THE ADI ADVANTAGE

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There are many advantages to owning ADI Hydraulic Pruning Tools. The ADI line of tools was designed to remedy the known problems of other hydraulic tools on the market in order to give you rugged, long-lasting, high performance tools that can be considered “the best” of their kind. Their simple and unique design is a culmination of 30 years of experience in the design, operation and service of hydraulically operated tools.

ADI Hydraulic Pruning Tools are manufactured by Machinery & Engineering, Ltd. (MEL). MEL is located in Pardess Hanna, Israel. For 20 years, MEL was the sole distributor in Israel for the Limb Lopper line of hydraulic tools. They also distributed Stanley tools for 10 years. During this time, MEL gained specific knowledge about the advantages, disadvantages, and costs associated with the hydraulic tools being offered at the time. These insights led to the development of the ADI line of products.

During the creation and conception of the ADI tools special attention was paid to the following areas:

- Safety
- Cost of Ownership
- Product and Parts Pricing
- Ease of Service
- Product Support

We feel confident that in these areas the ADI Hydraulic Pruning Tools surpass all other hydraulic tools on the market.

Also, ADI offers a complete line of pruning tools including:

- Pole Chainsaws & Circular Saws
- Pole Loppers
- Pistol Grip Chainsaws
- Mini-Loppers

These tools are offered in various lengths (both conductive and non-conductive), with different head styles and options, multiple cutting capacities, and two different handle configurations to choose from.

Also, ADI offers peripheral equipment to maximize the capabilities of the tools. For example, the ADI Swivel was created to offer the most ease and mobility to operators by allowing the hydraulic hoses to swivel 360 degrees without binding or losing flow. The swivel is an indespensible and remarkably innovative solution to one of the most common problems with the use of hydraulic tools.

In keeping with their ambitions to create the best, specialized pruning equipment, MEL also has lines of unique pruning, topping and hedging machines and Afron all-terrain aerial lifts.

In the following pages you will learn more technical information about the ADI tools as well as gain a better understanding of their design and their capabilities.
WHY ADI?

A great deal of time and effort went into making ADI Tools the safest available.

The ADI tools meet all the safety requirements of OSHA (United States), T.U.V. Codes (German Institute) and Europe’s C.E. Codes. ADI tools also have other features, not required by these institutions, that further enhance the safety of the tools. The following is a breakdown of these and additional safety features:

**OSHA CERTIFIED NON-CONDUCTIVE LENGTHS**

The two longest loppers, chain saws and circular saws are die-electrically certified for live line work according to the ANSI code A92.2-1969 as referenced by OSHA Code 1910.67. (Models APT185, APT215, ACS70, ACS80, ADS70, and ADS80)

**ADI SPOOL SYSTEM**

It is common for our competitor’s tools to become hot enough to force the tool operator to wear gloves to keep from being harmed by the heat. The ADI hydraulic tools utilize a patented spool system which eliminates heat generation within the tool. This prevents the tool from becoming too hot for the operator. (More advantages and diagrams of the spool system will be covered later in this booklet).

**MANUAL TRIGGER LOCK**

The ADI hydraulic tools utilize a manually engaged trigger lock located on the side of the tool’s handle. Our competitors use a lock mechanism that is part of the trigger itself. Because this type of lock mechanism impedes the operation of the tool, they are often broken off, leaving the tool with no workable safety device. The lock mechanism on the ADI tools was designed to be on the side of the handle to avoid interfering with the easy usage of the tool. It is less likely to be damaged and more likely to be used.

**ADI TRIGGER**

The ADI tools utilize a trigger similar in style to the trigger of a gun. This style of trigger system ensures that the operator can maintain a firm grip on the tool, even when he is not in the act of cutting. Other types of trigger mechanisms force the operator to release his grip on the end of the tool when not in the act of cutting. The ADI trigger allows an operator to have more control over the tool.

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ADI TRIGGER CONT.

ADI tools also have the option of a full-hand style trigger. Although this system looks similar to those of our competitors, it still does not require that the operator release his grip on the tool, only to loosen his grip. Again, this increases the control an operator has over the tool.

HYDRAULIC HOSE CONNECTIONS

On ADI tools, the working hydraulic hoses are connected inside the handle of the tool. This ensures that the operator is protected against a high-pressure leak at the hose connection. This also allows for better flexibility at the end of the tool.

TOOL WEIGHT

The ADI tools are some of the lightest on the market. The number one complaint of hydraulic tool users is weight. Your employees will surely appreciate a lighter tool that doesn’t compromise performance.

EASE OF SERVICING

Servicing is a point often overlooked in regards to safety. A tool must be periodically cleaned to maintain its non-conductive properties. The ADI tools are sealed to keep dirt and moisture out of the tool, but inevitably they will find a way in. This is most common with loppers because of the internal rod used inside the tool. If a tool is not easy to service and clean it is less likely to be done and therefore it's operation becomes more risky. ADI loppers can be disassembled for cleaning by removing only 2 Allen head screws and the cylinder nut. It takes only minutes to ready and clean an ADI tool, making it easy to keep tools safe for use.

Hydraulic chain saws do not have any moving parts internally and as a result tend to stay cleaner longer. However, a small hole must be drilled into the fiberglass extention tube for hydraulic oil to escape in case of a leak. Due to this hole, dirt and moisture can get into the tool. This is why it is still important to clean the saws periodically. The removal of 8 Allen head bolts is all that is needed to prepare a tool for disassembly and cleaning.

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COST OF OWNERSHIP

WHY ADI?

The combined advantages of ADI Hydraulic Pruning Tools make them the most rugged and reliable tools on the market. But what does that really mean? Well, it means less downtime, fewer purchased parts, and ease of servicing so that simple repairs and cleaning can be performed on site. All this equals productivity and low cost of ownership.

ADI provides a line of tools that are intended for intense daily use. Therefore, most of our customers use their tool every day for a year or more before needing any repairs. Also, the most common problem experienced after one year of daily use is a minor oil leak that can be fixed with a $1.50 O-ring.

We are confident that ADI tools will cost less to own and operate more effectively and efficiently than any other hydraulic tool. The following is a breakdown of the ways that ADI tools save you money and increase actual working hours:

ADI SPOOL SYSTEM

As previously explained, the ADI spool system is the key to the tool's ability to run cool. This system also provides other advantages that help reduce the overall cost of owning the tool.

The ADI spool system utilizes a pressure-balanced spool (see drawing). This means that there is equal pressure on both sides of the spool at all times. The balancing pressure is the return pressure (low pressure) side of the tool. Therefore, the seals used in the spool system are only exposed to low pressure extending the life of the tool.

As you can see from the drawing (left), the spool system is incredibly simple and contains only TWO moving parts. Fewer parts means fewer, more simple repairs, which translates into less downtime for servicing. Also, all the ADI tools use the same spool parts so that fewer parts need to be kept on hand.

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WHY ADI?

The ADI Spool System provides a fast and easy way to convert any ADI tool from open center to closed center (see below). This is accomplished by simply installing a plug in the return port in the handle of the tool. The plug is stored on the tool itself, so it will be ready whenever needed. All the ADI tools come standard with the conversion port. There is no extra charge for the plug, nor does it increase the weight of the tools.

Simply install the plug to convert the tool from open center to closed center.

Pressure Port

Return Port

In order to better understand how the spool system works in operation we will take a look at the system in both the ADI loppers and the ADI chain saws.

ADI LOPPER SPOOL SYSTEM

Any lopper has 2 modes; the neutral mode (with the trigger released and the lopper open) and the power mode (with the trigger pulled and the lopper cutting). On the ADI tools we have developed a simplified system to open the tool when in neutral mode. This system utilizes the back pressure of the hydraulic system. The principle is that in the neutral mode the hydraulic cylinder within the tool works as a displacement cylinder and causes the tool to open. In the power mode, the cylinder works as a double acting cylinder, pulling the tool closed and performing the work. As soon as the trigger is released, the cylinder automatically works as a displacement cylinder, again opening the tool. No additional parts are needed within the lopper cylinder.

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In the drawing below, the lopper is in neutral mode, with the trigger released and working as a displacement cylinder. As the pressurized oil enters the tool it is able to flow freely through the spool system, into both sides of the hydraulic cylinder, providing equal pressure on both sides of the cylinder piston. Because there is greater area on the handle side of the piston, greater force is created making the tool open. The drawing clearly shows that the oil flows without restriction. This makes sure that heat is not generated within the tool.

**OPEN CENTER HYDRAULIC SYSTEM -- TOOL IN NEUTRAL MODE**

In the next drawing (below), the lopper is in power mode, with the trigger pulled and the cylinder working as a double acting cylinder. As the trigger is pulled and the spool is shifted upward, it directs the pressurized oil into the rod side of the piston. This forces the piston downward, closing the lopper to make a cut.

Once the trigger is released, the cylinder automatically becomes a displacement cylinder, again forcing the tool to open. As always, the flow of oil is never restricted, so that heat won’t be created.

**OPEN CENTER SYSEM -- TOOL IN CLOSED POSITION**

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COST OF OWNERSHIP

Next, let’s view a lopper in the neutral mode, with the closed center plug installed. The tool still works exactly the same. The pressurized oil is stopped at the closed center plug, but it is still free to flow to both sides of the piston in the cylinder.

The cylinder is still working as a displacement cylinder so the tool will open. The difference is that high pressure (2000 psi) is being used inside the cylinder instead of low pressure. Still, the spool seals are only exposed to low pressure, reducing wear.

ADI CHAIN SAW SPOOL SYSTEM

The spool system of the ADI chain saws uses the same spool, spool pin, trigger guard, and handle as the loppers. The only difference is the spool housing. We must use a different spool housing because on a chain saw we are using a hydraulic motor to provide the force as opposed to the cylinder used on a lopper.

In the following drawing the saw spool system is in neutral mode with the trigger released. The pressurized oil flows through the spool system and is free to flow to both sides of the hydraulic motor and back out of the spool system, again. Because both sides of the motor are exposed to the same pressure, there is no existing pressure drop and as a result the motor won’t turn. Again, no high pressure is ever created and oil flows freely through the tool. Also, the seals are not exposed to high pressure. All of these details help keep the ADI tools running smoothly and protect the parts from wear.

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Now, the saw is in power mode with the trigger pulled. As the spool shifts upward, it directs the pressurized oil to the “IN” side of the motor, causing the motor to turn. The oil then exits the “OUT” port of the motor, returns through the spool system and then out of the tool.

Finally, this time the saw is in neutral mode with the trigger released and the closed center plug installed. The pressurized oil is stopped at the closed center plug and trapped within the spool. Notice on the drawing how the motor “IN” and “OUT” ports are open to the return port of the tool. There is still equal pressure on both sides of the motor. So, despite the high pressure trapped in the tool, the motor does not turn and the seals are not exposed to high pressure.
WHY ADI?

In addition to the spool system, there are many features of the ADI tools that make them long-lasting and a value to own. The following are advantages that are specific to the ADI loppers.

STEEL CYLINDER

ADI loppers use a steel cylinder instead of an aluminum cylinder like our competitors use. In addition, the cylinder and cylinder rod are also chrome plated and polished. This provides a very hard, smooth surface that extends the service life of the cylinder seals. The cylinder on an ADI lopper will greatly outlast the aluminum cylinders of other hydraulic tools. Despite the additional weight of the steel cylinder, the ADI loppers are still the lightest on the market.

TWISTING CUTTING HEAD

ADI loppers come standard with a built in swivel between the handle and the cutting head. This makes penetrating a tree canopy much easier. If the cutting head must be turned, the operator is not forced to turn the handle of the tool and thereby fighting the working hoses. With an ADI tool, the operator can simply use the built in swivel to twist the cutting head. Studies have shown that most of the injuries caused from using hydraulic pruning tools occur when the operator uses the tool to flip brush out of the tree. The built in swivel on ADI loppers eliminates the operator’s ability to flip brush, lessening the chance of injury.

We understand that there are those hydraulic pruning tool operators that have developed the ability to use the lopper to flip brush safely. We also understand that sometimes crew efficiency is dependent on this ability. With this in mind, ADI loppers can be ordered with the swivel locked in place. Also, the ability of an existing lopper to twist can be stopped by simply adding a locking washer.

STEEL BUSHINGS

Hardened, steel bushings are used at both ends of the linkage rod pivot points. These special bushings help to spread the load on the pivot points when cutting, ensuring long service life and minimal wear.

CHROME PLATED CENTER BOLT

ADI loppers have a large diameter, chrome plated, center bolt that secures the blade to the anvil. Chrome plating allows the center bolt to maintain a hard, smooth finish that increases the longevity of the tool.

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ADI chain saws are as reliable and rugged as the loppers. The following is a breakdown of the advantages that are specific to ADI saws.

**SYNFLEX HOSE**

ADI chain saws utilize flexible Synflex hose inside the tool as opposed to the fiberglass oil transfer tubes found in our competitor’s tools. The Synflex hose is also held firmly in place at both ends. Therefore, the seals are not floating up and down as the tool is working, causing unnecessary wear. The result is a long seal life. Also, because Synflex hose is used inside the ADI saws, a break in the fiberglass shaft will not cause internal damage or oil leaks.

**UNIQUE SHAPE**

The outer fiberglass extension tube of the saws is oval in shape. The oval provides superior strength compared to other tools. The shape also provides the operator with a firm grip on the saw, especially when twisting the tool to penetrate a tree canopy.

**VERSITILITY**

ADI chain saws can easily be converted to ADI circular saws and vice versa. All it takes to change a head kit is to unscrew 4 Allen head bolts, remove the chain saw head and bolt the circular saw head in its place. Some companies keep an alternate head kit in stock so that a tool can conveniently be converted.

**CUTTING HEAD PARTS**

The cutting heads of the ADI chain saws are made of individual parts, instead of one casting. This allows individual parts to be replaced if they become damaged, instead of buying a whole new cutting head. This reduces the cost of repairs to the most used part of the tool - the cutting head.

Also, the saws use standard Oregon bars and chains that can be purchased through any authorized Oregon dealer. Bars and chains are standard wear items and we work very hard to keep our prices on such items extremely competitive.
ADI CHAINSAWS USE STANDARD OREGON BARS FOR CONVENIENT AND ECONOMICAL REPLACEMENT

ADI CHAINSAWS AND CIRCULAR SAWS OFFER THE HIGHEST SPEED AT A GIVEN FLOW RATE MAKING THEM THE FASTEST TOOLS ON THE MARKET

SYNFLEX HOSE USED INSIDE THE FIBERGLASS EXTENSION TUBE

EXTENSION TUBE IS OVAL IN SHAPE TO PROVIDE STRENGTH AND GRIP

FINGER TRIGGER

MANUAL TRIGGER STOP

PATENTED SPOOL SYSTEM

HOSE FITTINGS INSIDE THE HANDLE

CHAIN SAW HEAD ASSEMBLY MADE OF INDIVIDUAL PARTS

ADI CHAINSAWS CAN EASILY BE CONVERTED TO A CIRCULAR SAW

ADI CHAIN SAWS ARE MADE OF INDIVIDUAL PARTS

ADI CHAINSAWS AND CIRCULAR SAWS OFFER THE HIGHEST SPEED AT A GIVEN FLOW RATE MAKING THEM THE FASTEST TOOLS ON THE MARKET

PATENTED SPOOL SYSTEM

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We understand very well that these days, every penny counts. We also understand that most companies are facing intense competition within their markets and that profit margins are often lacking. With this in mind, we have made every attempt to keep our prices fair and our tools a good value for the long haul. On average, ADI tools and parts cost 20% less than our competitors.

In addition to low prices, we have “Value Added Services”. Whenever possible, we try to offer replacement parts that are standard items, likely to be available anywhere in the U.S. For example, on the ADI chain saws we use standard Oregon bars and chains. These can be purchased through any authorized Oregon dealer in the U.S. When it comes to parts that are actually wearing every time the tool is used, we want you to be easily and economically able to obtain the part you need. We feel that we would be taking advantage of our customers if we forced them to purchase a special, expensive bar or chain directly from us. Of course, we invite you to check our prices, we are usually less expensive than your local Oregon dealer.

When you combine our low prices and cost of ownership with the added benefits and savings through our “Value Added Services”, we are confident you will see that the ADI line of hydraulic pruning tools are hard to beat. But don’t take our word for it...try an ADI tool and discover the true ADI advantage for yourself.
As mentioned in the previous section on safety, it is important that a tool be easy to clean and service or it will rarely get done. However, proper and regular cleaning and servicing is necessary to keep a tool safe and functioning at its peak.

In general, the ADI tools require very little service and will normally only need to be taken apart for cleaning. The required daily service routine takes only minutes to perform and will greatly extend the life of the tool.

**DAILY SERVICE - LOPPERS**

Daily service for ADI loppers consists of lubricating the tool and doing a visual inspection for obvious problems. After every 50 hours of operation, the cutting blade should be removed, cleaned and sharpened. If this basic service is done, along with periodic cleaning, an ADI lopper will last for years. Specific instructions on maintaining the ADI loppers are included in the Operations and Service Manual.

**DAILY SERVICE - CHAIN SAWs**

Daily service for ADI chain saws consists of adjusting the chain and doing a visual inspection for obvious problems. The operator should also confirm that the chain oiler set screw is properly adjusted. Chains should be sharpened as needed and the bar and chain should be replaced as needed. ADI saws should also run efficiently for years if basic servicing and periodic cleaning is performed. Specific instructions on maintaining the ADI chain saws are included in the Operations and Service Manual.

In general, ADI hydraulic pruning tools are built to perform over time with minimal maintenance. The maintenance that is recommended is easy to perform and takes little time. Also, when it is necessary to take the tool apart, it is obvious that every effort was made to make the tool fast and easy to disassemble.

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Although the ADI hydraulic system is very simple and straightforward, it is not expected that every tool operator will understand the basic principles of hydraulics. Therefore, a lot of time and effort has been put into supporting the ADI tools from both a technical and safety perspective.

Every ADI tool that is shipped out includes a complete Operations and Maintenance Manual and a Parts Manual. The Operations and Maintenance Manual explains in detail the tool specifications, hydraulic principles, and the recommended maintenance schedule. It also explains how to perform the maintenance on the tool and safety instructions for usage. The Parts Manual provides a complete exploded view of the tool including all the available options for that tool, a list of part numbers and their descriptions, and other pertinent maintenance instructions.

If the tool operator takes the time to read the Operations and Maintenance Manual and review the Parts Manual they should be able to gain a good understanding of how the tools work and the proper way to maintain them.

Even the best tools can experience problems. We understand this, but we also understand that downtime for repairs costs you money. Therefore, preventative maintenance is very important in order to get the longest life and best performance out of the tool. This is why we go out of our way to give adequate information to anyone who purchases an ADI tool.
There is simply nothing else on the market like the lightweight, compact ADI swivel. The unique design of this inline, 2 hose hydraulic swivel allows hydraulic tools to be twisted 360 degrees without tangling the attached hoses. The swivel is also pressure balanced so it will continue to swivel freely even at full working pressure.

The secret of the swivel is balance. Equal pressure must be maintained on both sides of the swivel to allow it to move freely. This is accomplished by the use of a small drain hole inside the swivel. The drain hole maintains the pressure balance by allowing any oil that escapes from the pressure side of the swivel to drain to the return side of the swivel. This insures that the maximum pressure on the seals ("O" RING 00640085) is never greater than the return pressure of the tool. This balances the swivel allowing it to turn freely even at full working pressure.

The ADI swivel is also very easy to maintain. Because the seals are only exposed to the return pressure, there is little wear. If the seals ever do go out, you simply remove the lock ring (LOCK 00640087), pull the swivel apart and replace the seals.