



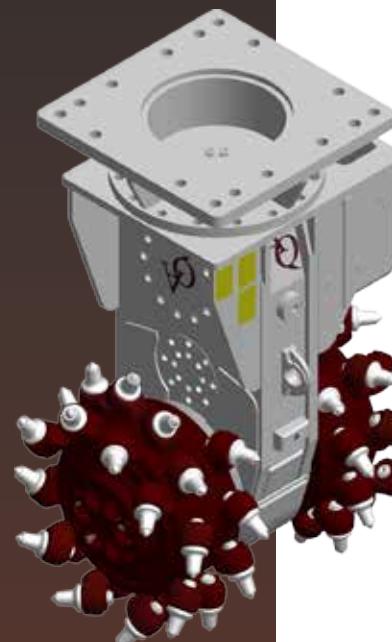
HYDRAULIC CUTTING ATTACHMENTS



HYDRAULIC CUTTING ATTACHMENTS

FACTORS FOR EQUIPMENT SELECTION

- Rock Type & Hardness
- Applications
- Excavator Size & Power



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MAXIMIZING THE PRODUCTION OF YOUR EXCAVATOR

EXTENSIVE RANGE OF APPLICATIONS FOR ANTRAQUIP HYDRAULIC ROCK AND CONCRETE CUTTERS

Suitable for material with Unconfined Compressive Strength (UCS) up to 30,000psi (Pounds per Square Inch) / 200MPa (Mega Pascal).

Some of the advantages of Antraquip Hydraulic Cutter attachments include:

- ✓ **Rugged spur gears and housing**
- ✓ **The use of a powerful high torque hydraulic motor**
- ✓ **Robust cutting drums to ensure maximum production and a long life span**
- ✓ **Customizable drums for a variety of applications to maximize performance**
- ✓ **Various displacement settings for the hydraulic motor to maximize performance on specific excavators**
- ✓ **Experienced field technicians and office personnel available for technical support at all times**
- ✓ **Manual 360° rotation with most models**
- ✓ **All American made parts and components**

METHODS OF EXCAVATION GUIDELINE DEPENDANT ON MATERIAL STRENGTH

| Strength of Materials (UCS) in Pounds Per Square Inch (PSI) /Megapascal (MPa) | | | |
|---|--------------------------------|---------------------|-----------------|
| BUCKET | HYDRAULIC CUTTER & CARBIDE SAW | DIAMOND SAW | BLASTING |
| 500 -30,000 PSI | 500 - 30,000 PSI | 10,000 - 40,000 PSI | over 30,000 PSI |
| up to 3 MPa | 4 - 205 MPa | 70 - 275 MPa | over 205 MPa |

APPLICATIONS

BUILT TOUGH FOR YOUR NEXT ROCK EXCAVATION OR CONCRETE DEMOLITION PROJECT

ANTRAQUIP'S line of AQ Cutters are leading the way of innovation in the attachment industry to maximize productivity of hydraulic excavators. AQ Cutters are available in both transverse and axial styles in sizes to fit any excavator to be used for a variety of applications which include:

ROCK EXCAVATION



Antraquip cutters can be used for a variety of applications, one of which is general rock excavation as an alternative to hydraulic hammers and blasting.

TRENCHING



Antraquip Hydraulic Cutters are ideal alternatives to hammers for trenching given the ability to excavate the trench to the desired profile and in many cases reuse the cut material as backfill.

DEMOLITION



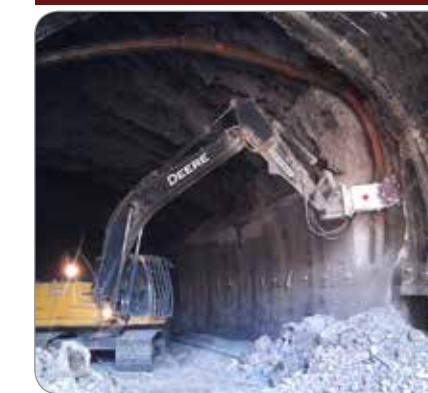
AQ cutters provide the power to efficiently cut reinforced concrete while offering the precision and low vibrations to control the demolition process and not disturb nearby structures.

UNDERWATER CUTTING



AQ hydraulic cutters are designed to operate under water without any modifications being required. Controlled rock (or concrete) excavation underwater makes these attachments an excellent option for underwater use.

TUNNELING



AQ cutters, often referred to as Road-header attachments, are commonly used to excavate tunnels, shafts and cross passages as the cutting profile can be precisely controlled.

SCALING



After blasting in tunnels, underground mines and even open pit quarries Antraquip cutters are ideal for scaling operations offering a faster process and safer environment than conventional methods.

QUARRYING



Antraquip hydraulic cutters are an ideal solution for mining applications in soft to medium hard rock such as gypsum, talc, and some limestone as it creates a finished product that may not need further crushing/processing.

APPLICATIONS

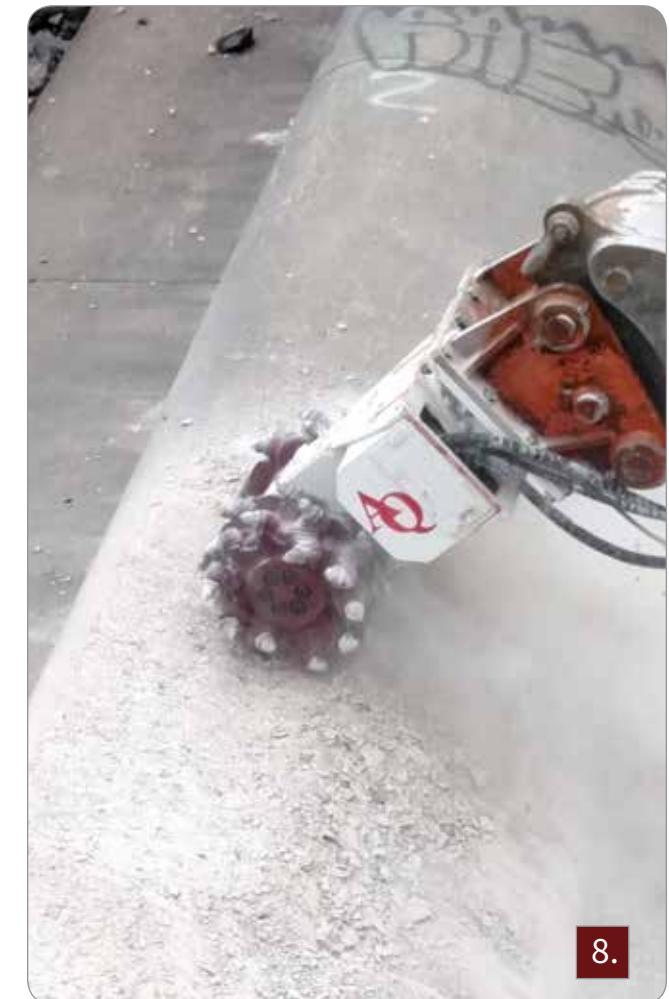
Trenching

- 1 & 3.** AQ-4 cutter on Hitachi Zaxis 350 LC excavating multiple trenches for pipeline project in Las Vegas. Rock consisted of hard Caliche common in southwestern USA.
- 2.** AQ-4XL excavating a trench as a part of major pipeline project in the Middle East. Rock was medium hard limestone with 70 - 90 MPa unconfined compressive strength.
- 4.** AQ-2 cutter on CAT430 backhoe used for trench excavation in frozen ground in Ontario, Canada.
- 5.** AQ-2 cutter used in Phoenix, AZ for trench excavation.



DEMOLITION

- 6.** AQ-4 on CAT328 used to remove concrete from existing support wall along road in upstate New York. The low noise, low vibration and highly productive AQ-4 was ideal for this project in an urban area.
- 7.** AQ-4 used to remove old concrete for refurbishment of bridge footing in Wisconsin, USA.
- 8.** AQ-4 on Case 330 excavator being used for demolition on dam spillway. AQ-4 was able to grind the heavily reinforced concrete effectively.
- 9.** AQ-4W (custom wide drums) on Liebherr 954 with AQR5 hydraulic rotation unit. The cutter was used for Lock and Dam rehab work in Minnesota by the US Army Corp of Engineers.



APPLICATIONS

Tunneling & Underground Mining

1. AQ-3XL working at Billy Bishop tunnel in Toronto, Canada.
2. AQ-4 on a Liebherr 924T tunnel excavator used to excavate NATM tunnels in Riyadh, Saudi Arabia as part of a multi billion dollar metro project.
3. AQ-3XL on John Deere 200 excavator cutting concrete lining and hard rock as a part of tunnel enlargement project in Maryland (USA).
4. AQ-4 on Hitachi EX200LC excavator cutting shale with unconfined compressive strength of 40 - 60 MPa (6,000 - 9,000 psi) on tunnel project in Cleveland, Ohio (USA).



2.



3.



4.



1.

Quarrying & Rock Excavation

5. AQ-5 on Linkbelt 470 excavator operating on a land development project in hard Caliche outside of Las Vegas, NV.
6. AQ-5 cutter operating at a limestone quarry in Australia. Cutter mounted on a CAT 374 excavator.
7. AQ-6 being used to excavate a tunnel shaft in Canada. Rock was a combination of medium hard shale and hard limestone with compressive strength of up to 180MPa (26,000psi).
8. AQ-4 on a PC360 excavator operating in a quarry in Colorado for production mining and quarry roadway development work. Production rate in the limestone with average compressive strength of 10,000 psi (or 70 MPa) was up to 100 ton / hour of net cutting.



6.



8.



5.



7.

Other Applications

- ✓ Underwater Cutting
- ✓ Soil Mixing / Remediation
- ✓ Forestry
- ✓ Frozen Ground
- ✓ Wood Cutting

HYDRAULIC CUTTING ATTACHMENTS



NEW INNOVATION IN ROCK CUTTING

Antraquip Cutters are powerful attachments that can excavate rock and concrete efficiently while limiting noise and vibrations. The models ranging from the AQ-1S to the AQ-6 can be mounted on and operated with the auxiliary hydraulics of excavators ranging in size from 1.5 tons to 150 tons.

AQ Cutters offer excellent production rates for rock excavation and concrete removal/ demolition while providing precise cutting control. So consider an ANTRAQUIP Hydraulic Cutter as the solution for your next project involving trenching, general rock excavation, controlled demolition, scaling, profiling, soil remediation, frozen ground cutting, tunneling, rock dredging, and many other applications.

Antraquip is now also offering a variety of cutting drums designed for specific applications. Some of these include specialized drums for tunneling, scaling, remediation, and stump grinding. In addition, there are various types of carbide cutter bits (picks) available for each machine that are designed for different material and conditions.

AXIAL/ LENGTHWAYS "INLINE" vs TRANSVERSE

Axial cutters (see right image) utilize a single drum design and are most commonly utilized for narrow trench excavation, cutting of concrete piles, remediation, profiling, scaling and other projects that require extraordinary cutting precision. Antraquip transverse cutters utilize a dual cutting drum system (image to the left) that maximizes the cutting forces transferred into the rock or concrete. Specifications noted below.



AXIAL (INLINE) CUTTERS

| | UNIT | AQ-1L | AQ-2L | AQ-3L | AQ-4L |
|---------------------------------------|-------------|--------------------|---------------------|---------------------|-----------------------|
| Cutting Head Diameter | in (mm) | 15 (380) | 16 (405) | 19 (485) | 26 (660) |
| Cutting Head Width | in (mm) | 15 (380) | 16 (405) | 19 (485) | 26 (660) |
| Displacement 1 | RPM | 95 rpm @ 16 gpm | 80 rpm @ 32 gpm | 80 rpm @ 32 gpm | 70 rpm @ 58 gpm |
| | L/MIN | 95 rpm @ 60 l/min | 80 rpm @ 121 l/min | 80 rpm @ 121 l/min | 70 rpm @ 219 l/min |
| Displacement 2 | RPM | 90 rpm @ 25 gpm | 85 rpm @ 43 gpm | 85 rpm @ 43 gpm | 75 rpm @ 82 gpm |
| | L/MIN | 90 rpm @ 95 l/min | 85 rpm @ 163 l/min | 85 rpm @ 163 l/min | 75 rpm @ 310 l/min |
| Oil Flow Range | GPM (L/MIN) | 15 - 30 (55 - 115) | 30 - 45 (110 - 170) | 30 - 45 (110 - 170) | 50 - 95 (190 - 360) |
| Max Pressure | PSI (bar) | 5,800 (400) | 5,800 (400) | 5,800 (400) | 5,800 (400) |
| Max Torque Output | ft lbs (Nm) | 4,370 (5,925) | 8,740 (11,850) | 8,740 (11,850) | 19,690 (26,700) |
| Max Cutting Force | lbs (N) | 7,028 (31,275) | 13,125 (58,405) | 11,050 (49,175) | 18,204 (81,010) |
| Weight | lbs (Kg) | 750 (340) | 810 (370) | 925 (420) | 2,980 (1,350) |
| Maximum Input Power | HP (kW) | 60 (45) | 90 (65) | 90 (65) | 160 (120) |
| Carrier Weight (Recommended) | tons | 4 - 15 | 10 - 25 | 10 - 25 | 20 - 60 |
| Engine Power of Carrier (Recommended) | HP (kW) | 25 - 90 (20 - 65) | 80 - 120 (60 - 90) | 80 - 125 (60 - 95) | 150 - 240 (110 - 180) |

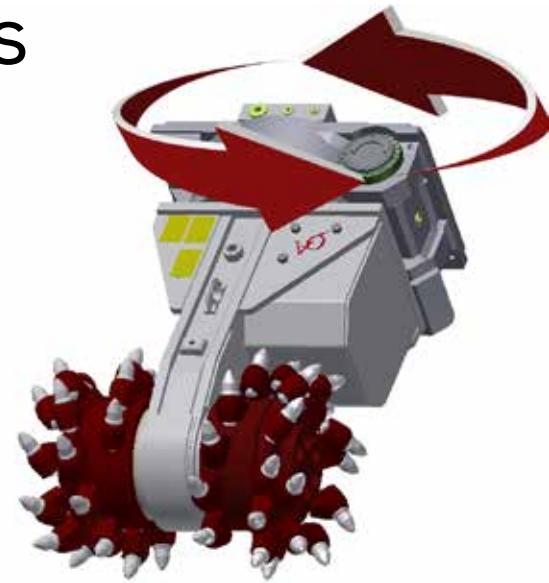
TRANSVERSE CUTTERS

| | UNIT | AQ-1S | AQ-1 | AQ-2 | AQ-3 | AQ-3XL | AQ-4 | AQ-4XL | AQ-5 | AQ-6 |
|---------------------------------------|-------------|--------------------|--------------------|--------------------|---------------------|---------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Cutting Head Diameter | in (mm) | 9 (230) | 11 (280) | 15 (380) | 22 (560) | 23 (585) | 25 (635) | 28 (710) | 33 (840) | 40 (1,015) |
| Cutting Head Width | in (mm) | 19 (485) | 21 (535) | 25 (635) | 31 (790) | 32 (815) | 40 (1,015) | 49 (1,245) | 53 (1,345) | 68 (1,730) |
| Displacement 1 | RPM | 150 RPM @ 7 GPM | 100 RPM @ 7 GPM | 95 RPM @ 16 GPM | 80 RPM @ 32 GPM | 80 RPM @ 40 GPM | 70 RPM @ 58 GPM | 75 RPM @ 80 GPM | 65 RPM @ 96 GPM | 52 RPM @ 185 GPM |
| | L/MIN | 150 RPM @ 25 L/MIN | 100 RPM @ 30 L/MIN | 95 RPM @ 60 L/MIN | 80 RPM @ 121 L/MIN | 80 RPM @ 140 L/MIN | 70 RPM @ 219 L/MIN | 75 RPM @ 299 L/MIN | 65 RPM @ 363 L/MIN | 52 RPM @ 700 L/MIN |
| Displacement 2 | RPM | 160 RPM @ 11 GPM | 115 RPM @ 18 GPM | 90 RPM @ 25 GPM | 85 RPM @ 43 GPM | 85 RPM @ 50 GPM | 75 RPM @ 82 GPM | 70 RPM @ 110 GPM | 60 RPM @ 135 GPM | 45 RPM @ 235 GPM |
| | L/MIN | 160 RPM @ 40 L/MIN | 15 RPM @ 60 L/MIN | 90 RPM @ 95 L/MIN | 85 RPM @ 163 L/MIN | 85 RPM @ 189 L/MIN | 75 RPM @ 310 L/MIN | 70 RPM @ 416 L/MIN | 60 RPM @ 510 L/MIN | 45 RPM @ 888 L/MIN |
| Oil Flow Range | GPM (L/min) | 5 - 12 (20 - 45) | 8 - 20 (30 - 75) | 12 - 26 (45 - 100) | 30 - 45 (110 - 170) | 34 - 65 (125 - 245) | 50 - 85 (190 - 320) | 65 - 130 (245 - 495) | 95 - 160 (360 - 610) | 175 - 260 (660 - 985) |
| Max Pressure | PSI (bar) | 5,800 (400) | 5,800 (400) | 5,800 (400) | 5,800 (400) | 5,800 (400) | 5,800 (400) | 5,800 (400) | 5,800 (400) | 5,800 (400) |
| Max Torque Output | ft lbs (Nm) | 1,196 (1,620) | 2,625 (3,560) | 4,370 (5,925) | 8,740 (11,850) | 11,200 (15,185) | 19,690 (26,700) | 28,120 (38,125) | 39,310 (53,300) | 99,600 (135,040) |
| Max Cutting Force | lbs (N) | 3,315 (14,750) | 5,717 (25,440) | 7,028 (31,275) | 9,545 (42,475) | 11,683 (51,990) | 18,933 (84,250) | 24,068 (107,105) | 28,686 (127,655) | 62,112 (276,400) |
| Weight | lbs (Kg) | 230 (105) | 495 (225) | 1,010 (460) | 2,045 (930) | 2,290 (1,040) | 4,020 (1,825) | 4,900 (2,220) | 7,400 (3,355) | 14,350 (6,510) |
| Maximum Input Power | HP (kW) | 24 (20) | 45 (35) | 60 (45) | 90 (65) | 120 (90) | 160 (120) | 215 (160) | 270 (200) | 540 (405) |
| Carrier Weight (Recommended) | tons | 1 - 3 | 2 - 8 | 5 - 15 | 12 - 20 | 15 - 28 | 25 - 45 | 40 - 70 | 50 - 80 | 85 - 180 |
| Engine Power of Carrier (Recommended) | HP (kW) | 13 - 45 (10 - 35) | 15 - 60 (10 - 45) | 25 - 90 (20 - 65) | 80 - 120 (60 - 90) | 90 - 160 (65 - 120) | 150 - 240 (110 - 180) | 200 - 300 (150 - 225) | 260 - 360 (195 - 270) | 470 - 805 (350 - 600) |

ADDITIONAL ATTACHMENTS OFFERED

HYDRAULIC ROTATION UNITS

Antraquip offers a full range of hydraulic rotation units that enable the attachments to be hydraulically rotated 360 degrees to cut tunnel profiles, difficult to reach areas, and increase precise cutting capabilities on the most challenging jobsites



SOIL MIXERS FOR REMEDIATION

Variety of soil mixing and remediation head options are now available depending on project conditions and requirements.

Antraquip soil mixing attachments can be supplied with customized extensions to help protect hydraulic hoses and incorporate hard lines for required additives needed for remediation and/or soil stabilization.

PATCH PLANERS

These machines are dedicated to work on asphalt and concrete surfaces for maintenance and resurfacing of roadways, concrete floors and walls.

Antraquip patch planers are available to be mounted on excavators backhoe loaders in the 5-25t weight classes.



DIAMOND & CARBIDE SAW ATTACHMENTS

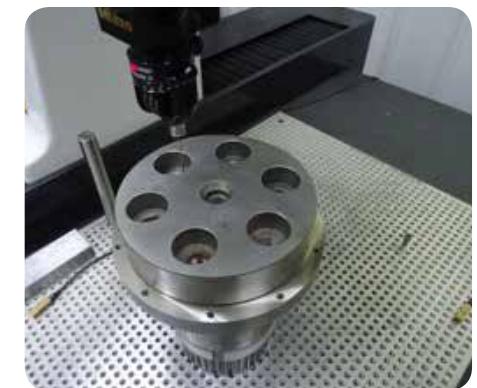
Antraquip offers carbide and diamond saw attachments for excavators of all sizes for various applications. Carbide saws offer a rock/concrete cutting solution for soft to medium hard rock with a minimum width of roughly 4 inches (100mm) while the Diamond Saw offers a solution for cutting hard rock that other methods of mechanized excavation can simply not handle. The AQD series can cut the hardest of rock including granite, basalt etc. as well as reinforced concrete. Certain steel cutting can also be performed with these saws.

Models are available for excavators in any weight class, with blade sizes ranging from 600mm (2 feet) up to 3,000mm (~10 feet).



SPARE PARTS & SERVICES

Whether it is a billion dollar tunnel project or a small local sewer project, Antraquip is committed to having spare parts in stock at one of their locations (or their dealer's location) closest to you to ensure minimal downtime of any Antraquip attachments. Items such as cutter bits (picks) and most other items can be offered and shipped the same day as ordered.



Spare Parts



Cutter Bits



Cutter Head Services

APPLICATIONS FOR SAWS

- Bridge Demolition
- Trenching
- Mass Rock Excavation
- Asphalt Cutting & Roadwork
- Dimensional Stone Quarrying



ADDITIONAL PRODUCTS AVAILABLE:
ROADHEADERS & SHAFT SINKING MACHINES
LATTICE GIRDERS
ARCH CANOPY SYSTEM

LEASE EQUIPMENT

Antraquip's complete line of products are also available for lease, worldwide.

FINANCING AVAILABILITY

Antraquip offers assistance to find the right financing solution to meet your needs.



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