



White paper:

# Skyjack Safety Initiatives

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## Introduction

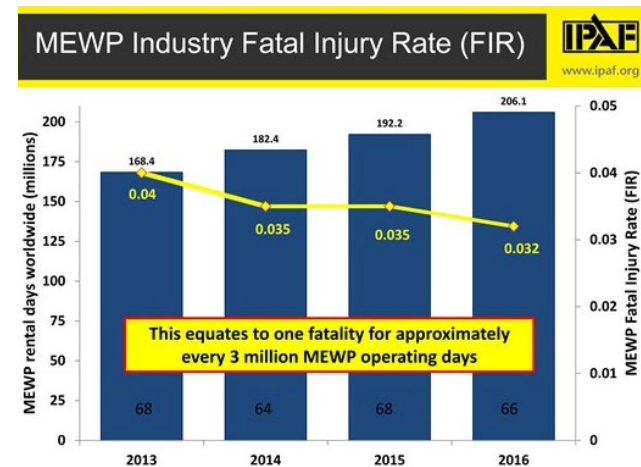
As an industry, construction remains one of the most challenged of groups with regard to safety and accidents at work. Great strides have been made to improve safety performance within construction, yet the need to improve still remains. The Mobile Elevating Work Platform (formerly known as Aerial Work Platform) industry has an important part to play in that journey since access equipment has long been recognised as a positive contributor to work at height. Skyjack has always taken a safety first approach to how we do business. As a leading manufacturer of aerial access equipment with an international reach, we're reaffirming our commitment to safety to help raise awareness for our customers, users, and operators.

This paper will guide you through the initiatives Skyjack has done and will be undertaking. We will also comment on wider responsibilities for the equipment owner and the machine operator, based on U.S., Canadian, and European standards and regulations.

## Industry Outlook: IPAF

Skyjack is an active member of the International Powered Access Federation (IPAF), which encourages its members to raise standards and uphold professionalism within the industry. As a non-profit organisation that represents interests of manufacturers, distributors, users, rental, and training companies, IPAF promotes the safe and effective use of powered access worldwide. It serves as a forum for all parties active in the world of powered access and has played a key role in promoting many of the design, safety, and testing procedures that are now established in the powered access industry. It also has a Code of Conduct, which states that member companies shall only market products and services that conform to specific standards. We at Skyjack strive to meet that Code of Conduct by operating in a transparent manner and upholding a high benchmark of professionalism and safety standards within the Mobile Elevating Work Platform (MEWP) industry.

IPAF also makes significant contribution to operator safety through providing training programs and making a host of materials available concerning best safety practices. As a result of a recent initiative to catalogue injury-related incidents involving MEWPs, IPAF has published a report noting that, within their registered incident database, “The fatal injury rate (FIR) for mobile elevating work platforms (MEWPs) declined in 2016, despite the fact that the total MEWP rental fleet and the number of rental days worldwide increased significantly over the same period.”



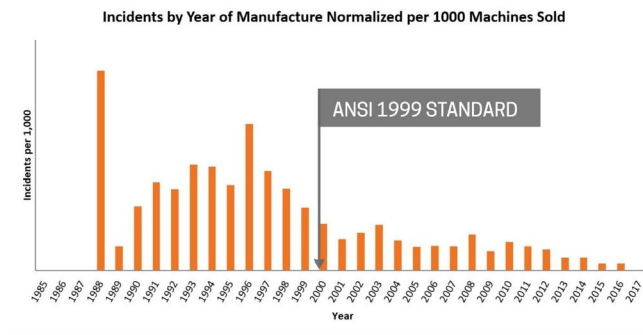
source: [www.ipaf.org/accident](http://www.ipaf.org/accident)

## Downward Trend for Incidents

When looking at personal injury-related incidents involving Skyjack products by year of manufacturer compared to our total sales, we see a trend similar to the one that IPAF identified. Although sales have increased and we have more units out in the field, we've seen a reduction in the rate of incidents since the introduction of the ANSI 1999 standard.

Skyjack recently took an unprecedented step at the October 2017 IPAF North American Conference in Miami of publically presenting trends on incidents involving our own products. Skyjack President Brad Boehler presented incident trends demonstrating that, although we had more machines in use in 2016 than 2008, we were notified of fewer personal-injury incidents. While one incident is one too many, this data, similar to IPAF's industry-wide trends suggests that Skyjack's commitment to safety is achieving results.

Skyjack's trends, as depicted in the graph below, shows the total incident rate by year of product manufacturing date. As the graph shows, there was a steep decline in the incident rate of products manufactured after the ANSI 1999 standards came into effect, illustrating the significant impact that consensus standards can have on operator safety. Moreover, what cannot be measured in the data is that



compared to other methods of working at height, MEWPs have been recognized as one of the safest and they are used on construction sites worldwide.

In order for the industry to help build on Skyjack's initiative, Skyjack also voiced a call to action at the October 2017 IPAF North American Conference. We encouraged other OEMs to share data they've collected in a similar manner. Leading manufacturers should track incidents and work together with safety associations to create a safer work environment for workers.

## Safety Standards

As an OEM who distributes our products internationally, we use global standards as a baseline, but manufacture each machine based on the region it's being delivered to. Safety standards and regional expectations may vary from one area to the next. From a design standpoint, we develop machines compliant with ANSI (US), CSA (Canada), Machinery Directive (CE-marked machines for EU), AS (Australia/New Zealand), and KC (Korea) depending on the area we're manufacturing for.

### Safe Use of Mobile Elevating Work Platforms (MEWPs)

Everyone has a role in promoting safety. Safe use of the equipment involves a combination of training and familiarization for the operators, regular maintenance and inspections on the equipment, and proper planning of the work to be performed. This includes proper machine selection and conducting a risk assessment.

Operators and users have a very important role to play in safety. An operator or user must know how to properly and safely use equipment. Standards, manufacturer design, and owner actions will be of no avail if the operator knowingly misuses a machine and puts him or herself and others at risk. Despite numerous actions on behalf of manufacturers, owners, and campaigns by enlightened industry publications (e.g. [Vertikal.net's Death Wish Series](#)), operator error and misuse can remain a cause for concern.

### Responsible Ownership

If a machine owner modifies a machine without checking with the OEM, they may be in danger of compromising a measure the OEM has taken to ensure compliance with safety guidelines and regulations. In such cases, it is the machine owner who will bear the responsibility, even when the owner relies on a third party to supply parts or assemblies for use on the machine. To ensure the continued safe operation of the MEWP, only manufacturer-approved parts should be installed. No modifications to the MEWP should be made without consent of the manufacturer.

Importantly, simply because a third party performs a service or inspection, an owner is not relieved of its safety responsibilities. When using a third party for service or inspection, owners must ensure that those services are being performed according to manufacturer's instructions and any relevant regulatory requirements, and that any work performed is documented.

## Operator Training

Operators must be trained and authorized to use the MEWP they're operating. Training requirements can vary depending on the region, but generally consist of the following topics:

- Knowledge of safe use requirements;
- Understanding the risk assessment process;
- Appropriate MEWP selection;
- MEWP labels and use and storage of the manufacturer's operating manual(s);
- Applicable regulations and standards;
- Inspection and maintenance requirements;
- Factors affecting stability in all operation configurations of the MEWP;
- Hazard identification and their avoidance;
- General knowledge of the MEWP controls and features;
- How to address problems or malfunctions affecting the operation of the MEWP;
- Use of personal protective equipment;
- Safe travelling procedures and route inspection;
- Loading and unloading procedures for transport (if appropriate);
- Securing the MEWP from unauthorized use;
- Rescue preparedness, including how to obtain assistance from a person on the ground;
- Obtaining familiarization, including any accessories, prior to operation of a MEWP;
- Operation of a MEWP, under the direction of a qualified person, for a sufficient period of time to demonstrate proficiency;
- Providing instruction to occupants.



## Occupant Training

A new element of training within the ANSI A92.22 safe use standard is to ensure that occupants are trained. They must have a “basic level of knowledge to work safely on the MEWP”. This would include:

- Any requirements for the use of fall protection;
- Factors affecting stability;
- Safe use of MEWP accessories;
- Site-specific work procedures related to the operation of the MEWP;
- Hazards and their avoidance, including applicable site risk assessment(s);
- General knowledge of the intended purpose and function of the MEWP controls, features, and devices, including emergency shutdown and lowering procedures, to the extent required to lower the MEWP safely to the ground or to the stowed position;
- The manufacturer's specific warnings and instructions related to the work activity undertaken;
- The location of the operation manual(s).

## Familiarization

Familiarization is another essential part of the safe use process to ensure the operator is aware of particular characteristics of the machine they are about to use. Familiarization of operators needs to occur prior to a user authorizing an operator to use a specific model of MEWP.

As defined by ANSI A92.22, familiarization is “providing the necessary information regarding the features, functions, devices, limitations, and operating characteristics as defined by the manufacturer in the operator's manual, in order to properly utilize a specific model of MEWP, to include the location of the manufacturer's operation manuals”. Familiarization includes:

- Storage location for the manual(s);
- Confirmation that the required manual(s) specified by the manufacturer are with the MEWP;
- Purpose and function of controls specific to the model of MEWP to be used;
- Features, limitations, and devices;
- Operating characteristics specific to the model of MEWP.



## Risk Assessment

To ensure that any unique hazards in the work area, or other potential risks associated with the work method are identified, a risk assessment must be performed.

As per the [Statement of Best Practices for Workplace Risk Assessment and Aerial Work Platform Equipment Selection](#) “the identification of potential workplace hazards must occur prior to the start of any work. Doing so provides the opportunity to eliminate or control the risks associated with the identified hazards. It also allows management to correct any uncontrolled hazards and avoid the risk of harm to workers and property damage”.



## Maintenance and Inspection

Maintenance and inspection of the MEWP is also an essential part of its safe use. The MEWP must be inspected and maintained according to the manufacturer's requirements prior to each delivery/rental. Records must be kept regarding frequent and annual inspections performed, including any deficiencies found, corrective action taken, and identifying the person completing the inspection or repairs.

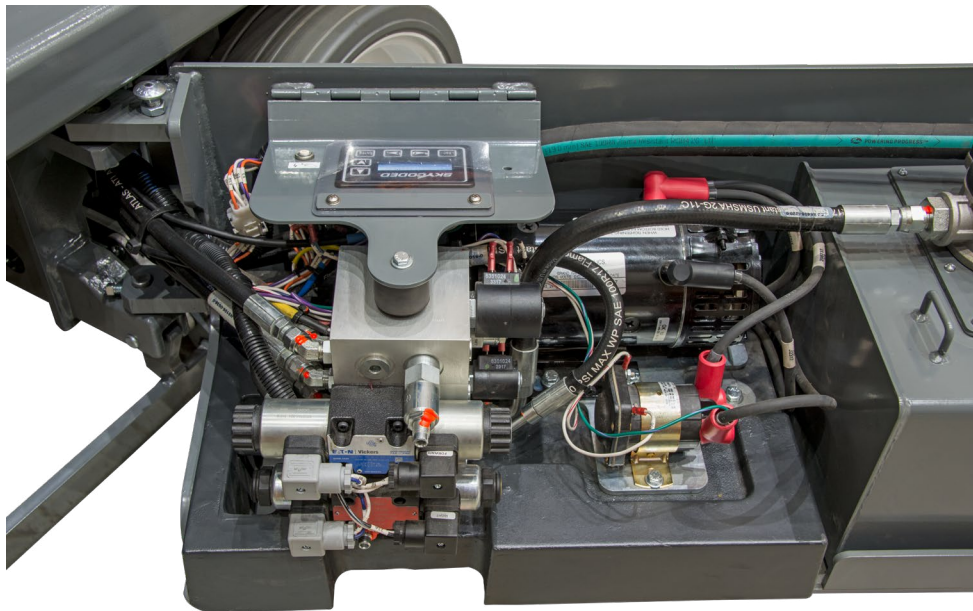
They must also keep records of the pre-delivery preparation performed. Additionally, prior to use, the operator must perform the manufacturer-specified daily inspection checks.

# Beyond Design and Manufacture

Staying true to the Skyjack way of keeping safety top-of-mind, products are designed to be easy to service and maintain, and use common components across our product lineup. By making the task of servicing our machines as easy as possible utilizing off the shelf service parts, we're reducing barriers to regular maintenance, which in turn promotes safe and reliable use.

As an industry leader, Skyjack wants to maintain an open line of communication with customers and the industry as a whole. Skyjack also publishes tools that help operators, owners, and users meet their responsibilities to create a safe work environment. We provide a host of services and information to accomplish this goal. We offer training in a variety of formats (both online, and in-class) to assist with machine servicing skills development, operator training, supervisor training, familiarization (both in the operating manuals, as well as recently-developed animations) and pre-use inspections (guidance and checklists in operating manuals).

Operating, parts, and services manuals are all available downloads on the Skyjack website, along with links to documents on best practice guidance, and other sites with useful information. In spite of our best efforts, there are occasions when we, as the manufacturer, must advise a modification to a piece of equipment after delivery. Skyjack Service Bulletins are used to communicate these required modifications to machinery that is already in the field with our customers. We also publish Service Advisories, which advise, clarify, and expand upon processes and procedures associated with daily, frequent, and annual inspections, or other required maintenance. Skyjack Tech Tips provide informative, detailed overviews on various topics related to equipment operation, scheduled or recommended maintenance, troubleshooting, and a host of valuable technical information.



## Service Bulletins

It is important that Service Bulletins are read thoroughly and understood prior to attempting the required modification, inspection, or repair.

Skyjack distributes Service Bulletins to the registered and last known owners of the equipment affected. It is crucial that owners register their machines with us so this distribution of Service Bulletins can occur. We ask that companies who sell or transfer any Skyjack equipment promptly inform us of the new owner's contact information, so that we may forward the service bulletins to all affected owners. Service Bulletins are also available for download on the Skyjack website.

These Service Bulletins also provide our customers with step-by-step instructions on how to complete the required action items. Our Service Bulletins are divided into two categories: safety related, and non-safety related.

## Safety Related Service Bulletins

To ensure the ongoing safe use of the equipment, instructions in a safety related Service Bulletin are mandatory and must be followed as outlined. Any safety related bulletin will clearly identify itself as "SAFETY RELATED" on the first page of the bulletin.

We will provide a list of serial numbers affected by the bulletin, as well as a timeline that any adjustments or installations must be completed by.

## Non-Safety Related Service Bulletins

Non-safety related Service Bulletins can address anything that could impact owner satisfaction such as longer-term reliability. Our non-safety related bulletins will also identify the serial numbers affected as well as a recommended timeline of completion.

## Service Advisories

Service Advisories act as useful guidance that outlines information pertinent to the reliable operation of Skyjack equipment. All Skyjack Service Advisories are also available for download on the Skyjack website.

## Tech Tips

Tech Tips can include everything from how to test your motor controller, how to properly install your wheel bolts on replacement tires, or how to properly inspect outriggers. You can view our catalogue of Tech Tips on the Skyjack website.

## THE SKYJACK TECH TIP

1. When troubleshooting any of the new Motor Controlled Vertical Mast or Electric Powered Scissor Lifts, make sure you have good, clean & tight ground connections. A bad ground connection anywhere in the circuit can be the root cause of the malfunction. When taking volt readings please use the B- terminal at the motor controller. This is direct from the negative battery terminal.

2. When operating or testing a Skyjack vertical mast, scissorlift, or boomlift, please make sure both the base control panel and platform control panel emergency stop switches are turned on. The units will not operate with one emergency stop in the on position.

3. When checking the auto level system on the Skyjack rough terrain scissor models, use the red LED on the auto level module to tell you the system status. When the LED is off, the outriggers are fully retracted. A solid LED indicates outriggers are extended and the unit is level. The LED will flash when the outriggers are in operation – extending or retracting. If you have a flashing LED and the outriggers are not being operated, the LED is sending an error code. Please consult the chart in correct service manual for the serial number of the unit you are working on.

If you have any questions regarding your Skyjack product, please contact Skyjack Product Support at 1-800-275-9522 or e-mail [service@skyjack.com](mailto:service@skyjack.com).

## TECH TIDBIT

When replacing the batteries on your electric scissorlift or vertical mast model, please remember to use the correct specification replacement battery for that machine. Using a smaller battery for example, would not provide the needed power and amp hours which could damage the electrical components. Most importantly, the battery weight is part of the ballast for the machine and is critical to proper stability when elevated.

**SKYJACK**  
simply reliable

## New ANSI Standards

The American National Standards Institute (ANSI) is moving towards a new access equipment design standard, which will bring North American equipment more into line with standards currently used in the international marketplace. The committee coordinating the development of these standards is represented by consumers, operators, distributors, expert aerial access equipment consultants, government, insurance bodies, equipment manufacturers, professional societies, regulatory agencies, and testing laboratories.

Read our [New North American Access Equipment ANSI Standards](#) white paper for detailed information on what's included in the new standards.

### Changes Headed Our Way

There are inclusions in the new ANSI standards that affect the way operators do business. The following areas will be impacted by the new standards:

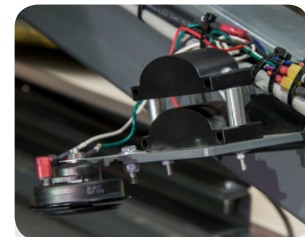
- Naming - ANSI A92.5/A92.6 becomes (ANSI A92.20) for equipment design. An Aerial Work Platform (AWP) becomes a Mobile Elevating Work Platform (MEWP).
- Load sensing – most machines will actively monitor load and NOT operate with normal functionality if overloaded beyond rated capacity.
- New wind force requirements – Increased weight and reduced capacities in outdoor/wind conditions.
- New stability testing requirements – expect to see foam filled only (no air filled tires) on the vast majority of RT scissors and RT booms under the new standard (Booms and Rough Terrain Scissors). Flotation tires not feasible.
- Entrance gate with toe boards replaces chain entrance on electric scissors and vertical masts. Toe boards at entrances on booms.
- Railing Heights – Compact DC scissors now mostly equipped with folding instead of fixed rails



**CONTROL BOX**  
Newly designed upper control box with integrated shroud and service friendly components.



**SCISSOR STACK**  
Standard welded cross bracing for increase rigidity and operator comfort.



**LOAD SENSING SYSTEM**  
SkyCoded™ integrated load sensing system. Color coded numbered wiring still applies.



**SKYCODED™ DIAGNOSTIC DISPLAY**  
Provides plain English diagnostic prompts for simple machine troubleshooting. Also removes requirement for separate handheld calibration units to interface with the machine.



## SKYJACK: DC SCISSOR LIFTS



**E-LOWERING**  
Single location emergency lowering toggle switch integrated in hydraulic swing out tray. No more access rod required.



**POTHOLE PROTECTION**  
Directly mounted to the chassis with a simplified mechanical design. Ground clearance has been improved by up to 45%.

# Safety in the Digital Age

## Online Content

Skyjack is taking the opportunity to further enhance our safety initiatives by addressing safety issues that we see online.

Using online media monitoring tactics, we're finding posts that clearly show misuse involving Skyjack products and addressing those posts in a timely fashion. With custom tailored responses per infraction we're able to appropriately address any misuse and provide the original poster with information on safe use of our equipment.

When Skyjack notices an image that showcases misuse, we flag that image as needing a response. Skyjack then responds from our official handle with an advisory appropriate to the infraction.

The example below shows an operator violating a number of safe use guidelines. For instances such as these, we may remind the user that "Safety begins with you. Be trained and ensure that you are using the MEWP according to your operating manual."

We've created a [quick reference page on the Skyjack website](#) to help raise awareness about common safety issues that one might encounter while operating a MEWP. The page itself lists some potential hazards, as well as quick tips explaining what you can do to avoid each one.

Embarking on this campaign allows Skyjack to highlight misuse when observed on social media and Skyjack is eager to encourage other manufacturers to do something similar.

This initiative demonstrates to the user, who we don't usually have face-to-face interactions with, that we are a manufacturer who is actively committed to safety.



## Impact of New Technology

Skyjack recently partnered with Trackunit to bring ELEVATE, a connected fleet solution to our product lineup. Telematics and job site connectivity can help lead our industry to a user base that's more aware of their surroundings and safety related standards.

Remote transmission of data and analysis of machine functions offer the possibility of digital record keeping. Successfully completed preliminary checks, and familiarization access can potentially be tracked and reported on, providing site managers and construction companies with the tools to easily monitor and audit safety records. This could potentially lead to a simplified and paperless safety process.

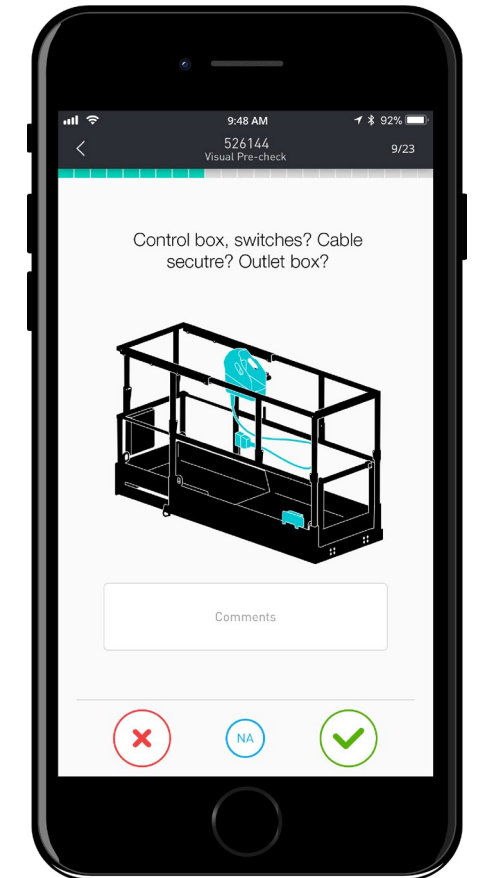
Skyjack's ELEVATE service offers the necessary tools to help increase safety awareness for parties involved in the operation of MEWPs. Mobile apps ELEVATE ON, and ELEVATE GO are specifically designed for the operator to allow more direct feedback and guidance on the proper safety pre-check procedure and compliance for different types of machines. With an operator who has a real-time connection to the machine, companies could benefit from alerts on missed safety pre-check steps, or having familiarization content readily available.

- Telematics designed for the operator allows us to realise the potential for traceable activities such as pre-checks and familiarization;
- Visual familiarization, provided according to the machine you're operating;
- Digital daily check sheets, linked to an operator via a mobile app;
- Operator resume – taking data and highlighting correct use of machines so that best practice is perpetuated and responsible operators are recognised;
- Access control - limit access through PIN code or RFID card to make sure only authorized personnel are operating machinery.

ELEVATE is a tech-based solution that can improve safety conditions and awareness while creating more efficient processes. This leads to safer job sites for all involved in the operation, maintenance, and rental of MEWPs.

## Conclusion

Creating a safety strategy that reaches all stakeholders at every part of the MEWP spectrum was, and remains to be a key goal for Skyjack. We will maintain our historical efforts and we're evolving our platforms with the changing demographics of all parties involved. This evolution includes the introduction of tech-based strategies to help us broadcast our messages on safe use.



## PROFESSIONAL PRODUCTIVITY

WELDER PACKAGES

GLAZIER KIT

LED WORK LIGHTS

FLUORESCENT TUBE CARRIER

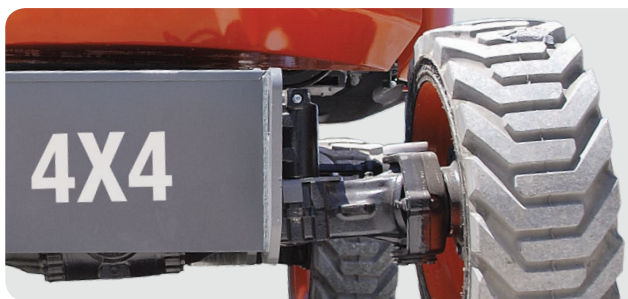
TOOL CADDY

MATERIAL HANDLING STAND

BOARD CARRIER

HEAVY DUTY PIPE RACK

LIGHT DUTY PIPE RACK



## TIRE OPTIONS

NON MARKING AIR AND FOAM FILLED TIRES

GRIP LUG FOAM FILLED TIRES

GRIP LUG AIR FILLED TIRES

# ACCESSORYZERS™

FACTORY APPROVED ACCESSORIES TO ENHANCE PRODUCT VERSATILITY

## DEDICATED APPLICATIONS

COLD WEATHER START KIT

EE RATING

HOSTILE ENVIRONMENT

POSITIVE AIR SHUT OFF VALVE

ARCTIC WEATHER PACKAGE

AIRCRAFT PROTECTION



## PEAK PERFORMANCE

AC INVERTER

HYDRAULIC GENERATOR

AIRLINE TO PLATFORM

AUXILIARY TOP RAIL

SECONDARY GUARDING OPTIONS

HYDRAULIC OIL COOLER

LOCKABLE CONTROL BOX COVER

EXTRA PROPANE TANK AND BRACKET

DIESEL SCRUBBER

BIO OIL

NON-DESTRUCTIVE TESTING

EXTENDED WARRANTIES