BREAKING UP DOESN'T HAVE TO BE HARD TO DO

Choosing a better hydraulic breaker design and quality equipment improves productivity and decreases costs

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FRD FURUKAWA

IF YOU HAVE THE RIGHT TOOL FOR THE JOB, BREAKING ROCK ISN'T HARD TO DO.

There's no debating that a breaker's life is a rough one. Whether being used on a road construction site, for demolition, at a mine or quarry, or just about anywhere else, hydraulic breakers have one task and one task only – to break stuff apart without breaking themselves.

In a nutshell, hydraulic breakers involve a heavy piston striking a working steel, creating energy and using brute force to break material. That means breakers have to be strong, reliable and durable to stand up to the many stresses they face. A breaker uses nitrogen in conjunction with the host carrier's hydraulic system to thrust a piston into a working steel.

Hydraulic breakers turn compact utility loaders, skid steers, mini excavators, backhoes and excavators into versatile demolition tools.

PROPER OPERATION

When operated properly, breakers efficiently and effectively break up concrete and shatter rock. If not operated properly or not sized correctly for the job, the attachment can fail unexpectedly and waste precious time on a job site, or even suffer a reduced lifespan.

Effective performance comes from operators following proper operational standards, some of which include:

- **Use the breaker at the correct angle** (perpendicular to what's being broken, otherwise, it will create undue stress on the breaker).
- **Operate for no more than 30 seconds at a time.** If the material is not going to break, move to a new area.
- **Start from the outside of the material**, where it will break faster, and not the center of the mass.
- **Let the breaker do the work** without trying to force it to increase production.

FOLLOW A MAINTENANCE SCHEDULE

Routine maintenance to a hydraulic breaker ensures better working efficiency and a longer service life. The most important parts of a breaker to maintain are the bushings, which means keeping them lubricated. Look for a visible film of lubricant on the working steel. If it's not there, lubrication is needed.

DAILY MAINTENANCE

A hydraulic breaker should be inspected each time before it is used. The operator should check several components, including attachment pins, retainers and locks; top cap hardware; tool retainers and locks; and hoses, connectors and ball valves. Needless to say, if any components are loose, damaged or missing, they should be replaced before the breaker is used.

Back to the working steel and bushings—because they're that important—they should be lubricated every two to three hours of operation. That said, those aren't hard and fast rules. Jobsite conditions impact the frequency of lubrication. Lubrication will be needed more frequent on dusty job sites or where the hydraulic breaker must work in a horizontal or inverted position. Also, refer to the manufacturer recommendations.

WEEKLY MAINTENANCE

Weekly maintenance involves looking for cracks and excessive wear, this time on the surface of the working steel, on the retainers and retaining pin slots, and on the piston striking surface. If cracks or wear on these components are found, they should be remedied. It's also a good idea to inspect hardware weekly.

For every 100 hours of operation, the fittings on the hydraulic breaker should be inspected. Over time fittings can wear and loosen from hydraulic pulsations during operation.

ANNUAL MAINTENANCE

The hydraulic breaker should be dissembled, inspected and resealed once a year or every twelve hundred hours.

SIX MONTHS

The carriers flow and pressure should be checked to ensure they are operating at recommended specifications.

HYDRAULIC BREAKER CONSTRUCTION

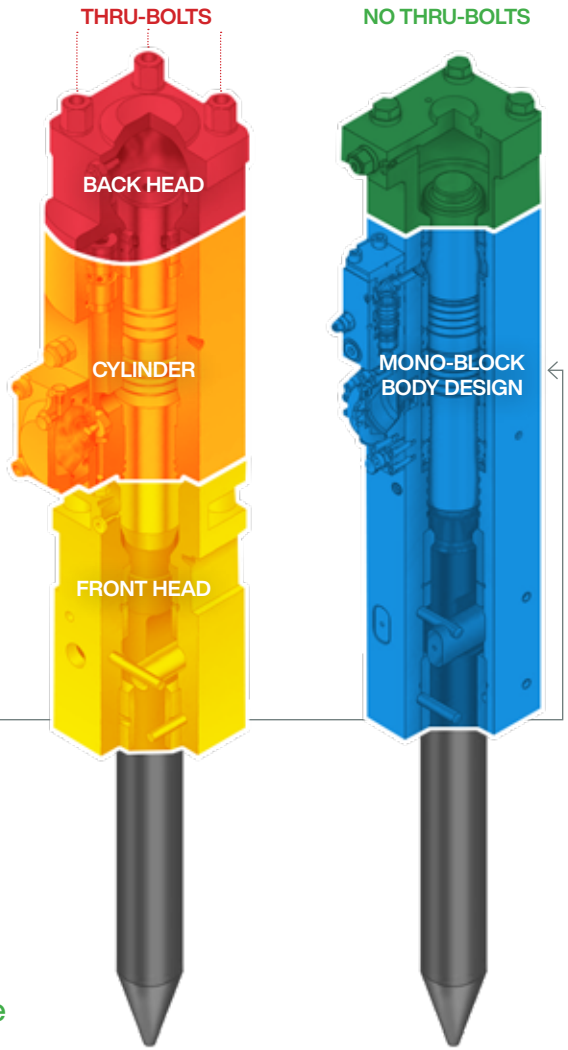
There are typically three primary components on a breaker, which are all tied together with thru bolts as the industry standard:

- **Back Head** (nitrogen chamber)
- **Cylinder**
- **Front Head**

The back head is a nitrogen-filled chamber under low pressure that acts like a damper for the return piston stroke. The back head also serves to enhance impact when the piston travels down.

The cylinder assembly primarily includes a cylinder, piston and control valve, and is the principal component of a hydraulic breaker. The piston and the valve are the only two moving parts of a breaker, with the piston moving to strike the working steel.

The front head is where the piston connects with the working steel. The working steel is retained with pins which is considered a common wear item.



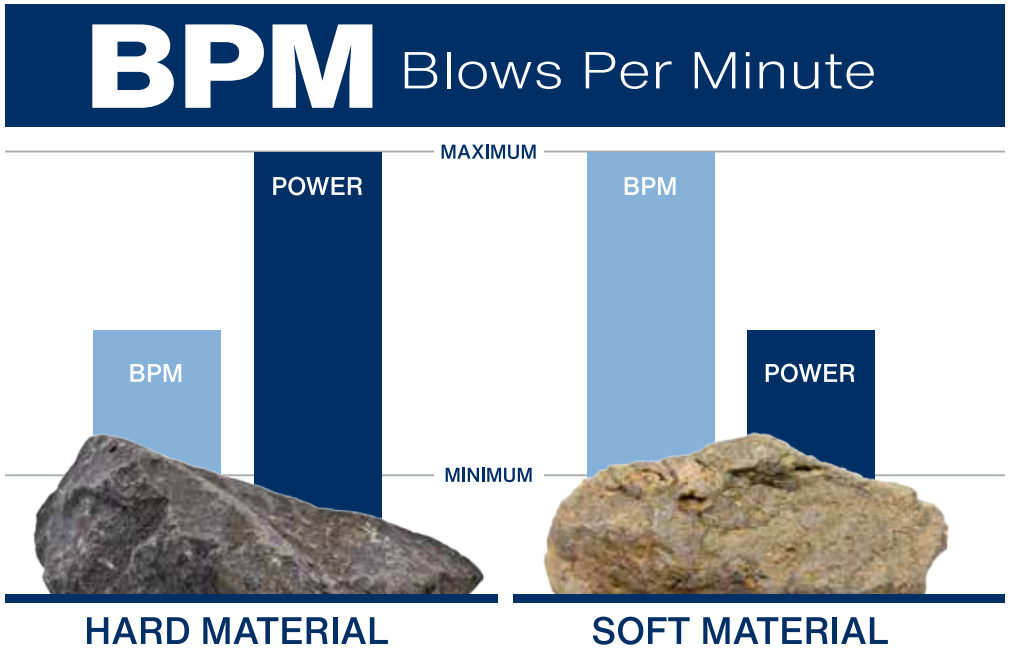
MONO-BLOCK BODY DESIGN

A different approach is to incorporate the front head and cylinder into one piece, which is called a mono-block. This body design eliminates thru-bolts because two separate components that would require bolts to hold them together are combined into a single piece of steel as the internal body of the breaker. Thru-bolts are a maintenance item that need to be checked periodically. Without them, that part of the maintenance schedule is eliminated and so is a point of potential failure, which can reduce downtime and catastrophic failure, and lower lifecycle costs.

BLOWS PER MINUTE

With hydraulic breakers, blows per minute refers to how many times the chisel hits the material it's working to break apart.

The harder the material is, the harder the breaker must hit it, which means the further the piston must travel in the cylinder (long stroking). In softer material, the piston should move a shorter distance (short stroking), which means it moves faster—higher beats per minute—but doesn't produce as much power. For softer material, a faster speed is desirable.



REBUILDING A BREAKER

Rebuilds are a part of breaker life. Breakers are designed so critical parts that wear can be replaced without a lot of work. While rebuilds are usually not difficult, they can be expensive (anywhere from a few hundred dollars up to $40,000), which is why following a thorough maintenance schedule is so important. The better maintained equipment is, the less expensive rebuilds will likely be.

There are two obvious signs that a rebuild is in order: if the bushing wears beyond spec or oil can be seen leaking down the working steel. When it comes to rebuilding, the old adage “you get what you pay for” really does apply. Genuine OEM parts are a must. Using an authorized repair center or the manufacturer themselves ensures a proven process will be followed and the correct components will be used. There’s added peace of mind paying a little more up front to know the job will be done the right way.

THE RIGHT BREAKER FOR THE JOB

Choosing the proper size breaker to handle the job starts with the material to be broken. A larger breaker is typically better suited for really hard or thick material because it has more power to handle the material and can do the job faster. There is no universal industrial standard, but the size of the breaker can be measured by weight ratio, impact energy level, working steel/piston diameter and more. The size of the attachment will depend on the size of the carrier.

Choosing a breaker also means choosing a high-quality vendor that offers a solid warranty for manufacturing flaws and a strong service plan. Warranties in the industry typically range from one to three years, but one or two years is most common.

A quality hydraulic breaker is built to be dependable and last for years to come. That's why it's important to understand the steps involved in choosing the right equipment. A quality breaker might cost a little more up front, but it won't lead to higher maintenance costs and will reduce expensive downtime.

FURUKAWA ROCK DRILL USA BREAKERS

The Furukawa Rock Drill (FRD USA) Breaker Attachment Division (formerly Kent Demolition Tool) specializes in attachments for compact utility loaders, skid steers, mini excavators, backhoes and excavators. Kent was established in 1965 and began designing and manufacturing breakers nearly 40 years ago, before being acquired by Furukawa Rock Drill in 1990.

Backed by more than 50 years of experience, FRD USA breakers and attachments are built to last. With innovative features such as mono-block body design, the elimination of thru-bolts, improved internal grease routing and patented dust intake prevention systems, FRD USA breaker technology represents an ongoing commitment to engineering innovation, durability and quality operation. All FRD USA equipment is backed by industry-leading service and support, which includes the FRD USA Encore Program that offers genuine OEM rebuilds.

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