## **HYDRAULIC EXCAVATORS**

Cat Hydraulic Excavators are the most versatile machines on the jobsite, working in applications ranging from small landscaping projects to large surface extraction mines—and everywhere in between. Together, Cat buckets and G.E.T. make up the only bucket system designed and developed to optimize hydraulic excavator performance and your productivity. Rely on your Cat dealer for expert support and service for your specific application.

## **SYSTEM OVERVIEW**

Hydraulic excavators are extremely versatile machines used for a variety of purposes, from grading to mass excavation to demolition work. A hydraulic excavator's main work tool is a bucket, but these machines can also be equipped with hydraulic couplers to pick up a variety of tools.

Balancing your desired productivity/penetration with the wear life of your system is critical. Excessive wear material can reduce productivity and increase fuel burn. Cat hydraulic excavator buckets and G.E.T. are designed as a balanced system to increase life while minimizing drag.



## **TIP SELECTION GUIDE**

Even though bucket tips come in many shapes and sizes, you don't have to be an expert to choose the right ones. Use the chart below to determine if the material you're digging in is high, medium or low impact and abrasion—then find the balance you need among these three factors:



The ability to withstand digging and penetrating shocks and high breakout forces

The ability to penetrate tough material when it's tightly compacted, rocky or frozen

The ability to withstand wearing, scouring and abrasive action of the material being handled

	I	ABRASION (tip life)		
	SMALL HEX (311-319)	MEDIUM HEX (320-329)	LARGE HEX (336-390)	
LOW	کی ای	0 - 3″   0 - 75 mm	0 - 6"   0 -150 mm	> 1,000 hours
MEDIUM	<b>)</b> 1 - 3″   25 - 75 mm	3 - 8″   75 - 200 mm	6 - 12″   150 - 300 mm	250 - 1,000 hours
HIGH	3+"   75 mm+	8+"   200 mm+	12+"   300 mm+	< 250 hours

# CAT ADVANSYS<sup>™</sup> TIP & ADAPTER SYSTEM

### BUILT TO DELIVER MAXIMUM PRODUCTIVITY AND THE LOWEST BUCKET LIFECYCLE COST IN THE TOUGHEST APPLICATIONS.

Cat Advansys is built for machine productivity, balancing tip wear material and penetration requirements. Integrated hammerless retention ensures you are back to work in minutes without a separate retainer.

## PERFORMANCE & PRODUCTIVITY

Wider top surface reduces drag on the tip and adapter side as the tip moves through the material. Reduced side drag results in less force required to move the hex bucket through the material.

EXTEND BUCKET LIFECYCLE

HANCE JOBSITE

Hammerless system. A 3/4 inch retainer lock requires no special tools for installation and removal.

Adapter design directs material flow over adapter strap, which can extend adapter

service life and bucket lifecycle.

### CAT ADVANSYS IS BUILT BY CATERPILLAR AND READILY ADAPTED TO FIT ANY BUCKET IN THE INDUSTRY.

Available for 950 through 994 Wheel Loaders and 311 through 390 Hydraulic Excavators.

## **CAT ADVANSYS TIP OPTIONS**

Below are the tip shapes best suited for the wide range of jobsite conditions performed by the hydraulic excavators. We also offer additional Cat Advansys tips more commonly used with wheel loaders. Your Cat dealer can help you choose the one that offers the right balance of penetration and wear life for your application.



\* Abrasion Resistant Material (A.R.M.) is a welding process that bonds very hard tungsten carbide particles to Cat G.E.T. to create a protective shield over the component. Typically, the A.R.M. process doubles wear life and can last even longer in some applications.

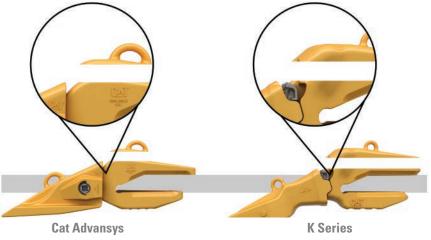
# CAT ADVANSYS HAMMERLESS TIP & ADAPTER SYSTEM

Cast retention pin means no separate retention pin to buy or lose during tip replacements. The tip loads on the adapter nose, never putting the cast retention lugs under stress or wear.



## **CAT ADVANSYS ADAPTER DESIGN**

The tip system design naturally shields the adapter strap even without a wear cap. This allows up to a 25% increase in wear life when compared to K series or other low profile systems.



Cat Advansys improves adapter to tip wear life ratio, and the resulting extension on the bucket life cycle.

Heavy Abrasion and Heavy Penetration tips both have a longer usable wear life, while staying sharper throughout the useful life of the entire tip.



X220 Heavy Abrasion Tip<sup>1</sup> 72% Available Wear Material



X220 Heavy Penetration Tip<sup>1</sup> 60% Available Wear Material



Wider top surface reduces drag on the tip and adapter side as the tip moves through the material. Reduced side drag results in less force required to move the hex bucket through the material.

The asymmetrical design ensures a reliable fit even when the adapter surface becomes worn.

1 This is representative of one customers and wear rates may vary by application

### MACHINE COMPATIBILITY

EXCAVATOR	LINKAGE	SIZE CLASS
315	N/A	Cat Advansys 80, Cat Advansys 90
318	N/A	Cat Advansys 80, Cat Advansys 90
000	Reach	Cat Advansys 80, Cat Advansys 90
320	Mass Excavation	Cat Advansys 90, Cat Advansys 100
004	Reach	Cat Advansys 90, Cat Advansys 100
324	Mass Excavation	Cat Advansys 100, Cat Advansys 110
000	Reach	Cat Advansys 90, Cat Advansys 100
329	Mass Excavation	Cat Advansys 100, Cat Advansys 110
000	Reach	Cat Advansys 100, Cat Advansys 110
336	Mass Excavation	Cat Advansys 110, Cat Advansys 130
040	Reach	Cat Advansys 110, Cat Advansys 130
349	Mass Excavation	Cat Advansys 130
074	Reach	Cat Advansys 150
374	Mass Excavation	Cat Advansys 170
200	Reach	Cat Advansys 150
390	Mass Excavation	Cat Advansys 170, Cat Advansys 200



## **K SERIES TIP & ADAPTER SYSTEM**

## EXCELLENT PENETRATION THROUGH VERTICAL RETENTION AND COMPACT PROFILE.

K Series delivers digging performance throughout the life of the tip with its elliptical adapter nose and vertical retention design. The twist-on fit of the tip and adapter makes installation easier.

### IMPROVE YOUR PRODUCTIVITY

### **STAY SAFE & REDUCE MAINTENANCE COSTS**

SIMPLIFY INSTALLATION Low-profile shape provides optimal sharpness, penetration, and digging ability throughout the tip life.

One-piece vertical retainer allows for easy installation and removal.

Rails on both sides of the adapter and a twist-on design hold the tip in place, allowing for quicker installation.

## **K SERIES DRIVE-THROUGH TIP** & ADAPTER SYSTEM

The drive-through system is for K80-K100 adapters and tips.

**Twist-on design** 

Lower-profile tip





No hole in adapter



**Drive-through retainer** 

#### **INSTALLATION & REMOVAL**

It's safe and easy—just use a standard pry tool and follow this three-step process:

Scan the QR code to the right to watch the installation video.





## K SERIES HAMMERLESS TIP & ADAPTER SYSTEM

The hammerless system is for K110-K170 adapters and tips.



No hole in adapter



\* Additional offering only for extreme packing and slag applications.

#### **INSTALLATION & REMOVAL**

It's safe and easy—just use a standard pry tool and follow this three-step hammerless process:

Scan the QR code to the right to watch the installation video.





### **K SERIES TIP OPTIONS**

Below are the tip shapes best suited for the wide range of jobsite conditions performed by hydraulic excavators. We also offer additional K Series tips more commonly used with wheel loaders. Your Cat dealer can help you choose the one that offers the right balance of penetration and wear life for your application.

ABRASION	EXTRA DUTY		>>	<b>Extra Duty</b> and <b>Extra Duty Abrasion Resistant Material (A.R.M.)</b> <sup>*</sup> tips include approximately 60% more wear material in the tip body. The A.R.M. wears around the profile to increase penetration.	<b>A.R.M.</b> OPTION AVAILABLE
	GENERAL PURPOSE		>>	<b>General Purpose</b> tips are symmetrical and the baseline for other tip styl All wear comparisons are to the General Purpose tip unless otherwise i	
			>>	<b>Wide</b> tips are used to maintain smooth trench floors and in low-abrasio easy-to-penetrate material.	n,
	PENETRATION PLUS	s			
			>>	<b>Penetration Plus</b> tips feature 25% more wear material and a leading edge 25% less cross-sectional area. They self-sharpen as they wear.	with
	PENETRATION		>>	<b>Penetration</b> tips are ideal for densely compacted materials. They feature a leading edge with 60% less cross-sectional area— allowing for maximum penetration—and a single center rib that self-sharpens as it wears. These tips are available with A.R.M.*	A.R.M. OPTION AVAILABLE
			>>	<b>Spike</b> tips are used to achieve maximum penetration. They are typically cohesive material and stay sharp during the life of the tip.	used in
▲ IMPACT	DOUBLE SPIKE		»	<b>Double Spike</b> tips are used in the corner positions with the spike tips fo hard-to-penetrate, fracturable materials.	r

\*Abrasion Resistant Material (A.R.M.) is a welding process that bonds very hard tungsten carbide particles to Cat G.E.T. to create a protective shield over the component. Typically, the A.R.M. process doubles wear life—and can last even longer in some applications.

### **K SERIES ADAPTER OPTIONS**

All K Series adapters feature rails on both sides of the nose for a twist-on design that stays in place during installation.

#### MACHINE COMPATIBILITY

EXCAVATOR	LINKAGE	SIZE CLASS
315	N/A	K80, K90
318	N/A	K80, K90
220	Reach	K80, K90
320	Mass Excavation	K90, K100
224	Reach	K90, K100
324	Mass Excavation	K100, K110
220	Reach	K90, K100
329	Mass Excavation	K100, K110
336	Reach	K100, K110
330	Mass Excavation	K110, K130
349	Reach	K110, K130
343	Mass Excavation	K130
374	Reach	K150
0/4	Mass Excavation	K170
390	Reach	K150
390	Mass Excavation	K170



## **J SERIES TIP & ADAPTER SYSTEM**

#### SIDE-PIN SECURITY WHEN YOUR APPLICATION DEMANDS IT.

Great performance and proven reliability over time—that's what you get with this classic horizontal retention system, a staple in the construction and mining industries.

## BOOST YOUR VERSATILITY

ENHANCE YOUR RELIABILITY

## **IMPROVE SAFETY & MAINTENANCE TIME**

Industry-standard side-pinned design performs across a variety of applications.

Weld-on adapters offer excellent retention.

Ability to retrofit means you can use the hammerless CapSure™ system.

## **J SERIES TIP & ADAPTER SYSTEM**



#### **INSTALLATION & REMOVAL**

Simply use the standard pin and retainer system—and make removal even easier with our Tip Pin Remover tool. $^*$ 



\*J550 and smaller use the pin removal tool. Consult your dealer for larger systems.

#### **J SERIES TIP OPTIONS**

Below are the tip shapes best suited for the wide range of jobsite conditions performed by hydraulic excavators. We also offer additional J Series tips more commonly used with wheel loaders. Your Cat dealer can help you choose the one that offers the right balance of penetration and wear life for your application.



\*Abrasion Resistant Material (A.R.M.) is a welding process that bonds very hard tungsten carbide particles to Cat G.E.T. to create a protective shield over the component. Typically, the A.R.M. process doubles wear life—and can last even longer in some applications.

#### **GENERAL DUTY TIPS**

General Duty tips offer a reliable, competitively priced parts option for small to medium-sized excavators operating in low to medium impact conditions. Tips are available in the J250-J460 size range.

General Duty tips are:

- » A match if you require quality and long wear
- » Designed to fit J Series adapters, reducing risky fit-ups
- » Backed by the standard Caterpillar warranty against breakage under normal, recommended operation in low to medium impact applications

LONG	» Most versatile shape with good balance of penetration, strength and abrasion resistance. Standard shape for most applications.
HEAVY DUTY LONG	» Use on larger machines where greater strength is required. More wear material for higher abrasion environments.
PENETRATION PLUS	<ul> <li>Enhanced penetration in densely compacted material, such as clay. Resists blunting and is self-sharpening. Ideal for tough trenching applications.</li> </ul>

### J SERIES MACHINE COMPATIBILITY

EXCAVATOR	LINKAGE	SIZE CLASS
312	N/A	J250, J300
315	N/A	J300, J350
318	N/A	J300, J350
220	Reach	J300, J350, J400
320	Mass Excavation	J400, J460
224	Reach	J400, J460
324	Mass Excavation	J460, J550
220	Reach	J400, J460
329	Mass Excavation	J460, J550
200	Reach	J460, J550
336	Mass Excavation	J550
240	Reach	J550
349	Mass Excavation	J550
274	Reach	J600
374	Mass Excavation	J700
390	Reach	J600
290	Mass Excavation	J700, J800

## HAMMERLESS TIP & ADAPTER SYSTEM FEATURING CAPSURE RETENTION

### LOSE THE HAMMER, NOT THE FLEXIBILITY.

Simplify bucket tip replacement with hammerless CapSure retention. These tips are matched to side-pin adapters, allowing the flexibility to use our conventional pin retention if your application demands it.

### LOWER OPERATING COSTS

**ENHANCE JOBSITE SAFETY** & MAINTENANCE TIME

CHANGE OUT TIPS QUICKLY & EASILY

SPEED UP YOUR INSTALLATION TIME Side-pin retrofit design used on J-style adapters means the pin is reusable.

A ¾-inch retainer lock requires no special tools and allows for hammerless installation and removal.

Positive stop is cast into the tip to prevent over-rotation—just turn 180 degrees to lock or unlock.

Tip and retainer are one system, so there's no special assembly or extra pieces.

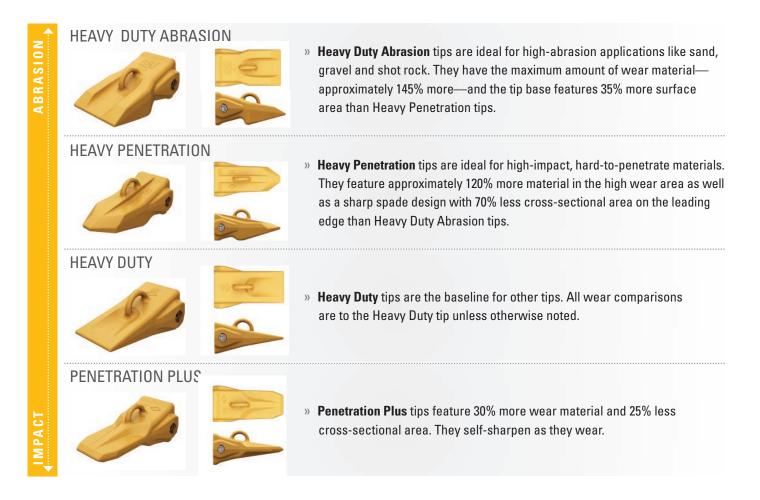


## HAMMERLESS TIP & ADAPTER SYSTEM FEATURING CAPSURE RETENTION



#### **CAPSURE TIP OPTIONS**

We offer four CapSure tip options designed for a range of jobsite conditions. Your Cat dealer can help you choose the one that offers the right balance of penetration and wear life for your application.



#### MACHINE COMPATIBILITY

EXCAVATOR	LINKAGE	SIZE CLASS
000	Reach	N/A
336	Mass Excavation	J550 (Retrofit)
	Reach	J550 (Retrofit)
349	Mass Excavation	J550 (Retrofit)
274	Reach	J600 (Retrofit)
374	Mass Excavation	J700 (Retrofit)
	Reach	J600 (Retrofit)
390	Mass Excavation	J700 (Retrofit), J800 (Retrofit)

## **BASE EDGE SYSTEMS**

### FASTEST INSTALLATION TIMES IN THE INDUSTRY.

SAVE INSTALLATION & REPLACEMENT TIME

OPTIMIZE MACHINE PERFORMANCE

Cat base edge systems go through a series of carefully controlled manufacturing processes to deliver maximum strength, durability and long life. They come completely welded and assembled, dramatically shortening your installation and replacement time.

## INCREASE DURABILITY

A consistent heat-treat process maximizes strength and resists abrasion. Shot blasting removes impurities that can cause inclusions on a weld, and controlled cooling reduces the chance of stress points.

Butterbead is applied to the back side of the base edge and the top strap of the corner adapter, so you can weld the edge onto the bucket without preheating.

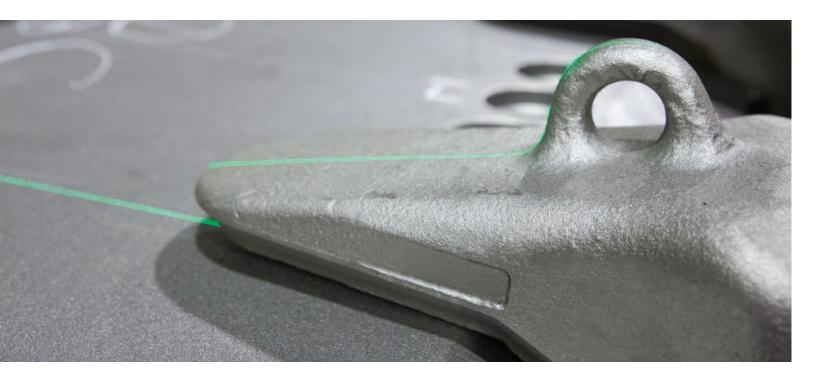
Base edges are designed by Caterpillar engineers for optimal performance on specific machines.

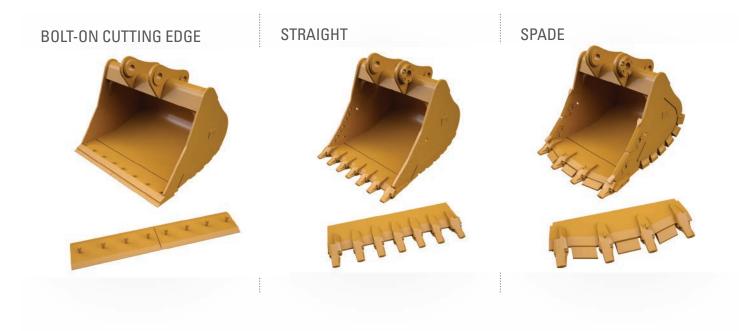
### BASE EDGE SYSTEMS

Base edge replacement involves replacing a base edge assembly, which includes adapters welded in from the factory, or replacing a bolt-on cutting edge (BOCE) base edge, which comes with factory-drilled holes for bolt-on G.E.T. Choose from three shapes (base edge for BOCE, straight and spade base edge assemblies) to get the right protection for your application.



Lasers place the adapters within 0.1 mm of specifications.





## **BUTTERBEAD BASE EDGE ASSEMBLY**

DURABLE PROTECTION COMBINED WITH SHORTER INSTALLATION TIMES.

The protection you need, with no preheating required—that's what you get with butterbead weld prep. This technique, which involves applying a layer of weld to a heat-treated, higher hardness part, makes it possible to weld a base edge to a bucket without preheating the hardened part. Choose from two shapes (straight and spade) on cutting edges thicker than 50mm and three levels of build to get the right protection for your application.

## SPEED UP YOUR INSTALLATION TIME

Weld prep eliminates the need for preheating, shortening edge installation time by 30-50%.

GET MORE DURABILITY

Base edges have the proper butterbead weld because it is applied in the factory.



## **BASE EDGE END PROTECTION (BEEP)**

### PROTECT YOUR CORNERS—WITHOUT CUTTING THEM.

Reduce base edge end wear and subsequent corner adapter weld erosion with our BEEP design. It makes adapter replacement on the edge much easier when it's time to rebuild the base edge assembly. BEEPs are available in a wide array of thicknesses and angles to fit 336-390 hydraulic excavators.

## BOOST YOUR UPTIME

EXTEND LIFE

SPEED UP INSTALLATION Through-hardened Rc ~45 (Br ~3.0) weldable steel is easily installed in the shop or the field.

Extended base edge end protects adapter corner welds.

Height and bevel are matched to the base edge, so there's no additional fabrication.





## **SIDE & EDGE PROTECTION**

### MAINTAIN YOUR PERFORMANCE EDGE.

Protect your bucket's structural integrity with sidebar protectors and shear blocks or increase penetration and performance with side cutters.

- » Sidebar Protectors
- » Side Cutters
- » Half Arrows
- » Top Covers
- » Cutting Edges
- » Weld-On Edge Shrouds

## **SIDEBAR PROTECTORS**

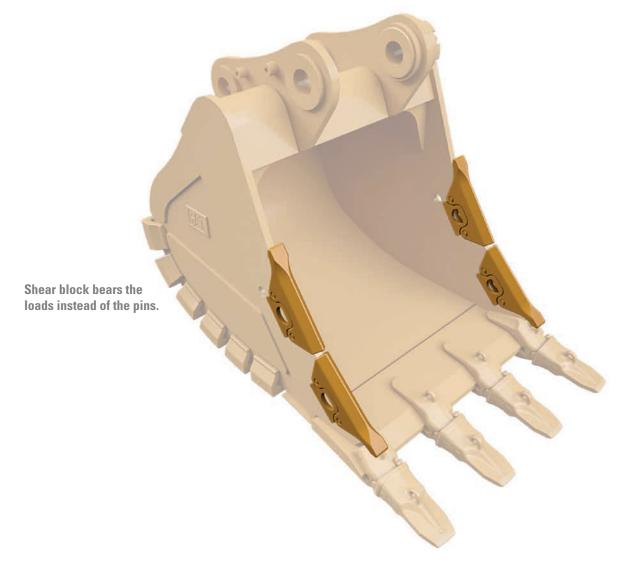
Protect your bucket's structural integrity with sidebars and shear blocks.

### INCREASE YOUR UPTIME

### CUT YOUR MAINTENANCE COSTS

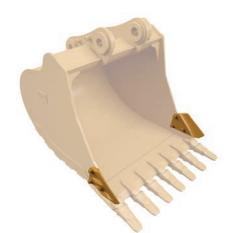
Shear block protects the pin from extreme loads and breakage, helping ensure sidebar protector retention.

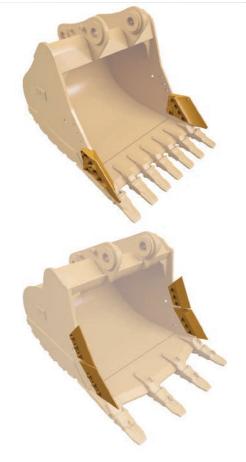
Sidebar protector protects the bucket edge.



## **SIDECUTTERS**

Improve your bucket's performance while protecting your sidebars.





### GENERAL PURPOSE SIDECUTTER

- > Effective in moderate-impact conditions.
- Suitable for most soil conditions.
- Provides a strong, wear-resistant surface to help protect bucket sides.
- Extends bucket side width to match the teeth bite.

### HEAVY DUTY SIDECUTTER

- » For tough digging conditions.
- » More wear material.
- » Covers more of the sidebar for enhanced protection of the bucket.
- » Scalloped profile improves bucket penetration and machine performance.

#### STRIKEOFF SIDECUTTER

- » Half arrow shape to provide better penetration than bare bucket.
- » Protects the lower bucket sides and corners.
- » For use in moderate-to-light conditions.
- » Can be stacked for more protection.

## **BOLT-ON HALF ARROWS, TOP COVERS, CUTTING EDGES & WELD-ON SHROUDS**

Protect your investment in buckets and base edges with these flexible components. Half arrows allow for a smooth transition of material over the base edge to protect the leading edge. Top covers complement the half arrows to protect the base edge fully. Modular edge shrouds are designed to fit any bucket configuration and extend the life of your excavator bucket edge assembly.



## **BUCKET SELECTION GUIDE**

We offer four standard bucket durability categories suitable for any application. Each category is based on the bucket's intended durability when used in the recommended application and material.



#### **GENERAL DUTY**

 » For digging in low-impact, lower-abrasion materials such as dirt, loam and mixed compositions of dirt and fine gravel. Example:
 Digging conditions in which General Duty tip life exceeds 800 hours.



#### HEAVY DUTY

- » For a wide range of impact and abrasion conditions including mixed dirt, clay and rock. Example: Digging conditions where Penetration Plus tip life ranges from 400 to 800 hours.
- » HD buckets are a good "center line" choice, or starting point, when application conditions are not well known.



### SEVERE DUTY

» For higher abrasion conditions such as well-shot granite and caliche. Example: Digging conditions where tip life ranges from 200 to 400 hours with Penetration Plus tips.

#### EXTREME DUTY

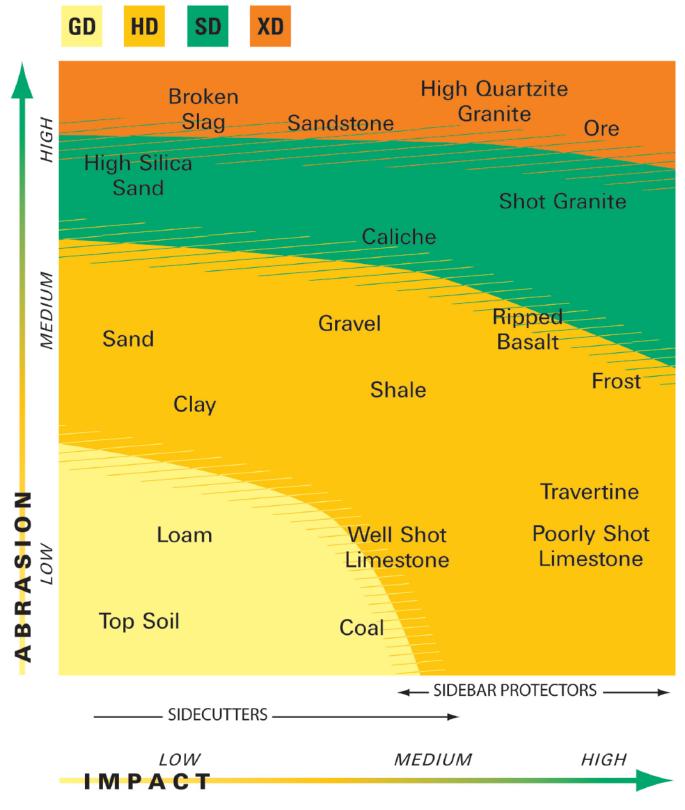
» For very high-abrasion conditions including high quartzite granite. Example: Digging conditions where tip life is less than or equal to 200 hours with Extra Duty tips.



Typical 336-349 bucket

### CHOOSING THE RIGHT DURABILITY.

Choosing the wrong bucket can easily reduce production and increase operating costs by 10-20% or more. It can also cause unnecessary wear and fatigue for both machine and bucket. Contact your local Cat dealer for more detailed information on choosing the right excavator, bucket and work tool attachment combinations to meet your application needs.



## **ADDITIONAL BUCKET STYLES**

Several different bucket styles are available—each with a special purpose:



#### **DITCH CLEANING**

These buckets are designed for cleaning ditches, sloping, grading and other finish work. Their shallow depth and compact size make working in confined areas easier. Drainage holes allow liquid to empty so material dumps more easily. Ditch Cleaning Buckets are available for 311-336 excavators.

Tilt Buckets feature a full 45° of tilt in each direction, powered by two doubleacting cylinders. Tilt Buckets are available for 311-329 excavators.



### CENTER-LOCK<sup>™</sup> PIN GRABBER PERFORMANCE

This bucket is designed with a patented recessed pin to provide maximum digging performance while keeping the versatility and convenience of a coupler. Tip radius is reduced and allows up to 10% improvement in breakout force when compared to a conventional pin-on bucket and coupler combination.

Center-Lock Pin Grabber Performance Buckets are available for 315-349 excavators in General Purpose and Severe Duty durability.



#### POWER

Power Buckets are for use in abrasive applications where breakout force and cycle times are critical—and for use in materials such as tightly compacted mixed dirt and rock. (Not recommended for clay.) Breakout force is maximized due to decreased tip radius and increased pin spread. Machine cycle times in most material are improved over a standard bucket in a similar application.

Heavy Duty Power Buckets are available for 320-336 excavators.



#### WIDE TIP

Wide Tip Buckets are intended to perform best in low-impact materials such as dirt and loam where leaving a smoother floor and minimal spillage is necessary. The bucket is engineered to be used exclusively with Cat Wide Tips. Corner adapters face straight forward to create a smooth edge.

General Duty Wide Tip Buckets are available in widths from 24" to 78" for 311-349 excavators.



### **HIGH CAPACITY**

High Capacity Buckets are designed and built for use in high-production truckloading applications. With proper application and set up, these buckets will move more material in a minimal amount of passes—maximizing production.

High Capacity Buckets are available for 336-390 excavators in General Duty durability.

## **CAT DEALER & BUCKET MANAGEMENT**

### CHOOSING CAT G.E.T. IS EASY.

Your Cat dealer makes it easy to choose the right G.E.T. for your machines and applications. In addition to a broad portfolio of products, your dealer offers the sales, service and technical support you need to keep productivity high and operating costs low. Trust your Cat dealer to:

### MAXIMIZE PRODUCTIVITY

## IMPROVE PERFORMANCE

### SIMPLIFY MAINTENANCE

## **MANAGE WEAR**

Buckets and G.E.T. products are designed to meet your application requirements, rather than simply fit onto your machine.

Get the most out of your bucket and G.E.T. with expert advice that helps you lower costs and reduce unscheduled maintenance.

Tailored G.E.T. systems simplify your maintenance. We develop solutions that fit your expectations, including custom products.

Intuitive Cat Inspect bucket inspection programs help you monitor how your G.E.T. system is wearing so you can adapt to changes in application and operation.



Talk to your Product Support Representative or G.E.T. specialist today to learn how they can help you simplify your bucket management by using Cat Inspect.

## HYDRAULIC EXCAVATOR (HEX) RIP AND LOAD

Using rippers mounted on large hex is a cost-effective alternative to blasting in quarries and site development. In site development, rippers on smaller excavators and backhoe loaders can readily deal with asphalt, caliche and frozen ground.

nter / Al



EXTEND

INCREASE DURABILITY Increase productivity by adding efficiency and flexibility to your operation.

A through-hardened hammerless wear tip and shank protector extend wear life.

Upsized, hammerless adapters and tips accommodate higher loads and abrasion, while edge segments and top covers protect your base edge.

10.000

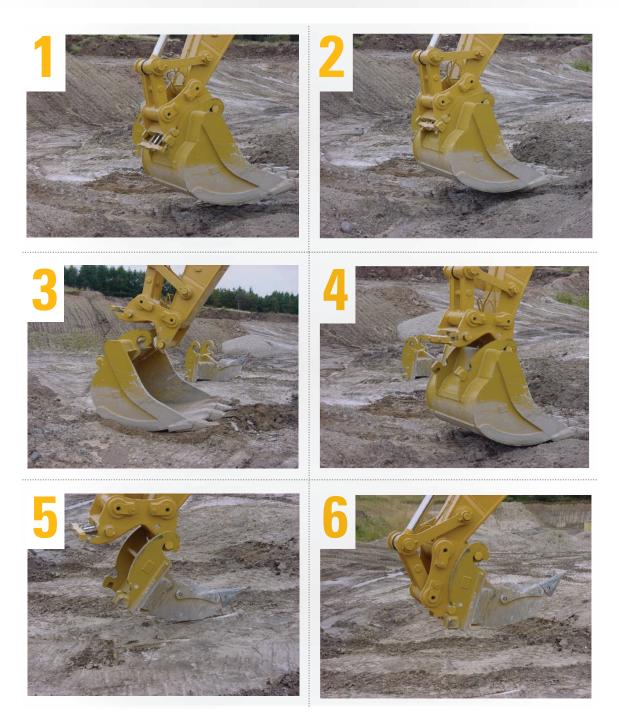
RIPPER-TO-BUCKET CHANGES ARE MADE HYDRAULICALLY IN LESS THAN 35 SECONDS. This gives the operator complete flexibility to continually adjust ripping, sorting and loading work.

## SIMPLE CHANGES

### BLAST FREE

Pull material down and change bucket quickly and easily.

Ripper allows you to work without blasting in areas with unstable land or sound regulations.





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