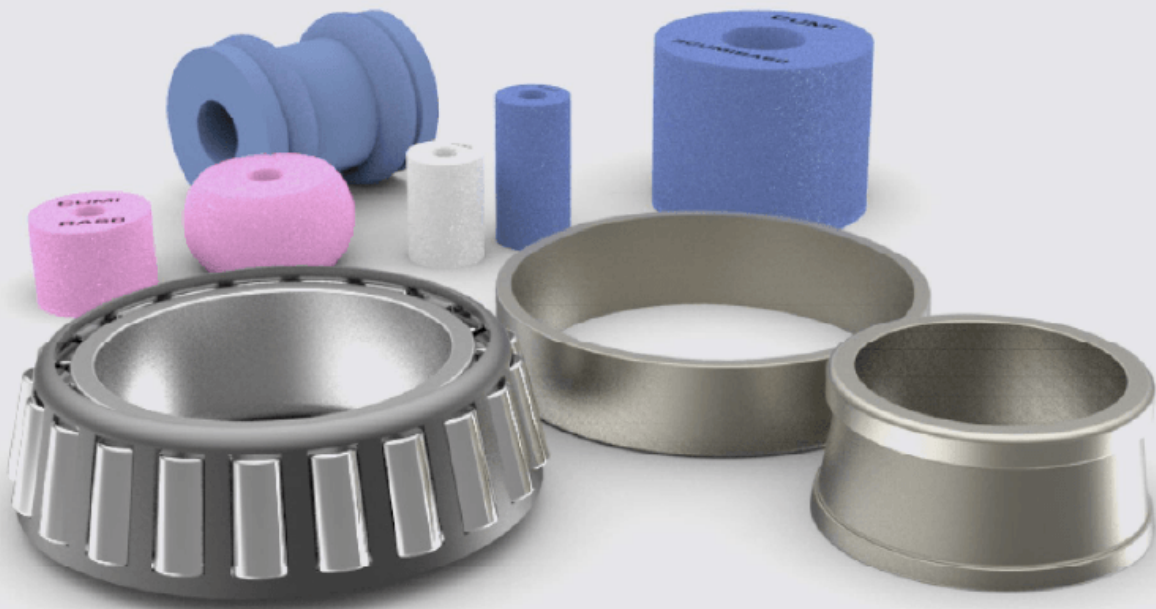
1. Good form retention
2. Excellent surface finish
3. Less dressing intervention
4. Reduced cycle time
5. Burn free surface

WIDTH OF PRODUCT RANGE

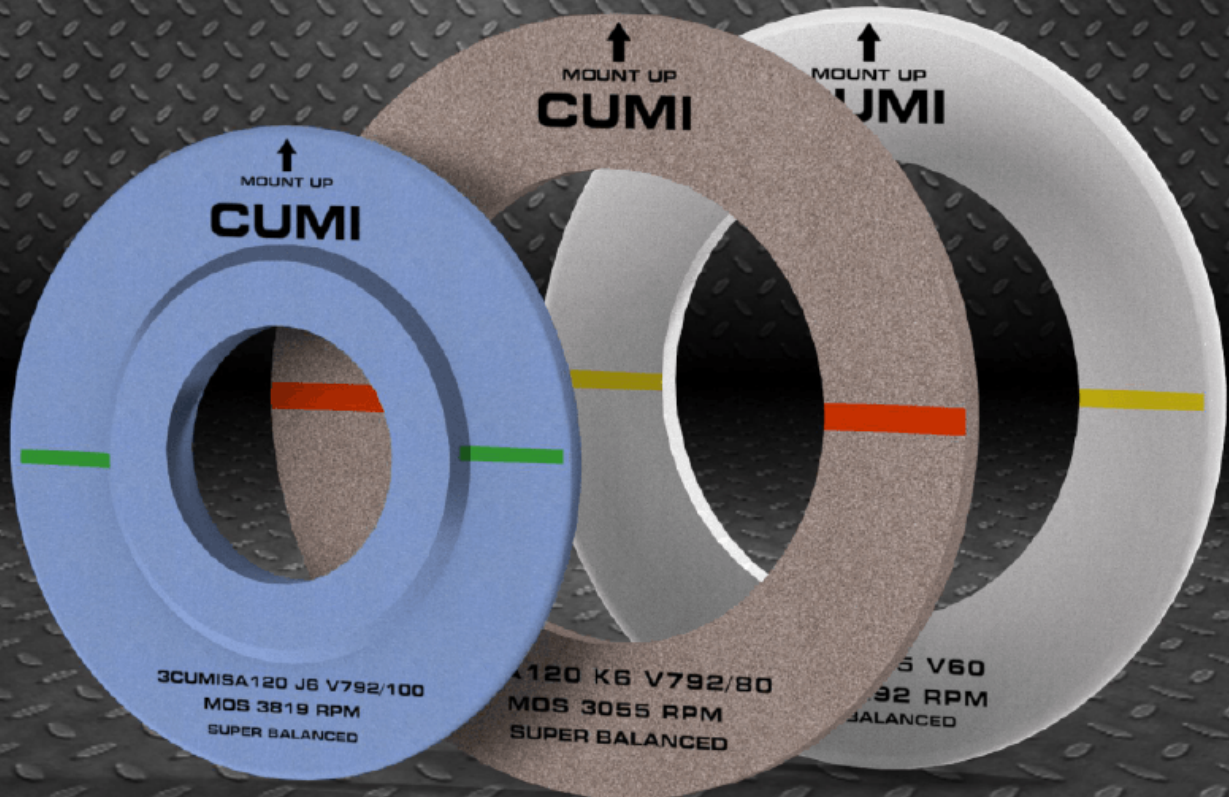
CUMI Code	Grit Range	Diameter		Thickness		Hardness	Structure	Speed
		mm	inch	mm	inch			mps
CN/CSA	60 - 120	10 - 20	3/8 - 5	5 - 75	1/5 - 3	I - M	6 - 8	33, 50 & 63
RA							7	
55A							7	
SA							5 - 8	

BEARING INDUSTRY

Material	Hardness	Bearing I.D (mm)	Speed	Best	Better	Good
Taper Roller Bearing (TRB)	55 - 60 HRc	<= 70	upto 50	3CN80 J6 VC500	55A80 J7 VC500	SA60 J7 V144
			63	3CN80 J6 VC500	55A80 J7 VC500	RA60 J7 VF8
		> 70	upto 50	3CN80 I6 VC500	55A80 J7 VC500	SA80 J7 V144
			63	3CN80 I6 VC500	55A80 J7 VC500	RA80 J7 VF8



BONDED ABRASIVES IR TRACK GRINDING WHEELS



IR TRACK GRINDING WHEELS

ABOUT IR TRACKING WHEELS

With all the latest advancements in the field of automobiles and machine manufacturers, the functions of bearings are now more crucial than ever before, thereby placing greater demands on quality of bearings.

Track grinding wheels must maintain form to ensure profile accuracy of the track of inner ring. This ensures that the wheels are dressed less often, leading to significant improvement in productivity and consistency of the process.

CUMI's Track grinding wheels are made with a special fusible glassy bond with sharp abrasive grain combination that ensures form holding while offering high material removal rates in a high contact area application. An advanced manufacturing process ensures that the wheel's hardness is consistent through the wheel life and highest levels of safety are maintained.

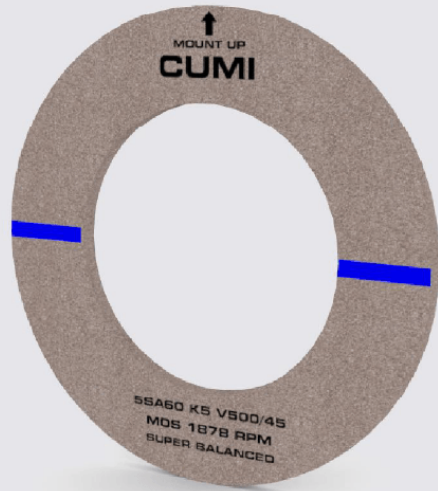
FEATURES:

- Sharp crystal aluminium oxide grains
- Krystal bond for form holding & Safety
- Customized profiling as per requirement



IR TRACK GRINDING WHEELS

ADVANTAGES OF CUMI WHEELS



1. Profile holding & form retention
2. Less dressing intervention
3. Burn free component
4. Surface finish (0.3-0.4 Ra)
5. Roundness (<math><5Q</math>)

WIDTH OF PRODUCT RANGE

CUMI Code	Grit Range	Diameter		Thickness		Speed mps	Hardness	Structure
		mm	inch	mm	inch			
CN	80 - 150	350 - 610	14 - 24	10 - 40	3/8 - 11/2	33, 50, 63, 80, 100	I - L	5 - 7
50A								
CUMISA/CSA								
AA								

BEARING INDUSTRY



BALL BEARING RING



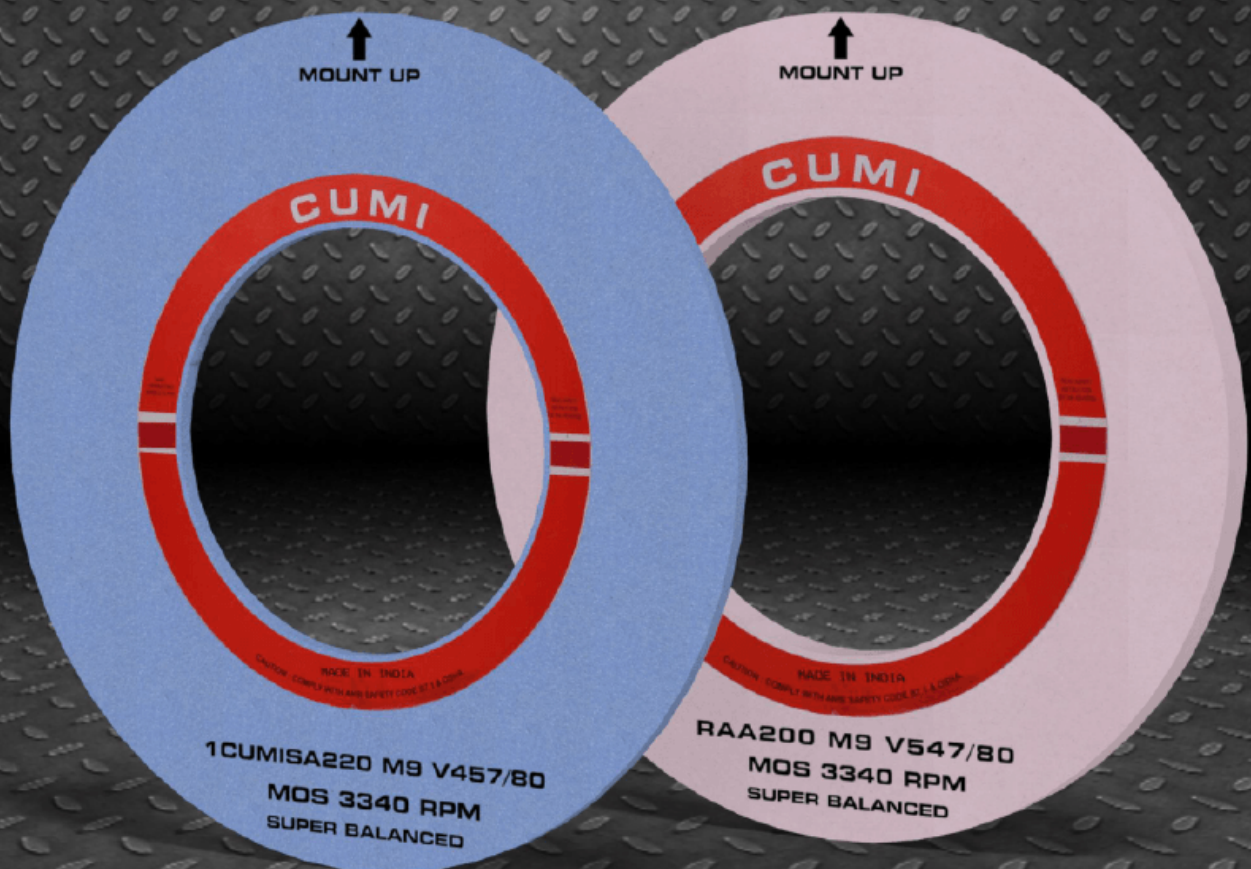
TAPER ROLLER RING

PRODUCT RECOMMENDATION

Bearing Type	Bearing Size	Speed	Best	Better	Good
Taper Roller Bearing (TRB)	up to 50mm	35	55A120 K7 VC500	12A120 K5 VCOOL	DA120 L7 V1092
		50	55A120 K7 VC500/50	-	DA120 K7 V1092/50
		63	-	-	AA120 K5 V60
		80	3CUMISA120 J7 V389/80	-	5SA120 K6 V792/80
		100	3CUMISA120 J6 V792/100	-	5SA120 K6 V792/100
	Above 50mm	35	AA100 L5 VF8	-	A100 L7 V1092
		50	55A100 K7 VC500/50	-	DA100 K7 V1092/50
		63	3CUMISA100 K7 V389/60	-	AA100 K5 V60
		80	3CUMISA100 J7 V389/80	-	5SA100 J6 V792/100
		100	3CUMISA100 J6 V792/100	-	5SA100 J6 V792/100
Ball Bearing	All	35	55A120 L7 VC500	-	DA120 L7 V1092
		50	55A120 K7 VC500/50	-	DA120 K7 V1092/50
		63	2CN1001 J6 V308C/60 3CSA1001 J6 V308C/60	-	AA100 K5 V60
		80	2CN1001 I6 V308C/80	-	5SA1001 J7 VC500/80
		100	3CUMISA120 J6 V792/100	-	5SA120 K6 V792/100



BONDED ABRASIVES THREAD GRINDING WHEELS



THREAD GRINDING WHEELS

ABOUT THREAD GRINDING WHEELS

Being a high speed, high material removal application with stringent demands on the thread profile, generating threads on taps and drills by grinding isn't an easy job.

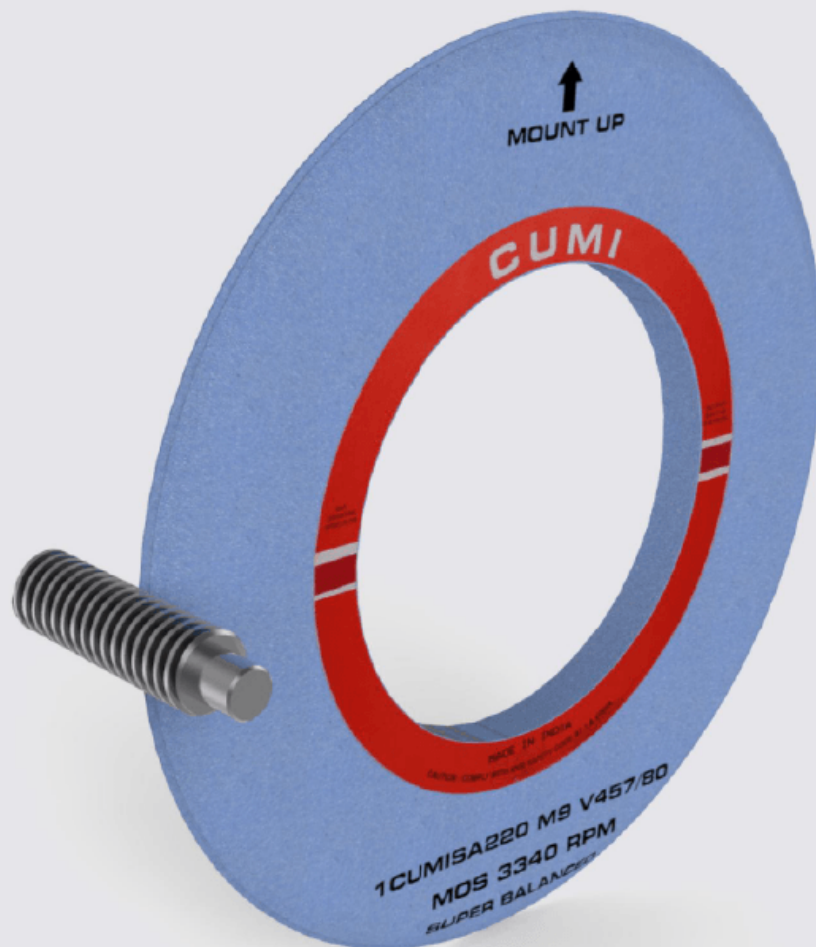
CUMI's Thread grinding wheels are formulated with high purity, Sharp Aluminium Oxide grains combined with a special glassy, fusible bond. This ensures excellent form retention of the wheel, which translates into consistent thread profile of components.

FEATURES OF THREAD GRINDING WHEELS

- Hi performance hard, sharp & friable Aluminium Oxide abrasive blend
- Fusible, glassy crystalline bond for improved form holding
- Special manufacturing process for uniform hardness across diameter

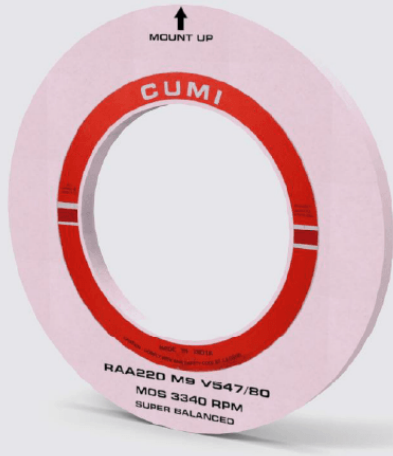
FEATURES OF THREAD ROLL DIE GRINDING WHEELS

- High purity closely graded Green Silicon Carbide micro grits
- Special Low temperature fired Vitrified bond for improved form holding
- Special manufacturing process for uniform hardness across wheel thickness



THREAD GRINDING WHEELS

ADVANTAGES OF CUMI WHEELS



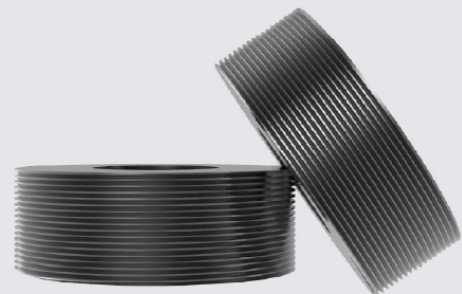
1. Excellent form holding leading to reduced dressing
2. Low grinding forces
3. Minimal thermal load/ No burns on the taps
4. Lower cycle time
5. Higher wheel life

WIDTH OF PRODUCT RANGE

CUMI Code	Grit Range	Diameter		Thickness		Speed mps	Hardness	Structure
		mm	inch	mm	inch			
55A	120 - 220	200 - 510	8 - 20	6 - 40	1/4 to 1 1/2	upto 80	I - M	4 - 10
AA	120 - 400							
RA	Upto 150							



THREADED TAP



THREAD ROLL DIE

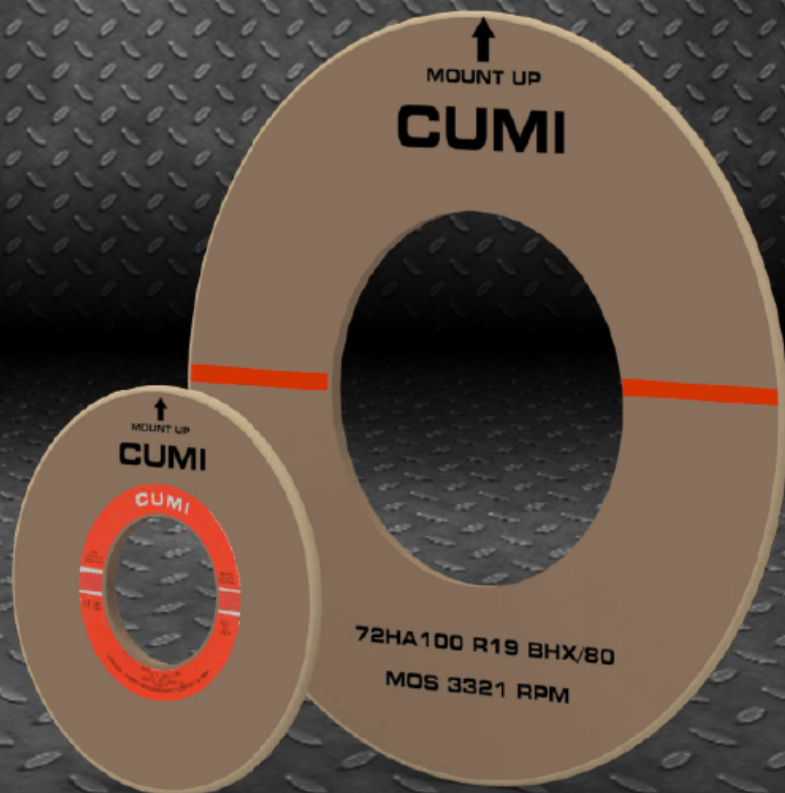
THREAD GRINDING WHEELS

TAPER ROLLER BEARING RING

Thread (pitch, mm)	Best	Better	Good
0.4 – 0.7	-	-	AA400 K9 VF920/80
0.8 – 1.0	-	55A320 K9 VF920/80	AA320 K9 VF920/80
1.25 – 1.5	-	-	AA280 L10 V457/80
1.75 – 2.0	-	55A220 J9 V457/80	AA240 L9 V457/80
2.25	1CUMISA220 K9 V457/80	55A220 K9 V457/80	AA220 M9 V457/80
2.50 - 3.00	1CUMISA180 L9 V457/80	55A180 K9 V457/80	AA180 M9 V457/80
3.25 -4.00	1CUMISA150 L9 V457/80	55A150 L8 V457/80	AA150 M9 V457/80

Thread (pitch,MM)	TPI	Grading
0.7	36	GC400 I5 VMG
0.8	32	
1	25	GC320 I5 VMG
1.25	50	
1.5	17	GC280 I5 VMG
1.75	15	
2	13	GC220 I5 VMG
2.5	10	
3.5	7	
4	6	

BONDED ABRASIVES FLUTE GRINDING WHEELS



FLUTE GRINDING WHEELS

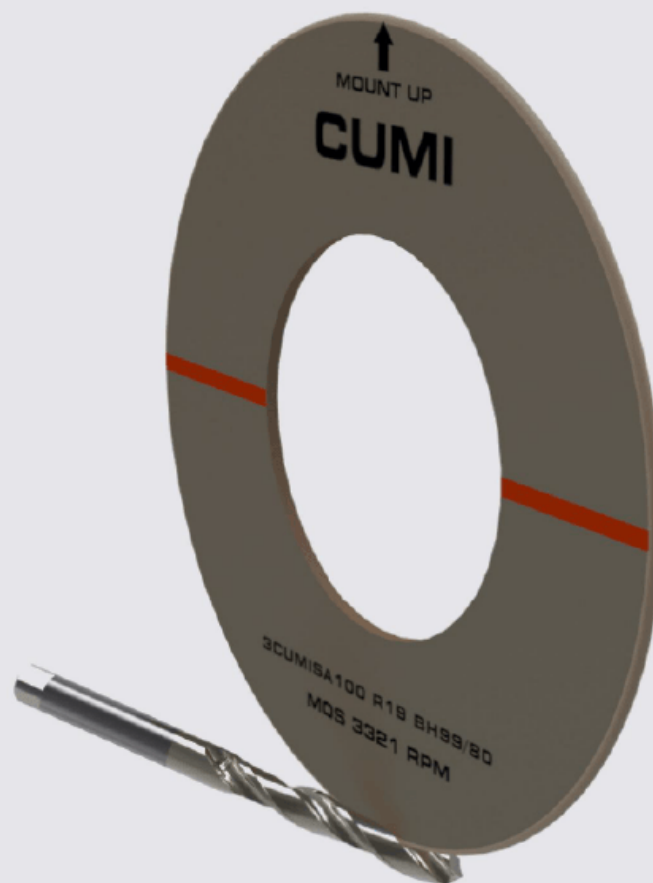
ABOUT FLUTE GRINDING

Being a high depth of cut, form generating grinding process, Flute grinding operations are at high speeds and remove material at rates comparable to machining process rather than grinding. A combination of peripheral and surface grinding actions, the depth of cut, width of cut, form retention and surface finish are crucial parameters.

CUMI Flute grinding wheels are specially engineered high density (near zero porosity), resin bonded wheels which ensure that the form is generated with utmost precision and finesse. These wheels truly are a testament to the expertise that CUMI has built over the years.

FEATURES:

- Special phenolic resin
- Specially treated aluminium oxide grains for higher depth of cut
- Micro crystalline grain for lesser dressing frequency
- Unique manufacturing process for high density packing



FLUTE GRINDING WHEELS

ADVANTAGES OF CUMI WHEELS



1. High depth of cut
2. Higher wheel life
3. Better form holding/
reduced dressing
4. Smoke free grinding
5. Burn free components

WIDTH OF PRODUCT RANGE

CUMI Code	Grit	Diameter		Thickness		Structure	Coolant slot	Speed
		mm	inch	mm	inch			mps
CUMISA/CSA	80 - 150	150 - 500	6 - 20	4 - 20	0.16 - 0.8	R P Q F	slotted	63
SA								
RA								
AA								

COMMONLY USED MACHINES:

- Normac
- Hertline
- Gefra

FLUTE GRINDING WHEELS

COMMONLY USED MACHINES

•Hertline •Normac •Gefra



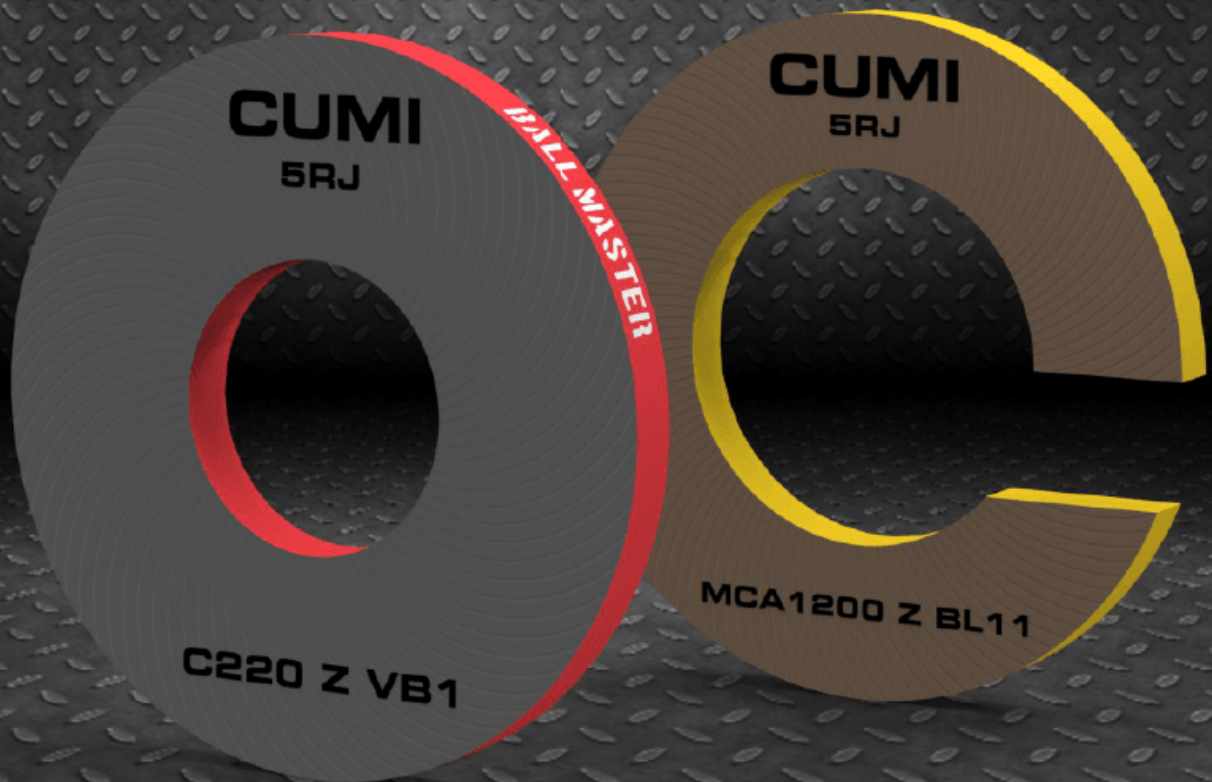
DRILL



TAP

Operation	Component	Best	Better	Good
Flute grinding	Drills	3CUMISA100 R19 BH99/80	3CUMISA100 R19 BHX/80	3SA100 R19 BHK/80
Point grinding	Drills	-	-	AA100 S12 BHP/60 AA100 S12 BH47/80
Clearance grinding	Drills	3CUMISA100 Q24 BH99/80	3SA100 Q24 BH99/80	AA80 Q21 BH99/80

BONDED ABRASIVES BALL GRINDING & LAPPING WHEELS



BALL GRINDING & LAPPING WHEELS

ABOUT BALL GRINDING & LAPPING WHEELS

The demands expected of balls in the Bearing industry have become highly stringent in terms of quality in the recent years. The primary objective of a ball manufacturer is to constantly improve quality of the balls, in terms of sphericity (roundness) and surface finish, while reducing the overall manufacturing cost.

CUMI provides best-in-class ball finishing solutions, customized to meet the exacting demands and ensure that premium quality balls are produced. Be it the High Density Vitrified wheels for Grinding or the Micro grit Resinoid wheels for Lapping, CUMI has got it all. The state of the art manufacturing facility ensures that every wheel produced meets stringent quality norms.

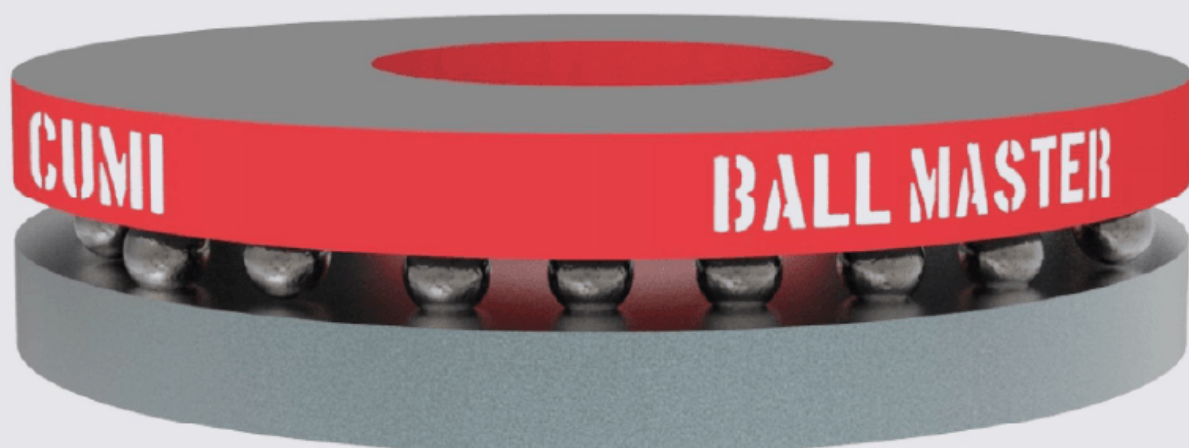
FEATURES

BALL GRINDING

- Conditioned and specially treated raw materials
- Unique bond system for defect free surface
- Specially controlled process for ensuring consistency (layer to layer & wheel to wheel)

BALL LAPPING

- Closely graded aluminium oxide grain for superior surface quality
- Unique hot press technology for ensuring consistency
- Modified resins to achieve high material removal rate and low wheel wear



BALL GRINDING WHEELS

ADVANTAGES OF CUMI WHEELS



1. Faster cycle time
2. Consistent quality layer to layer
3. Longer wheel life
4. Superior ball quality
5. Overall low abrasive cost per ball

WIDTH OF PRODUCT RANGE

CUMI Code	Grit Range	Diameter		Thickness		Hardness
		mm	inch	mm	inch	
C	80-220	300-1000	12-40	40-140	1-1/2 to 5-1/2	v,x,y,z
	240-600	300-660	12-24	40-70	1-1/2 to 4	

