



Cutting Units 201

BY: MIKE KRIZ & STEPHEN TUCKER



golf industry show

About Us

Stephen Tucker

- Founder / CEO of IGCEMA – 2006
- Equipment Manager – Four Seasons in Orlando
- 16 Years as Equipment Manager
- Held numerous PGA Tour and USGA events.
- Played in Nike Tour and USGA Qualifiers.
- Consultant in U.S and abroad.

Mike Kriz

- Equipment Manager at Arrowhead Country Club – Rapid City, South Dakota
- IGCEMA Board Member and Founder
- 21 Years in USAF as Aerospace Ground Technician, Instructor and Manager
- 36 Years Experience in Equipment Maintenance



About IGCEMA

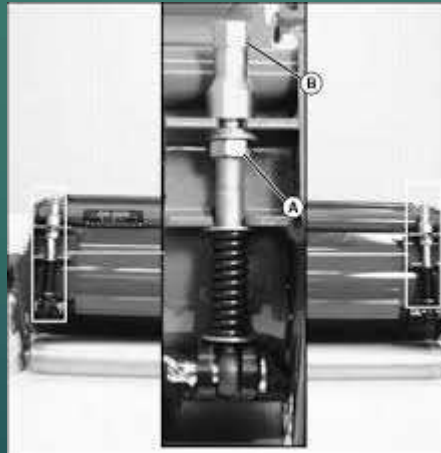
- ▶ Founded in 2006
- ▶ Certificate Program (Hydraulic, Electrical, Internal Combustion Engines, Drivelines, Cutting Units, Sprayers)
- ▶ The RHOC – Height of Cut Gauge
- ▶ Booth 4103 on Trade Show Floor
- ▶ Website – www.igcema.org
- ▶ Started the Edwin Budding Award

The Budding Machine



Cutting Unit Overview

Yesterday



Cutting Units Overview

Today



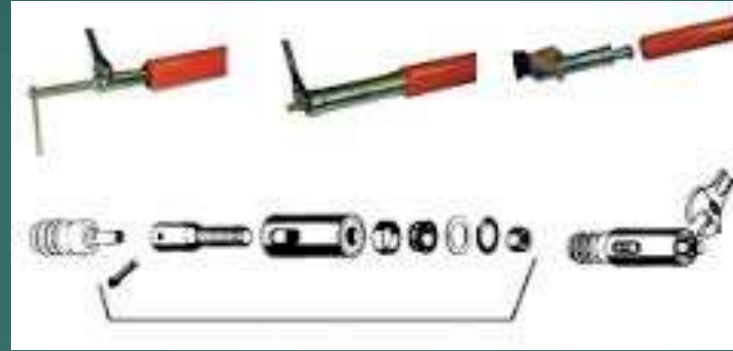
Cutting Unit Overhaul

- ▶ Special Tool Requirements
- ▶ Bearing and race (cup) removal / installation
- ▶ WP style tools
- ▶ Other local manufactured
- ▶ Facilitate removal / installation without damage!
- ▶ Common bearing failure indications

Press



Bearing Service Tools



Other Tools



Roller Tamer



Check out Turf Pride booth 20054



Edwin Budding Award Winner

Bearing Styles



Inspect Bearings



Reel Replacement Criteria

Pi Tape



Reel Replacement Criteria

Nominal Reel Size	Original Reel Diameter	Minimum Reel Diameter
8	8 inches (203.2 mm)	7.25 inches (184.2 mm)
7	7 inches (177.8 mm)	6.25 inches (158.8 mm)
5	5 inches (127 mm)	4.4 inches (111.8 mm)

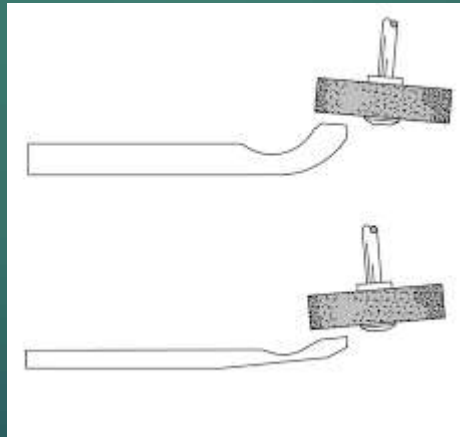
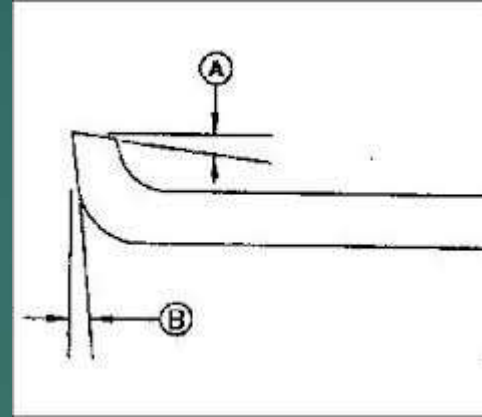
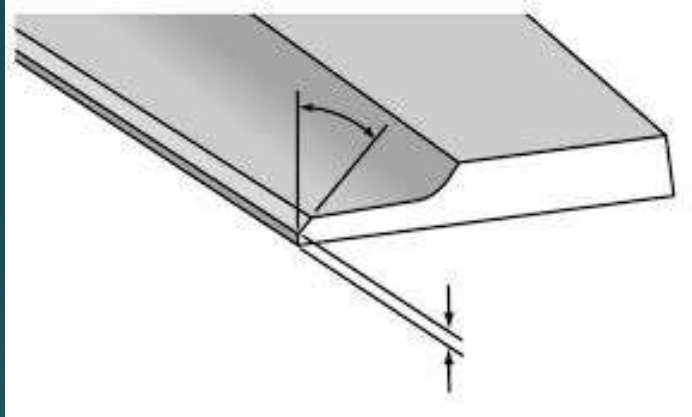
Grinding



Current Grinders



Relief Terminology



What is it we are trying to do?

- ▶ Eliminate Variables
- ▶ Minimize mistakes
- ▶ Catch bigger issues

Bedknife Issues



Bedknife Shoe Issues

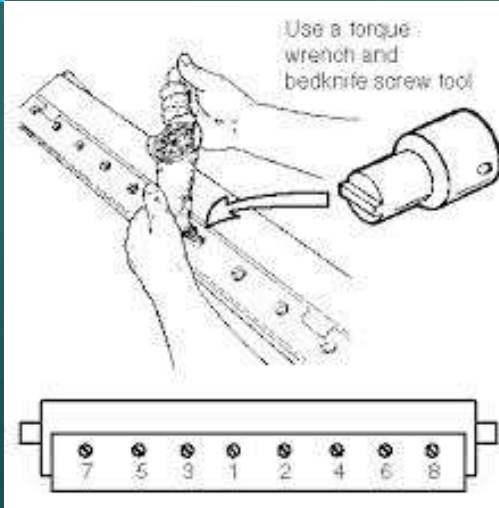
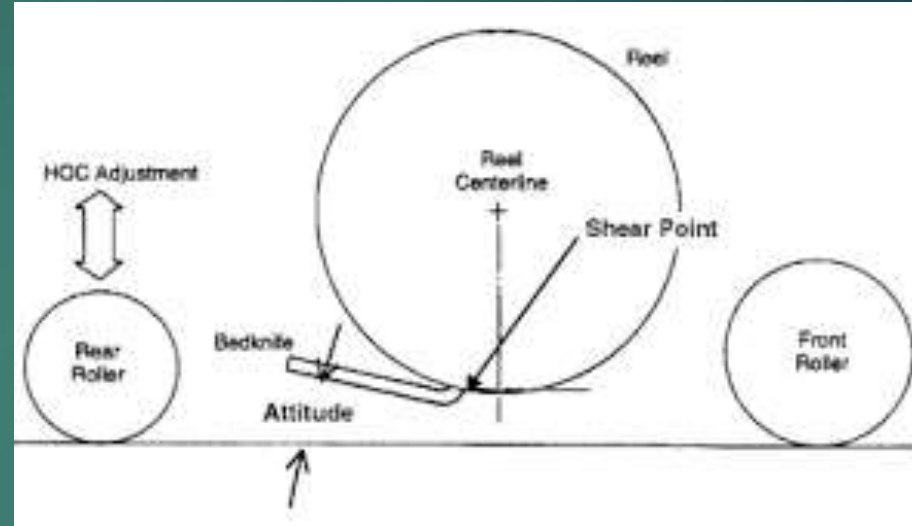
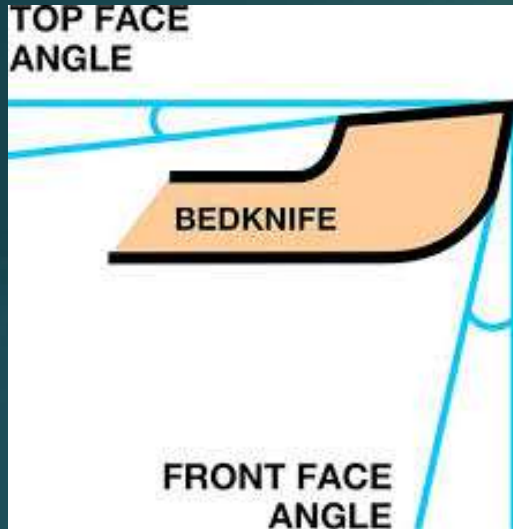


Bedknife Angles

Equipment	Bedknife Description	HOC Range	Bedknife Holes	Standard Part Number	EdgeMax Part Number	EdgeMax Type	Top Angle	Front Angle
Greensmaster Flex 18 and Greensmaster 800	18" Micro Cut	1/16" - 3/16"	11	98-7261	117-1530	Solid	3°	13° + 4° - 0°
	18" Micro Cut Extended**	1/16" - 3/16"	11	110-2300			7°	13° + 4° - 0°
	18" Tournament Cut	1/8" - 1/2"	11	98-7260	117-1532	Solid	3°	13° + 4° - 0°
	18" Low Cut	3/16" - 1"	11	110-2301			3°	13° + 4° - 0°
Greensmaster 500	21" Micro Cut	1/16" - 3/16"	6	95-3147			0°	30° ± 4°
	21" Low Tournament Cut	3/16" - 1"	6	88-9000			0°	30° ± 4°
	21" High Tournament Cut	3/16" - 1"	6	88-8990			0°	30° ± 4°
Greensmaster 1000/2000	21" Micro Cut	1/16" - 3/16"	13	93-4262	115-1880	Solid	3°	13° + 4° - 0°
	21" Tournament Cut	1/8" - 1/2"	13	93-4263	115-1881	Solid	3°	13° + 4° - 0°
	21" Low Cut	3/16" - 1"	13	93-4264			3°	13° + 4° - 0°
Greensmaster Flex 21	21" Micro Cut	1/16" - 3/16"	13	93-4262	115-1880	Solid	3°	13° + 4° - 0°
	21" Micro Cut Extended**	1/16" - 3/16"	13	108-4303			7°	13° + 4° - 0°
	21" Tournament Cut	1/8" - 1/2"	13	93-4263	115-1881	Solid	3°	13° + 4° - 0°
	21" Low Cut	3/16" - 1"	13	93-4264			3°	13° + 4° - 0°
Greensmaster 3000-Series Bolt Cutting Unit	21" Tournament Cut	1/8" - 1/2"	7	94-6394			3°	13° + 4° - 0°
	21" Low Cut	3/16" - 1"	7	94-6396			3°	13° + 4° - 0°
	21" High Cut	5/16" - 1"	7	94-6396			3°	13° + 4° - 0°
	21" Fairway Cut	3/8" - 1"	7	63-8610	112-7475	Insert	3°	13° + 4° - 0°
Greensmaster 3000/3100/3200-Series SPA and DPA Cutting Units	21" Micro Cut	1/16" - 3/16"	13	93-4262	115-1880	Solid	3°	13° + 4° - 0°
	21" Micro Cut Extended**	1/16" - 3/16"	13	108-4303			7°	13° + 4° - 0°
	21" Tournament Cut	1/8" - 1/2"	13	93-4263	115-1881	Solid	3°	13° + 4° - 0°
	21" Tournament Cut Extended**	1/8" - 1/2"	13	108-4302			7°	13° + 4° - 0°
	21" Low Cut	3/16" - 1"	13	93-4264			3°	13° + 4° - 0°
	21" High Cut	5/16" - 1"	13	94-6392			3°	13° + 4° - 0°
Greensmaster 1600/2600	21" Fairway Cut	3/8" - 1"	13	63-8600	112-7475	Insert	3°	13° + 4° - 0°
	26" Micro Cut	1/16" - 3/16"	16	112-9275			3°	13° + 4° - 0°
	26" Tournament Cut	1/8" - 1/2"	16	94-5885			3°	13° + 4° - 0°
	26" Low Cut	3/16" - 1"	16	93-9015			3°	13° + 4° - 0°
	26" High Cut	5/16" - 1"	16	104-2646			3°	13° + 4° - 0°
26" Fairway Cut	3/8" - 1"	16	107-8181			3°	13° + 4° - 0°	

* If you experience scalping with the aggressive bedbar, then use the extended bedknives.

Little Things That Can Affect After Cut Appearance



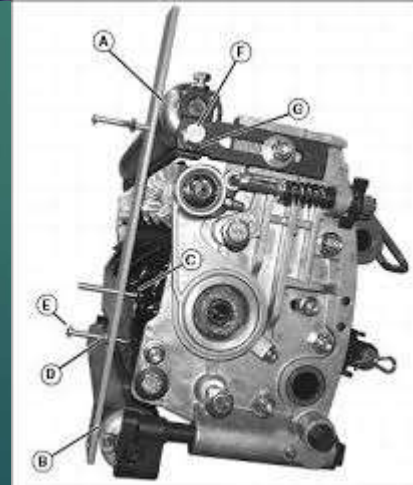
Big Things That Can Affect After Cut Appearance

- ▶ Rollers out of round
- ▶ Down pressure settings
- ▶ Tire pressure
- ▶ Bedknife thickness or type
- ▶ Bent reels
- ▶ Frequency of Clip
- ▶ Ground Speed
- ▶ Height of Cut

Reassembly and Set-up

- ▶ Hand tools only, no impact wrenches
- ▶ Torque Specifications
- ▶ Leveling Methods
- ▶ Set bench HOC
- ▶ Roller Run-out

Leveling Methods



Alternate Leveling



HOC Gauges



Eccentric Bolts



Take Aways

- ▶ Types of tools used today to repair and set-up cutting units.
- ▶ Minimize variables to produce consistent cutting units.
- ▶ Leveling techniques.
- ▶ Issues that can affect after cut appearance.
- ▶ Don't just fix it tell somebody what you did.



The End

CONTACT US

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