



ANDERSON

INNOVATIONS

User Manual

ES 1000

Ride On Floor Scraper

US Patent # 10273700, 10619365

EU Patent # EP3642429



READ BEFORE USING EQUIPMENT

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1 SAFETY

1.1 Manual

This manual guarantees the safe and efficient use of the ES 1000 "machine". This manual is part of the machine and must always be kept near the machine and be accessible for the operating personnel at all times.

The operating personnel have to have carefully read and understood this manual before any work begins. Prerequisite for safe working is compliance with all the safety and handling instructions in this manual.

Furthermore, this machine is to be used in compliance with all local regulations and the general safety requirements set forth by the Occupational Safety and Health Administration.

Illustrations in this manual are for the purpose of explanation and may differ from the actual design of the machine.

When passing the machine on to third parties this manual must be included.

All of the instructions and technical specifications in this manual have been written in compliance with current technical norms and regulations together with our many years of knowledge and experience.

In the following cases the manufacturer does not accept any liability:

- Non-compliance with these instructions
- Improper use
- Operation by untrained personnel
- Unauthorized modifications
- Technical modifications
- Use of unauthorized replacement parts

1.2 Explanations of symbols and instructions

Safety instructions in this manual are marked by symbols. Instructions are introduced by signal words which express the scale of the hazard.

It is essential that these instructions are adhered to and the machine is operated with caution to avoid accidents, injuries and material damage.



WARNING!

Indicates a potentially dangerous situation which if not avoided can lead to death or serious injuries.



CAUTION!

Indicates a potentially dangerous situation which if not avoided can lead to minor or light injuries.



PROHIBITION!

Indicates an immediate dangerous situation which if not avoided can lead to death or serious injuries.



Safe Practices

Emphasizes tips and recommendations as well as information for efficient and failure-free operation.

1 SAFETY

1.3 Intended use

The machine is used for the removal of all sorts of floor-coverings for example PVC, linoleum, carpets, rubber floors as well as tiles, coatings, adhesives and wood flooring.

The machine is NOT to be used to pull things or for non flooring related demolition work.



Any use beyond the intended use or other types of use is considered misuse.

WARNING! Danger due to misuse!

Misuse can lead to dangerous situations.

- Operation outside the specified limit values of the technical data.
- Bypassing or overriding of safety installations.
- Remodeling, refitting or changing the construction or individual parts with the intention to alter the area of application or use of the machine.
- Use of the machine when not in perfect mechanical condition.
- Use of the machine in potentially explosive areas.

1.4 Owner's obligations

Claims of any sort of damages following improper use:

The owner is a person who operates the machine for personal, commercial or economic use or leaves it to a third person for use/application and during its use carries the legal responsibility for the protection of the user, personnel or a third person. The machine is used in the commercial sector. The owner of the machine is therefore obliged to comply with the legal responsibilities for health and safety.

The local regulations of the place of use as well as accident prevention measures of the local trade association must be adhered to.

It applies in particular that the owner:

- is informed about current health and safety regulations.
- determines during a risk assessment additional hazards which occur through specific working conditions on the operating site of the machine.
- implements in a job control statement the necessary compliance requirements for the operation of the machine on the operating site.
- regularly examines during the entire operating time that the operating instructions comply with the current status of regulations.
- that the operating instructions-if necessary- are adjusted to new regulations, standards and conditions of use.
- clearly regulates the responsibilities for the installation, operation, maintenance and cleaning of the machine.
- ensures that all staff working near or with the machine have read and understood the operating instructions. Furthermore the owner will train all personnel as needed to adequately inform them about possible hazards.

Additionally the owner is responsible for:

- safe operating condition of the machine.
- the servicing of the machine in the recommended maintenance intervals.
- the regular inspection of all safety installations ensuring that they are complete and in working order.

1 SAFETY

1.5 Operating personnel

QUALIFICATION

The different tasks described in this manual request various qualifications from the persons dealing with the machine.



WARNING! Danger for persons with insufficient qualifications!

Insufficiently qualified persons can not judge the risks when operating the machine and put themselves and others at risk of serious injuries or death.

- All work must only be performed by qualified personnel.
- Insufficiently qualified persons must be kept away from the operating area.

In this manual the necessary qualifications for the persons and the different tasks are listed:

OPERATOR:

the operator has been instructed by the owner and been given the assigned tasks and has been informed about the possible hazards in case of improper behavior. Tasks which go beyond regular operation tasks can only be executed by the operator if listed in this manual and have been explicitly authorized by the owner.

TRAINED PERSONS

have been instructed by the owner and been given the assigned tasks and have been informed about the possible hazards in case of improper behavior.

QUALIFIED PERSONNEL

Qualified personnel is able to carry out assigned tasks and recognize and avoid independently possible hazards given their specialist training, knowledge and experience as well as their knowledge of relevant norms and regulations.

MANUFACTURER

Certain work can only be carried out by trained personnel of the manufacturer. Other personnel are not authorized to carry out this work. Please contact customer service for required work.

UNAUTHORIZED PERSONS

WARNING! Danger for unauthorized persons in the operating area!

- Unauthorized persons have to be kept away from the operating area.
- If in doubt remove persons from the operating area.
- Interrupt the work as long as unauthorized persons are in the operating area.

INSTRUCTION

The owner of the machine must regularly instruct all personnel. For better documentation an instruction protocol with the following minimum content has to be kept:

- date, content of the instruction
- name of the instructor
- signatures of the instructed and instructor

1 SAFETY

1.6 Personal protective equipment

When operating the machine personal protective equipment must be worn in order to minimize health hazards.

The following protective clothing must be worn by anybody in the operating area.



Protective work clothing.

Wear appropriate work clothing! Work clothing should fit tightly and loose garments should be avoided since they can get caught in the machine.



Protective gloves

Protective gloves to protect your hands when changing blades.



Ear protection + Protective goggles

Ear protection offers you protection from hearing damage through noise. Protective goggles protect your eyes from flying debris.



Safety shoes

Safety shoes protect your feet from bruising and from sharp objects and from slipping on slippery ground.



Respirator mask

Regular and prolonged exposure to dust can lead to chronic and debilitating lung disorders. When working for a long time or on dusty ground a minimum of a NIOSH N95 dust mask has to be worn to protect your respiratory tract from dust and from small particles.

1.7 Signage



WARNING! Danger with illegible signage!

With time labels and signage can become dirty or illegible so that hazards can not be recognized and necessary instructions adhered to. This causes an increased risk of injury.

- Keep all safety, warning and operating instructions always in legible condition.
- Damaged labels or signage must be replaced immediately.

The following symbols and signs can be found in the operating area. They refer to the immediate area where they have been placed.

WARNINGS

sharp blade,

Sharp Object / Wear



Pinch Point



Danger to hands



Electrical Hazard



1.8 Safety installations



WARNING! Danger through defective safety installations!

Defective or disabled safety installations can cause severe injuries and death.

- Before work can start all safety installations have to be inspected to see whether they are functioning properly and have been correctly installed.
- Never disable safety methods or override them.
- Make sure that all safety methods are always accessible.

1 SAFETY

1.9 Occupational safety and special risks

The following paragraph explains residual risks which might be present even if the machine is used correctly.

To reduce the risk for persons and material damages and to avoid dangerous situations the listed safety information in this paragraph and in the remaining manual has to be adhered to.

Improper use



WARNING! Danger through improper use!

Make sure:

- Only use machine when in good operating condition.
Broken parts must be repaired or replaced immediately.
- Modifications to the machine are not permitted and can impair safety.
- Before regular maintenance, cleaning and repairs the power must be switched off and secured against unintentional start-up.
- Never override, remove or switch off safety devices.
- All work on the machine and/or its electrical components must be carried out by trained personnel.
- Repair or maintenance work must only be carried out when the machine is switched off.
The machine must be secured against unintentional start-up.

Axis movements



WARNING! Danger of struck by injury!

Collision of persons with the machine or its tools can lead to severe injury.

Make sure:

- Unauthorized persons in the operating area are strictly prohibited!
- Safety installations and/or functions must not be switched off or overridden.
- Do not hold any body parts between moving components.
- Blades must only be changed when the machine is idle, secure, and disconnected from power.
- Wear personal protective equipment in the operating area.
- Assistants must always keep a safety distance of a minimum radius of 3 feet from the machine.

Removed materials

WARNING! Injuries through removed materials!

The removed floor-covering can fracture causing debris to fly around or be thrown around unexpectedly and cause serious injury or damage to the surrounding area



Make sure:

- Wear face protection or fully closed and tight fitting goggles, protective clothing, protective gloves and safety shoes.
- Seek medical attention immediately if particles have entered your eyes.
- Assistants must always keep a safety distance of a minimum radius of 3 feet from the machine.
- Use protective coverings on delicate surfaces near the work area

1 SAFETY

1.9 Occupational safety and special risks



Sharp edges and sharp corners

CAUTION! Danger of injury from sharp edges and sharp corners!
Sharp edges and sharp corners can scratch and cut into your skin.

Make sure:

- Be careful when working near sharp edges and sharp corners.
- Wear protective gloves when in doubt.



Cutting tools (knives/blades)

CAUTION! Danger of injury through improper use of tools! Scraping blades and associated tooling can cause severe injuries if handled improperly. Always wear protective clothing. Make sure blades are securely mounted when transporting, during maintenance and when in use. When installing blades never push a wrench toward the cutting edge.

- Use tools carefully and as intended.
- Consider the weight of tools in transport.
- Wear protective gloves and safety shoes.



Working environment

CAUTION! Avoid dangerous conditions!

Do not operate machine in rain, extreme humidity, wet areas or in explosive environments (gaseous vapors, dust or flammable materials). Remove materials and debris which can be ignited by sparks.

Keep your working area clean and well lit.
Untidy and dark working areas increase the danger of accidents.

Keep spectators away from the working area.
Children and spectators must keep a safe distance from the working area to keep from distracting the operator and not come in contact with the machine. The operator must always be aware of who is nearby.

Protect other persons in the working area.
Provide safety screens and protective shields to protect others from the movement of the machine and debris.

Always be aware of the position of your coworkers when the machine is in operation. Close off working area from unnecessary foot traffic.
Personnel in proximity must never be in front or behind the running machine. Non-compliance can lead to serious injuries or death.

Keep working area clean! Unsecured, scattered components and tools are a potential source for accidents

1 SAFETY

1.9

Occupational safety and special risks



Start-up and operation

WARNING! Danger of injury through improper start-up and operation Improper start-up and operation can lead to personal injury or material damage.

Make sure:

- Start-up and operation can only be executed by sufficiently trained personnel, authorized and instructed by the owner of the machine.
- Before work commences all safety installations have to be inspected to check whether they are functioning properly and have been correctly installed.
- Keep working area tidy and clean! Unsecured, scattered components and tools are a potential source for accidents

WARNING! Non-stop work; Incorrect handle height, vibrations and machine movements cause pain and fatigue

Make sure:

- Take regular breaks

Maintenance and troubleshooting



WARNING! Danger of injury through improper maintenance and troubleshooting! Improper maintenance and troubleshooting can lead to severe personal injury and material damage.

Make sure:

- Any maintenance work and troubleshooting must only be carried out by sufficiently qualified and instructed personnel.
- Secure machine from unintentional start-up.
- Provide sufficient space before starting maintenance work.
- Keep working area clean and tidy! Unsecured, scattered components and tools are a potential source for accidents.

When components need to be replaced:

- Contact manufacturer or authorized representative.

1 SAFETY

1.9 Occupational safety and special risks



ELECTRICAL CONNECTIONS / Charging /ELECTRICAL COMPONENTS

WARNING! Risk of death due to electric current!

Only connect the machine / charger to a power source that matches the the rating plate. Check before startup.

Only connect the machine to an approved power cable and outlet. Cables / extention cords must be at least 12AWG with molded plugs having ground lugs not exceeding 25ft. Using the machine with cables of insufficient gauge and / or excessive length may result in poor performance, overload, tripped breakers and personal injury or property damage.

Have electrical equipment such as breakers, power cord, extension cables checked by an authorized electrician. If the circuit breaker trips or trips repeatedly, it is a sign of a problem. Never use equipment on unprotected circuits.

Never work with a damaged cable or plug. Worn or damaged cables or plugs should be replaced by an electrician or authorized service personnel.

Do not use damaged electrical cords. Do not pull on the cable to unplug from the wall. Using the machine charger with a damaged cable can cause an electric shock.

Never remove or make unusable a ground lug from machine or cords. Using the machine in a non-grounded circuit may result in electrocution. Consult an electrician if the grounding wire is missing or if you believe that the circuit does not have adequate grounding.

The machine may only be operated on circuits with current protective device (I.E. fuse or circuit breaker).



When working on the machine always unplug the battery!
Maintenance, replacement or adjustment of components may result in personal injury to the operator and / or bystanders when the machine is started accidentally.

Work on electrical components of the machine may only be carried out by a qualified electrician.

Driving over or damaging the power cables with the machine may result in electric shock.

The machine is only suitable for operating in dry conditions. Do not expose the machine to water including Rain, pressure washers, hoses.

2 PRODUCT INFORMATION

2.1 Technical Description

SPECIAL FEATURES

A powerful motor combined with a highly efficient hydraulic drive system produces excellent performance at an extremely low noise level.

The ES 1000 is a compact yet powerful ride-on floor scraper. It is capable of removing difficult flooring such as ceramic, wood, tough carpet and epoxy coatings.

2.2 Technical Specifications

Technical Data	
Power Supply	220 VAC
Drive System	Hydraulic
Motor Size	3 HP
Speed	Up To 100 ft/min
Total Weight	
Length	51"
Width	24"
Height	39"

U.S. Patent # 10273700, 10619365
E.U. Patent Granted

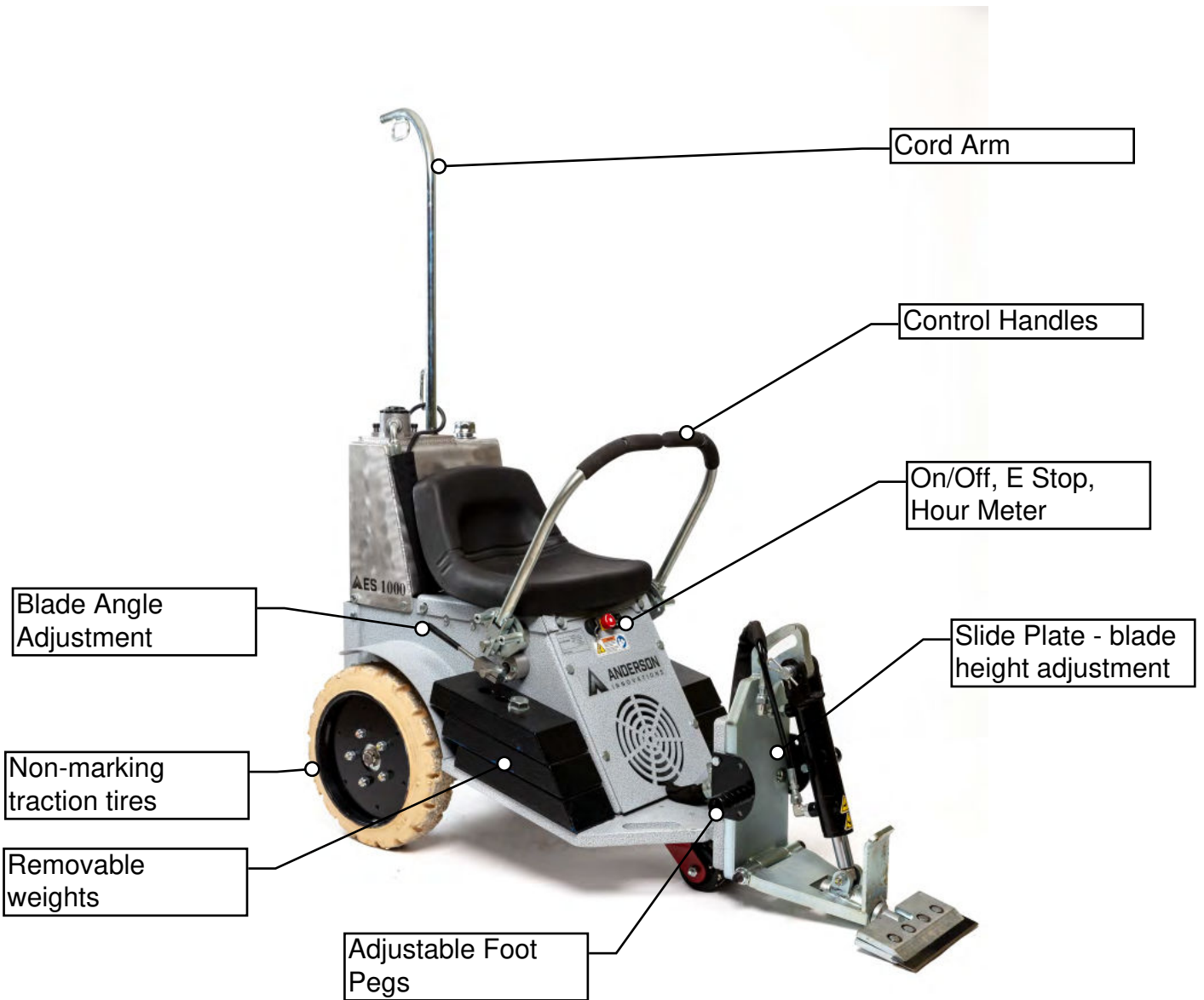


2.3 Scope of delivery

- ES 1000 Scraper
- 6" Blade Holder
- 12" Blade Holder
- 2" Carbide
- Safety Glasses and Cut resistant gloves
- Retaining Pins
- Safety Manual
- Blade and Slide Plate Adjustment Wrench

2 PRODUCT INFORMATION

2.4 Controls and equipment



3 TRANSPORT

3.1 Lifting

Before using lift-gates, elevators or other powered lifting tools make sure the lift equipment is in good operating condition and is properly sized for use with this machine. Refer to product specifications in this manual for weight and dimensions.

The machine can be moved without power by opening the hydraulic valves in the intended direction of travel and then pushing the machine. **DO NOT** push the machine with full weight applied to the control handles. Pushing or pulling the machine by the control handles will cause damage to the handles and control linkages.

FORKLIFT:

Placing the machine on a skid is the safest way to lift with a forklift. If using a forklift to move the machine without a skid / pallet, special attention must be given to fork placement.

1. Set the forks to the inside width of the tires
2. Pickup the machine from the back getting as close as possible to the mast of the lift truck
3. Ensure the forks are completely under the weight tray and not catching on the front caster
4. Slowly lift the machine and tip the mast back



32 Ramps

USING RAMPS:

Extra care must be taken to ensure the safe use of a ramp. The ramp **MUST** be rated for the weight of the machine and the operator. The operator is responsible for adhering to any safety regulations that apply in their area of work.

OSHA regulation 29 CFR 1926.451(e)(5)(ii)

No ramp or walkway shall be inclined more than a slope of one (1) vertical to three (3) horizontal (20 degrees above the horizontal).

- Ramps can be dangerous to use
- Make sure ramp is rated to hold machine and operator
- Ramp must be secured so it cannot slip off on the high side
- Be sure ramp is free of debris and is not slippery
- ALWAYS back up a ramp, keeping the front of the machine "down hill"
- ALWAYS drive down a ramp keeping the front of the machine "down hill"

4 SETUP

4.1 Blade Choice of blade

Using the correct blade size and style for various floor coverings and sub-floors will provide the best performance of your machine.

The principles described are to help operators choose the best type of blade for each job. There is not a "one size fits all" option with blade choice.

Blade size

For harder jobs it is better to use narrow blades, for easy jobs you can select wider blades.

Narrow blades can increase production on tough jobs as the machine will have less resistance and faster travel speed compared to using a wider blade and will allow for longer run time and a cleaner subfloor. Start with a narrow blade, switch to a wider blade if the material is coming up easily.

Blade bevel

Bevel up blade is for hard substrate like concrete.



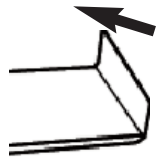
Bevel down for wood or soft sub-floors.



Self-scoring blades

When using self-scoring blades for soft floors, pre-scoring the flooring material is unnecessary. Depending on the type of flooring to be removed and the sharpness of the blade, it will be more difficult to control the machine.

Keep the blade and the side wings/edges sharp.



Insert / replace blade

Dull blades reduce the capacity and cutting performance of the machine. Sharpen or replace the blades as needed.



CAUTION! Even "dull blades" can cut you. Wear protective gloves

Use supplied extended wrench to keep hand safely away from the edge of the blade. When installing or removing blade **NEVER** use a short wrench that puts hand in-line with the blade or push toward the cutting edge.

4 SETUP

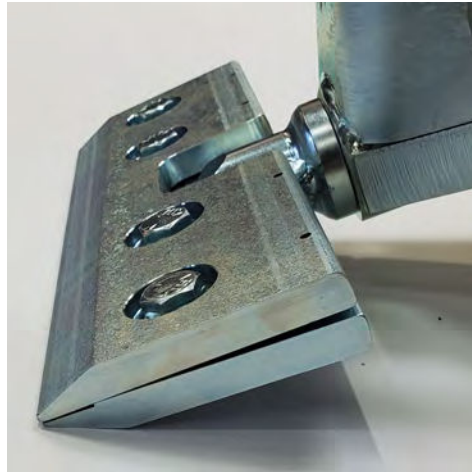
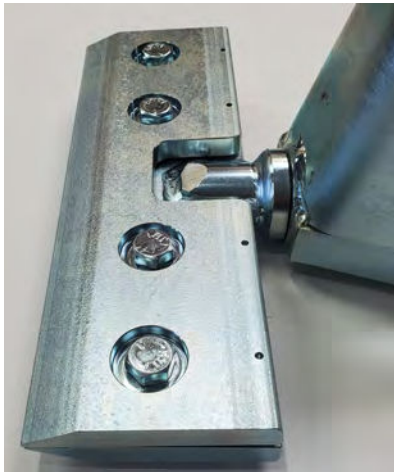
4.2 The ES1000 has 2 blade adjustments. One for the height of the slide plate assembly off of the floor and a second for the angle of the blade. In general, a low to medium angle will work best for removing materials such as glued down carpet, VCT and ceramic tile. A high angle is better suited for re-scraping adhesive and removing thin coatings. The two large bolts on the back of the slide plate assembly hold the slide plate at the desired height. Use the 36mm socket on the included wrench to loosen the bolts and then raise or lower the slide plate as desired. Typically it is best to use a high slide plate for a high blade angle and a low slide plate for a low blade angle. The blade angle is adjusted with the control lever on the low right hand side of the machine.



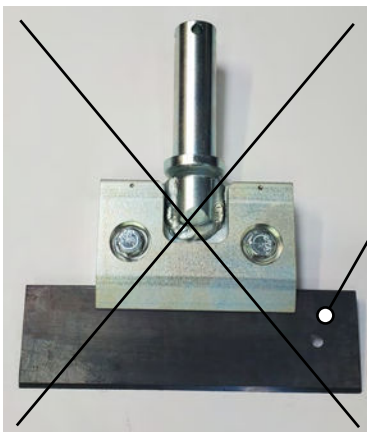
Low Blade Angle

Medium Blade Angle

High Blade Angle

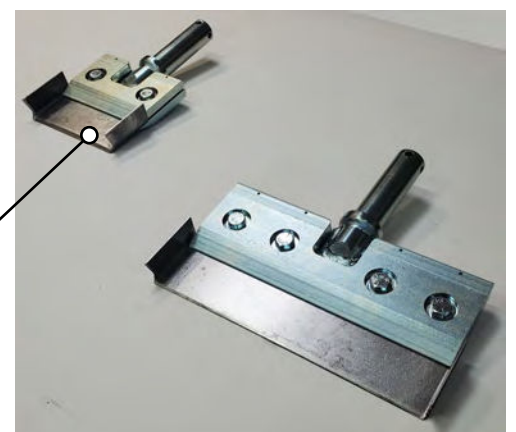


When choosing a blade it is best to match the size of the blade to the holder. A large blade extending past the sides of the holder will be unsupported and less effective at cleaning the floor. A small blade in a large holder can allow material to catch on the edges of the holder. For the best performance and efficiency match the size of the blade with the holder



This blade is too big for the holder

These blades are matched to the size of the holder



4 SETUP

4.3 Weights



Use caution when handling weights. It is possible to pinch or crush fingers as well as drop heavy parts onto your feet. Wear gloves and safety shoes to help protect from injury.

Removing Weights

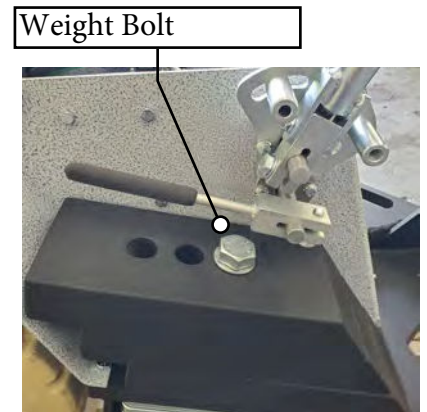
Depending on your application it may be necessary to remove weight from the machine. Some common reasons to remove weight include: weight restriction for elevator or lift gate, soft sub-floor that requires less pressure on the cutting edge, restricted point load for elevated working surfaces. You will need a couple of tools to remove the weights on the ES1300. Including a 36mm socket or wrench, 3/4" socket or wrench and possibly a soft hammer or mallet.

Removing the side weights:

1. Use a 36mm wrench or socket to remove the weight bolt. This bolt threads into a pin that holds the weights in place. The weights will not slide off the machine after the bolt is removed
2. Lift the weights off the pin and set them aside
3. Re-install the weight bolt so that it does not get misplaced

Installing the side weights:

1. Remove the weight bolt if installed
2. Line up the corresponding mounting hole in the weight and set onto the pin. The front of the weights should line up as shown in the image.
3. Re-install the weight bolt



5 OPERATION

5.1

Start-up and Shut Down

To start the machine follow this procedure:

1. Plug machine into 220 / 230 VAC power source
2. Inspect the machine for any signs of hydraulic leaks for other damage
3. Spread the handles apart and sit on the seat with feet on the foot pegs
4. With the handles in the center/neutral position twist the red cap on the E-Stop to make sure it is in the "up" position
5. Turn the key switch fully to start the machine.

To shut down the machine follow this procedure:

1. Allow the control handles to return to the center / neutral position
2. Make sure the machine is on a flat, level surface. Do not park the machine on a ramp or inclined surface.
3. Use the blade angle adjustment to lower the blade so the cutting edge is on the floor.
4. Turn the key switch to the off position
5. Remain in the seat until the motor has completely stopped
6. Step off of the machine



Key Switch

E Stop

5.2

Safe operation

To move the machine use the control handles. Pushing both handles forward will move the machine straight forward. Pulling both handles backward moves the machine straight back. Use the handles independently to turn the machine. Use slow smooth movements with the control handles for the best control. Operator must keep good situational awareness avoiding people and job site hazards.

5 OPERATION

5.3 Removal of floor coverings



VCT Tiles

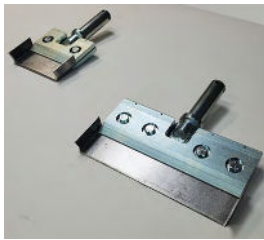
Keep blades sharp! Keep your work area clean and clear of debris. Always wear eye protection when working with the machine.

Never use a blade wider than the size of the tile being removed. If material being removed will not come up clean or the machine jumps out of the work continuously, reduce blade size to a smaller blade until proper blade size is found or use a smaller portion of the blade.

Vinyl-, Rubber, PVC, Direct Glued Carpet



Before starting the machine, cut the flooring into strips approximately the same width as the blade. Then use the machine to take up the strips. Pre-scoring carpet / sheet goods makes removed material easier to handle and extends the runtime of the machine. For best results use a stand-up scoring tool



If removing soft flooring with a strong bond, the self-scoring blade can also be used. Cut ditches into the floor then demo perpendicular to the ditch to make strips that are easy to handle. Keep debris cleaned off the floor and out from under the machine. This will reduce the chance of carpet scrap getting wrapped around the wheels and tangling with the machine.

Ceramic and other types of floor tiles



Everyone in the area must be wearing safety glasses before removing tile. Use a durable sheet material such as hard board to protect delicate wall surfaces like glass or finished wood. Using a hammer and chisel or electric demo hammer remove a tile in a clear area of the work space to open up the floor. Beginning at a doorway with an open edge is another way to start removing tile but can be more difficult to maneuver than opening a space in the middle of the room. Use a small heavy blade or preferably a carbide shank at a low angle to remove tile. Avoid removing tile at a high angle as this is less efficient and will shorten the life of your tooling. Open a line of tile across the room and then work perpendicular to that line in short passes along the line. Keep debris cleaned out from under the machine. Use a stiff broom to push debris out of the way. Debris is more easily pushed on the floor not yet removed. It is best to stop and clean the floor regularly rather creating a large volume of debris and working on top of the mess. Use a water sprayer to mist debris before pushing to reduce dust. After removing the tile use a water sprayer to mist any remaining thin-set or mortar until it has the consistency of damp sand then re-scrape at a high angle with a sharp carbide. DO NOT over water the floor. Too much water will create a slippery mess.

6 MAINTENANCE

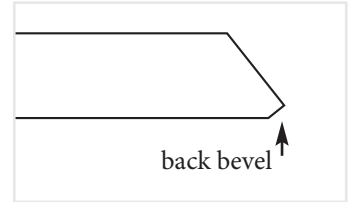
6.1 Sharpen blades

Dull blades greatly reduce machine performance. Sharpen or replace the blade if necessary.

Standard blades

When used continuously, the blades develop a back bevel on the edge

The blade is only really sharp, when the back bevel is completely removed.



- Always wear gloves and safety glasses.
- Grind the blade with a grinding wheel of 120 grit or finer.
- Move the grinder along the edge of the blade and hold the grinder at the correct angle to the blade.
- Grind until the blade is sharp.
- Be careful not to catch the grinding disc on the edge or corner of the blade.



WARNING! Risk of injury!

Blades are sharp. Be extremely careful.



NOTE! Recommendation for optimal use of blades

- Thinner blades are easier to sharpen, but are easier to break.
- It is easier to sharpen the dull blades on a bench grinder or with a belt sander.
- If using an angle grinder be careful to avoid catching the disc on self scoring wings or grinding toward the sharp edge.

1. To sharpen the blade while mounted to the machine follow these instructions:

- Keep the blade secured in the machine.
- Block up front of machine so blade is off the floor and the machine is stable.
- Sharpen the blade with a 5" diameter disk with 120 or finer grit.
- Be careful not to catch disk on edge or corner of blade.

2. A fine tooth file can be used to sharpen some blades but is considerably slower than using a grinder.



bevel down



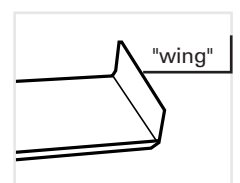
bevel up



Sharpening with a fine-toothed file

Self-scoring blade

It is important to keep the "wings" of the self-scoring blades sharp. Use a file at the "wing" edge. Sharpen the flat end of the blade exactly as described above.



Shanks with carbide tip

To sharpen carbide tipped shanks a green silicon carbide grinding wheel or a diamond wheel is required. Wear a mask to protect from the hazardous dust caused by grinding carbide.

6 MAINTENANCE

6.2 Maintenance schedule



Perform maintenance outside of hazardous areas. Maintenance work must be carried out with the machine switched off and disconnected from power

Maintenance by the user

Daily before you start work

- Clean the wheels, they need to be free of accumulated debris.
- Checking the wheels and castor for damage, they must have sufficient rubber and no flat spots.
- Check if all safety devices are working and are installed.
- Check for hydraulic oil leaks with the machine off.



WARNING! Risk of injury by hydraulic fluid!

Never inspect hydraulic components while the machine is running. Never feel pressurized hose assemblies to find leaks with the machine running.

Leaking pressurized hydraulic fluids may develop a mist or fine spray liquid that squirts or explodes on ignition and is capable of injecting into flesh and causing serious injury.

If hydraulic fluid leaks

- Keep ignition sources away
- With machine off look for the source of the leak
- A loose fitting is the most common source of a leak
- Use an absorbent pad and degreaser to clean up spilled oil.
- Residual oil can be found after fixing a leak for a period of days if it gets under panels and other components.
- If the source of a leak cannot be fixed contact the manufacturer or a hydraulic repair shop.

Replacement of hydraulic oil and oil filter- see chapter 6.3

Recommended Maintenance by the manufacturer

- Inspect hardware on panels and controls and tighten when required
- Check torque on wheel motor castle nut and lug nuts regularly
- Inspect electrical cables and hydraulic lines every 6 months, replace if there are any signs of wear or damage
- Change oil and filter annually
- Use only original equipment manufacturer parts for replacement.

6 MAINTENANCE

6.3

Hydraulic oil

Dangers for people and the environment

Hydraulic oils are flammable. Vapors released when exposed to very high temperatures and spray can form explosive mixtures with air.

There is a risk of ignition of oil-soaked clothing.

Frequent or prolonged contact with the products, even through oil-soaked clothing, can cause skin diseases, e.g. inflammation, rash, oil acne. Products exposed to high temperatures may accumulate with hazardous substances. Water pollutant.

Protective measures and rules of conduct

Drain hydraulic fluid into a drip pan, avoid splashing. Do not overfill drip pans and do not use to store other materials.

Keep away from ignition sources, do not smoke. Do not mist lubricants.

Keep container closed and protect from heat.

Keep soaked cloths in non-combustible, closed containers.

Replace cleaning rags regularly.

Mark filled containers, replace defective markings.

Never use food containers or containers to be confused with them.

Hand protection: for long-term use resistant chemical protective gloves

Skin protection: Avoid contact with skin and clothing.

Immediately change soaked clothing and put on only after cleaning. Do not put smeared cloths in the pockets of work clothes. Do not use solvents, thinner, or other harsh chemicals for cleaning hands or body.

Procedures in case of incidents

leak: After leakage, immediately use an absorbant mat or material to contain the spill. Pickup this contaminated material and dispose in a proper container. Clean the floor thoroughly so there is no slippery surfaces.

fires: Have a fire extinguisher available for fire class B. Do not extinguish with water. In case of fire, there is a risk of the hydraulic reservoir bursting due to the boiling liquid and expanding vapors.

escape route: See marking of escape routes and emergency exits

First aid

after skin contact: Thoroughly wash with soap and water, remove previously soaked clothes.

after eye contact: Rinse with an open eye and toward the outer eye for ten minutes in running water, visit a eye specialist.

after swallowing: Do not induce vomiting, consult a doctor.

after penetration of oil: After penetration of oil under the skin immediately consult medical attention!

Proper disposal

Collect waste in labeled non-combustible containers; Keep waste containers and empty containers closed, empty at the latest at the end of the shift or remove them from the work space.

6 MAINTENANCE

6.3 Replacement of hydraulic oil

Resources

Hydraulic oil: Shell Tellus S2 MX 46

Capacity: 3.5 Gallons

ATTENTION !

Keep the hydraulic fluid clean and at the specified level. Incompatible fluids can damage the unit or cause serious injury.

Level of hydraulic fluid

The machine is ready for operation when delivered, it is filled with hydraulic oil.

The full level is shown by the presence of oil at the bottom of the strainer basket under the breather cap.



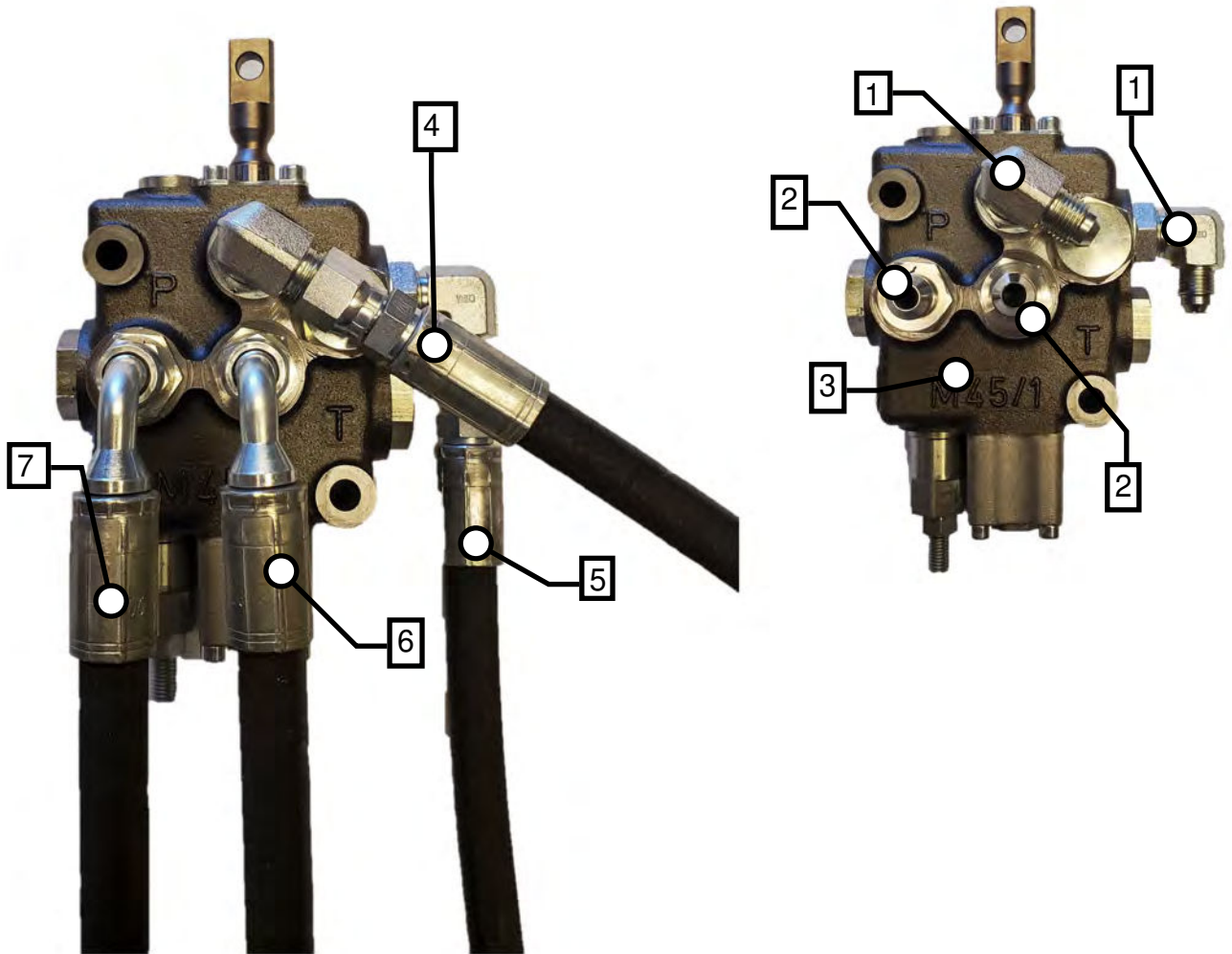
Check the hydraulic fluid level if there is a leak, damaged or broken hose or loose fitting.

Manufacturer Information



- Address: 5506 Thompson Hill Road, Proctor MN 55810
- Phone Number: 218-249-1314
- Email: info@andinllc.com
- Website: www.andinllc.com
- Patents: US Patent # 10273700, 10619365 - E.U. Patent granted

1 Spool Valve

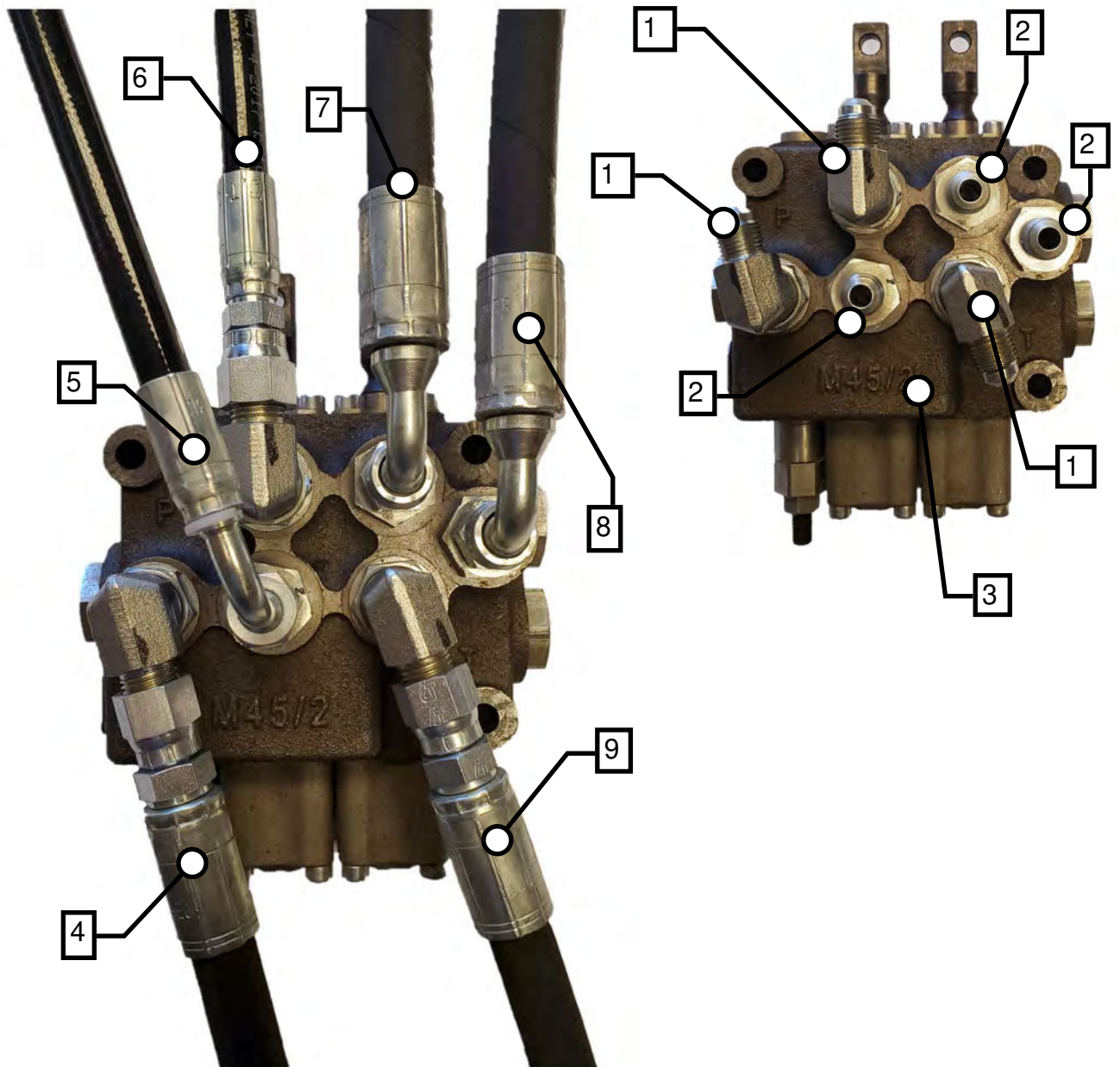


Part List

1 Spool Valve Parts List

Pos.	Description	Stk/pcs	Part Number
1	Fitting, UNO / JIC, 90	2	10107
2	Fitting, UNO / JIC, Nipple	2	10108
3	Valve, single spool	1	10084
4	Wheel Motor Line, Left, Rear Port	1	10103
5	Return Line, single spool to T fitting	1	10104
6	Wheel Motor Line, Left, Front Port	1	10102
7	Pressure Line, single spool valve to pump	1	10096

2 Spool Valve

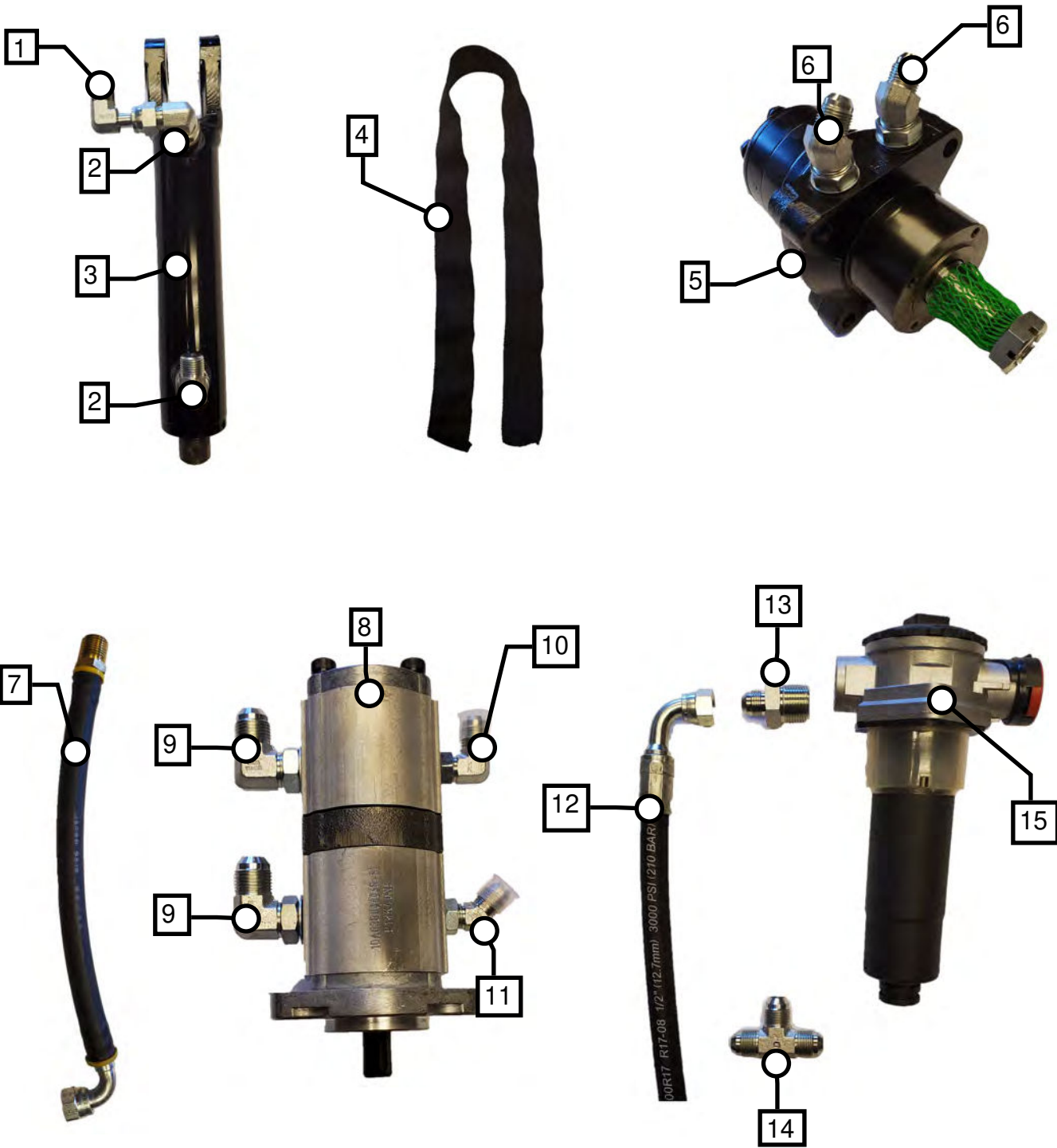


Part List

2 Spool Valve Parts List

Pos.	Description	Stk/pcs	Part Number
1	Fitting, UNO / JIC, 90	3	10107
2	Fitting, UNO / JIC, Nipple	3	10108
3	Valve, 2 Spool	1	10085
4	Pressure Line, Two Spool Valve	1	10097
5	Cylinder Line, Lower	1	10101
6	Cylinder Line, Upper	1	10099
7	Wheel Motor Line, Right, Rear Port	1	10100
8	Return Line, two Spool to T Fitting	1	10105
9	Wheel Motor Line, Right, Front Port	1	10098

Hydraulic Components

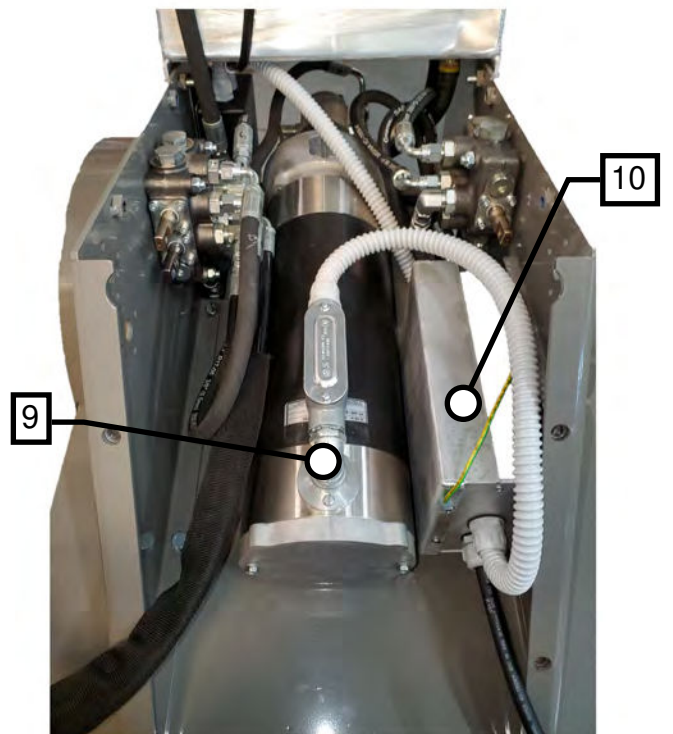
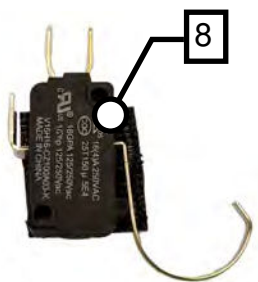
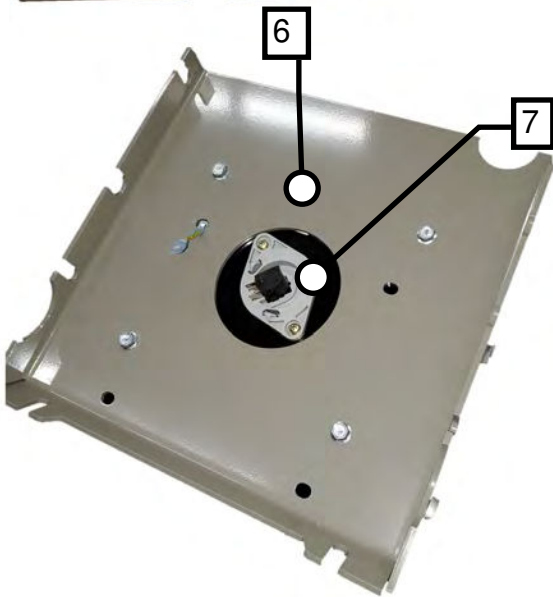
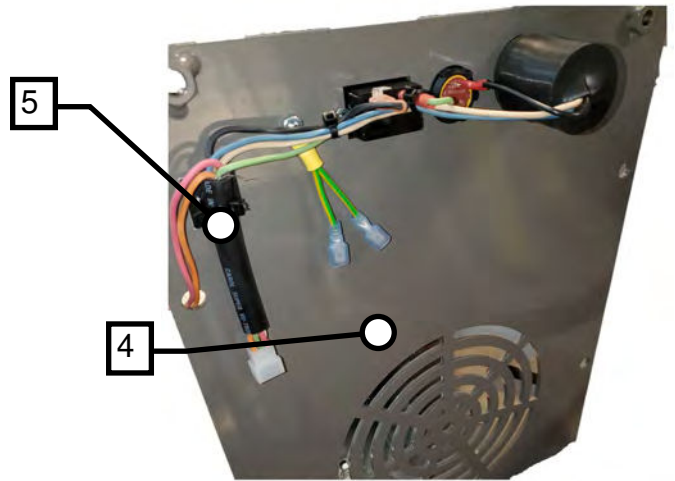
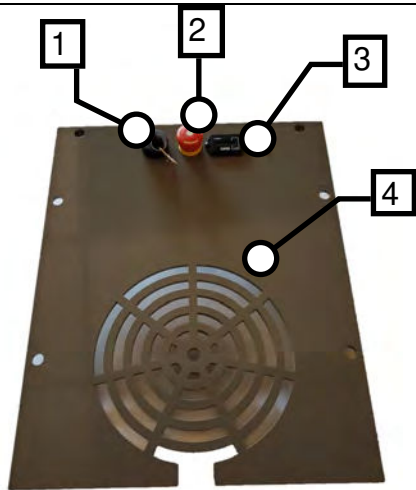


Part List

Hydraulic Components Parts List

Pos.	Description	Stk/pcs	Part Number
1	Fitting, 90 Degree, Oring Face	1	10347
2	Fitting, , -8 ORB - 90 / -6 ORF	2	10274
3	Cylinder, Welded	1	10275
4	Hose Sleeve	1	10116
5	Wheel Motor	2	10004
6	Fitting, UNO / JIC 45, Wheel Motor	4	10112
7	Suction Line, Reservoir to Pump	2	10095
8	Pump, Tandem, #6	1	10018
9	Fitting, UNO / JIC 90, -8 Pump	2	10114
10	Fitting, UNO / JIC 90,-6 Pump	1	10113
11	Fitting, UNO / JIC 45, Pump	1	10111
12	Return Line, Filter to T Fitting	1	10106
13	Fitting, Return Filter, Nipple	1	10110
14	Fitting, Return T	1	10109
15	Filter, Cartridge, Assembly	1	10054

Electrical Components



Part List

Electrical Components Parts List

Pos.	Description	Stk/pcs	Part Number
1	Switch, Key, Assembly	1	10042
2	Switch, E stop, Assembly	1	10043
3	Hour Meter	1	10044
4	Front Panel	1	10041
5	Harness, Electrical, Front Panel	1	10348
6	Seat Plate	1	10046
7	Seat Switch	1	10051
8	Switch, Backup Beeper	1	10088
9	Motor, Electric, 3KW	1	10011
10	Controller Complete With Wiring	1	10298

4

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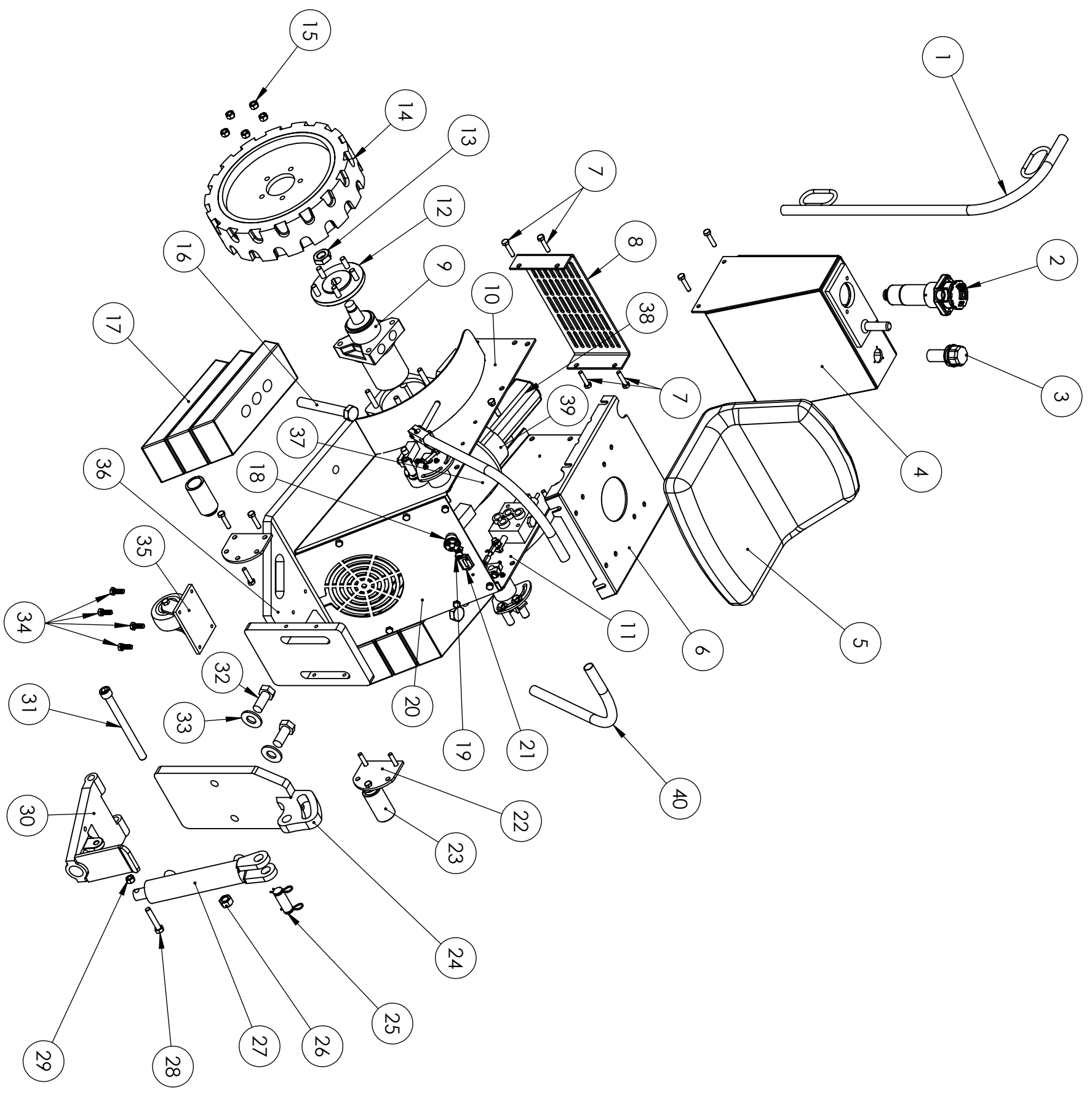
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ITEM#	DESCRIPTION	PART#
1	CORD ARM	10058
2	HYDRAULIC FLUID FILTER	10054
-	FILTER ELEMENT (FOR ITEM #2 - NOT SHOWN)	10055
3	FILLER/VENT CAP	10118
4	HYDRAULIC TANK	10052
5	SEAT	10047
6	SEAT PLATE	10046
7	M10 x 1.5MM x 20MM HEX HEAD BOLT	10335
8	REAR COVER	10039
9	HYDRAULIC WHEEL MOTOR	10004
10	RIGHT SIDE PANEL	10023
11	LEFT SIDE PANEL	10024
12	WHEEL HUB	10007
13	WHEEL HUB CASTLE NUT	10008
14	16" x 4" WHEEL	10009
15	1/2"-.20 NYLON LOCKING NUTS	10010
16	WEIGHT BOLT	10061
17	REMOVABLE WEIGHT	10060
18	EMERGENCY STOP SWITCH	10043
19	KEY SWITCH	10042
20	FRONT PANEL	10041
21	HOUR METER	10044
22	FOOT PEG BRACKET	10249
23	FOOT PEG	10118
24	SLIDE PLATE	10062
25	CYLINDER CLEVIS PIN	10070
-	COTTER KEYS FOR CLEVIS PIN (SHOWN ASSEMBLED ON ITEM#25)	10071
26	3/4"-.10 NYLON LOCKING NUT	10067
27	WELDED HYDRAULIC CYLINDER	10275
28	1/2"-.20 x 3" HEX HEAD BOLT	10069
29	1/2"-.20 NYLON LOCKING NUT	10333
30	BLADE ARM ASSEMBLY	10334
31	3/4"-.10 X 9" SOCKET HEAD BOLT	10066
32	M24 x 3.0mm - 50mm LONG HEX HEAD BOLT	10063
33	M24 INTERNAL LOCKING WASHER	10064
34	M10 x 1.5mm - 30mm LONG	10336
35	FRONT CASTER WHEEL	10001
36	FRAME KIT - BASE	10000
37	ELECTRIC DRIVE MOTOR	10011
38	HYDRAULIC DOUBLE PUMP	10018
39	PUMP MOUNT COLLAR	10014
40	CONTROL HANDLE	10032
-	LOVEJOY PUMP TO MOTOR SHAFT COUPLER (NOT SHOWN)	10012

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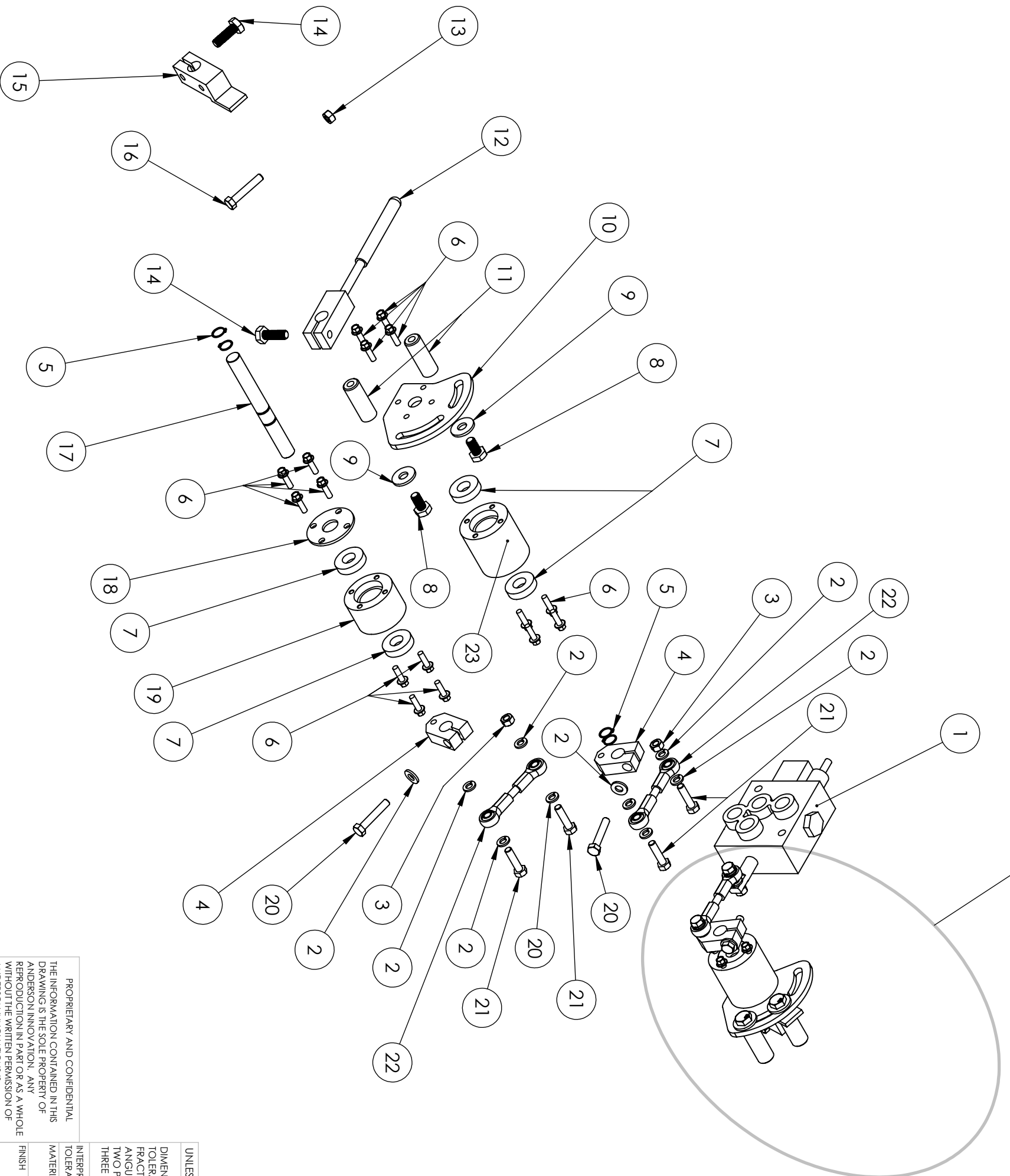
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COMPONENTS ARE THE SAME FOR LEFT & RIGHT SIDES



ITEM #	DESCRIPTION	PART #
1	SINGLE SPOOL HYDRAULIC VALVE (SHOWN)	10084
-	TWO SPOOL HYDRAULIC VALVE (NOT SHOWN)	10085
2	M8 SPLIT WASHER	10342
3	5/16"-24 NYLON LOCK NUT	10343
4	VALVE CAM	10176
5	C-CLIPS	10339
6	M6x1mmx20mm LOCKING HEX HEAD BOLT	10344
7	HANDLE AXLE BEARING	10027
8	M10 x 1.5mm x 20mm HEX HEAD BOLT	10335
9	M10 FLAT WASHER	10026
10	HANDLE STOP BRACKET	10178
11	HANDLE STOP PIN	10173
12	FRONT CYLINDER LIFT HANDLE	10175
13	M8x1.25mm NYLON LOCKING NUT	10087
14	M10x1.5mmx30mm HEX HEAD BOLT	10336
15	HANDLE CLAMP	10029
16	M8x1.25mmx45mm HEX HEAD BOLT	10340
17	HANDLE AXLE	10341
18	BEARING RETAINER CAP	10182
19	SHORT AXLE HOUSING	10175
20	M8x1.25mmx35mm FLANGED HEX HEAD BOLT	10345
21	5/16"-24 x 1 1/4" HEX HEAD BOLT	10346
22	TIE ROD LINKAGE	10076
23	LONG AXLE HOUSING	10177

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ANGULAR: MACH ± .1° BEND ± 1.0°		MFG APPR.			
TWO PLACE DECIMAL ± .010"		G.A.			
THREE PLACE DECIMAL ± .005"		COMMENTS:			
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