

ROGUE™ WALK-BEHIND SCRAPER

OPERATING & SERVICE MANUAL



CE



Read Manual Before Operating or Servicing Machine.

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GENERAL INFORMATION

CONTACT INFORMATION

Contact National Flooring Equipment (NFE) for customer support:

National Flooring Equipment, Inc.
9250 Xylon Avenue North
Minneapolis, MN 55445
Tel: (800) 245-0267
Fax: (800) 648-7124
nationalequipmentdirect.com
info@nationalequipment.com

SERIAL NUMBER

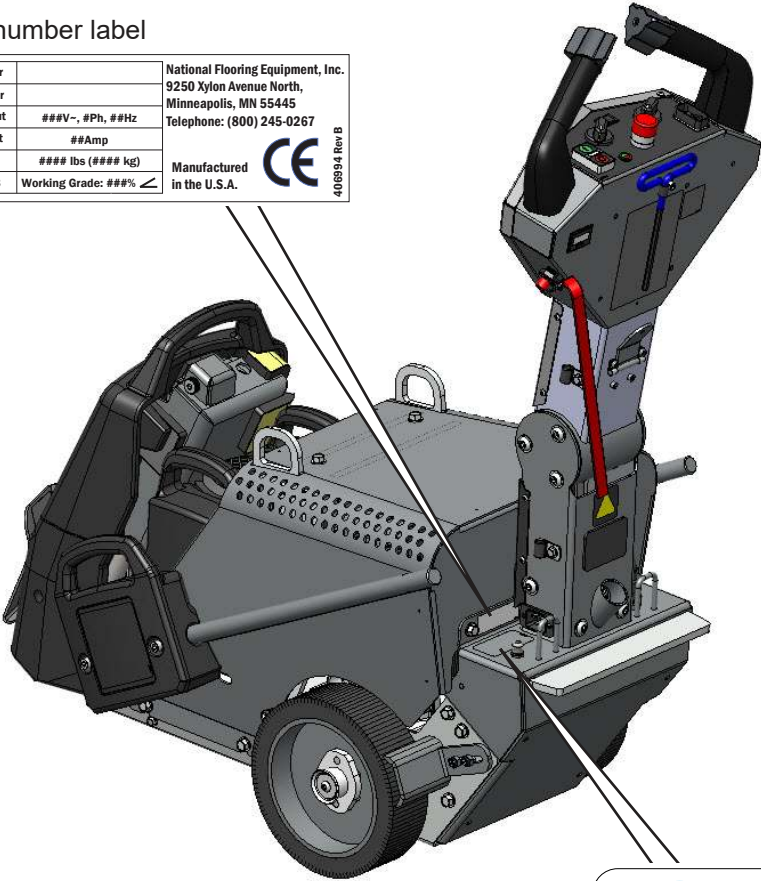
When contacting NFE, always provide the serial number of the machine. The serial number label is located on the back of the machine.

RESOURCES

Scan the QR code to access the manual, warranty and other resources for the machine. The QR code label is located on the back of the machine.

Serial number label

Serial Number		National Flooring Equipment, Inc.
Model Number		9250 Xylon Avenue North,
Electrical Input	###V-, #Ph, ##Hz	Minneapolis, MN 55445
Rated Current	##Amp	Telephone: (800) 245-0267
Weight	### lbs (### kg)	Manufactured in the U.S.A.
Ingress: IPX3	Working Grade: ###%	CE



QR code label

GENERAL INFORMATION

INTENDED USE

The Rogue walk-behind scraper is used to remove existing material from the floor including linoleum, VCT, hardwood, ceramic tile, rubber-backed carpet, glued-down carpet, coatings, plastic floor coverings, foam, plastic droppings, parquet flooring, chewing gum, felt, accumulated grime, rubber and vinyl tile, epoxy, paint and adhesives. The machine is designed for indoor use and confined spaces in residential and commercial environments.

The machine is not designed for use outdoors or in wet environments. The machine must not be run on an incorrect electrical supply and must not be used outdoors, on a roof or as a ramming device.

Operators should have average mechanical abilities and the ability to lift 70 lbs. Maintenance personnel should be fully trained, have above average mechanical abilities and the ability to lift 70 lbs. Trainees should be supervised, have above average mechanical abilities and the ability to lift 70 lbs. Operators, maintenance personnel and trainees should read and understand the operating and service manual before operating or working on the machine.

ALLOWED ENVIRONMENTAL CONDITIONS

The machine should be run in temperatures between 40°F-120°F (4°C-49°C) with relative humidity not above 95% to ensure correct operation.

Do not operate the machine in damp or wet locations, or in the presence of explosive or combustible atmospheres such as gaseous fumes, flammable materials and saw dust.

The machine may be operated in dusty conditions. The operator and other personnel in the proximity of the machine must wear adequate safety equipment including eye protection, ear protection, safety shoes, safety gloves, hard hat, high visibility safety vest and dust mask.

GENERAL INFORMATION

MACHINE SPECIFICATIONS

		ROGUE Scraper
A	Width (slide weights forward)	19.4" (49 cm)
B	Width (slide weights rearward)	22.1" (56 cm)
C	Length (handle forward)	41.4" (105 cm)
D	Length (handle back)	56.8" (144 cm)
E	Height (handle forward)	25.3" (64 cm)
F	Height (handle vertical)	45.3" (115 cm)
	Weight*	477 lbs (216.4 kg)
	Weight (machine only)	292 lbs (132.4 kg)
	Forward Speed	3-150 ft/min (.9- 45.7 m/min)
	Drive Motor Power (each)	1/3 HP (250W)
	Orbital Motor Power	3/4 HP (550W)
	Orbital Motor Speed	650-1900 rpm
	Input Power	100-240V, 50/60 Hz
	Amps	15A
	Max. Hand-Arm Vibration (HAV)	12.844 ± 1.532 m/s ²
	Sound Power Level	85.5 dBA
	Sound Pressure	79.7 dBA
	Body Color	Silver Vein

*Includes removable weights and transport wheels.

EXTENSION CORD SELECTION

Input Power	Recommended Extension Cord Size*
100-130V	12 AWG (4 mm ²)
200-240V	14 AWG (2.5 mm ²)

*Based on a maximum cord length of 150 ft (45 m), <10% voltage loss, data from the U.S. National Electrical Code Tables 400.5(A) & 400.5(B) and typical resistances for copper wire.

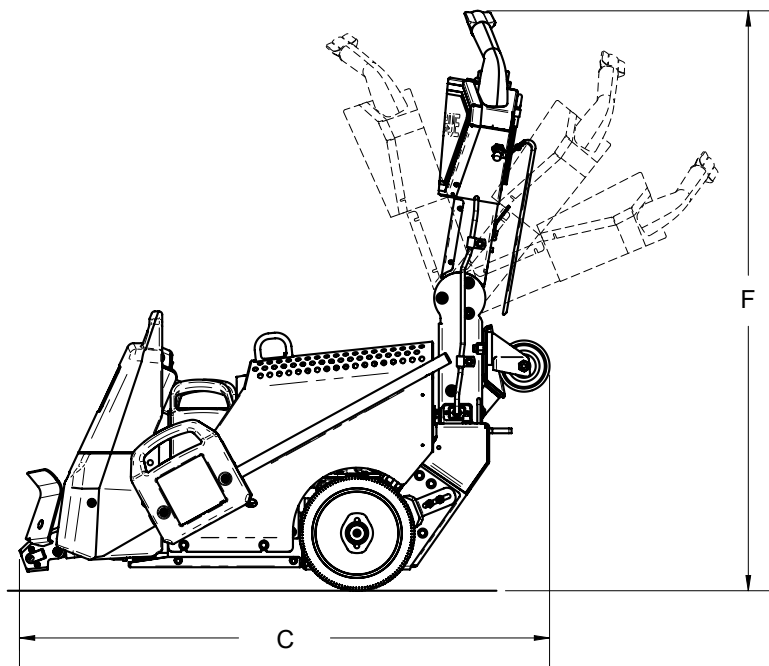
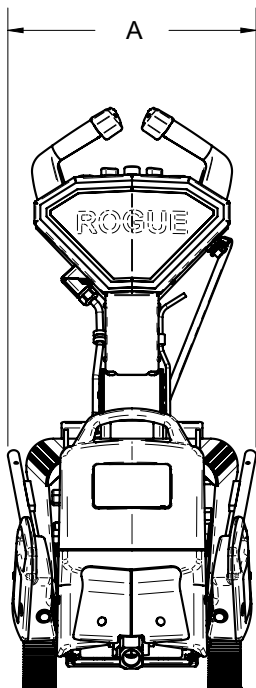
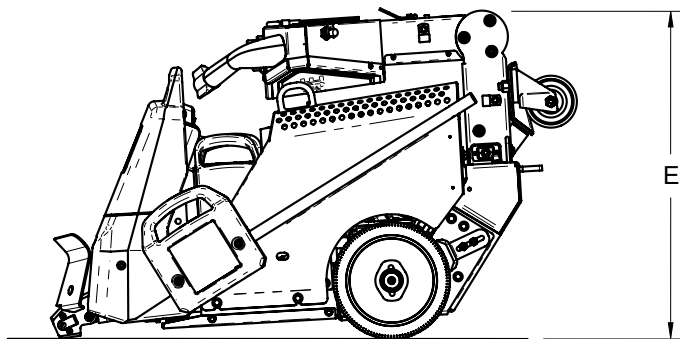
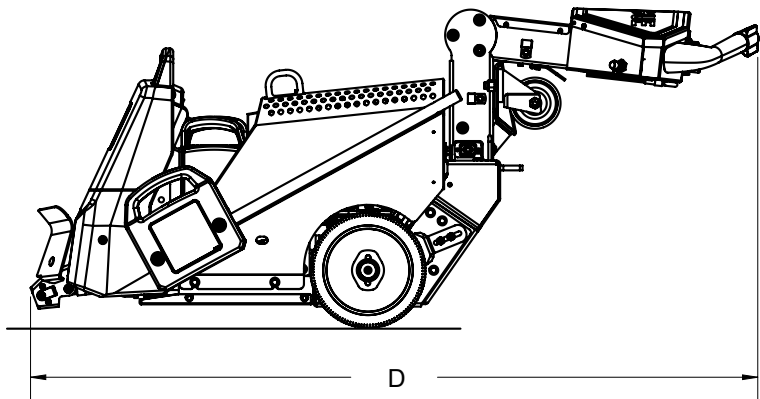
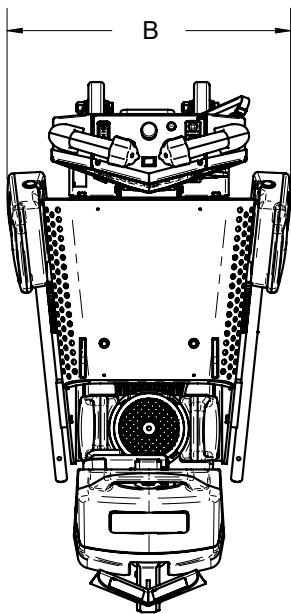
GENERATOR SELECTION

Recommended Generator Rating*: 5 kW

*Rating is "Running Watts" or "Continuous Watts"—**not** "Peak Output".

GENERAL INFORMATION

MACHINE SPECIFICATIONS (CONT'D)



SAFETY

SAFETY FIRST!

Look for the safety alert symbol. This symbol is used throughout the manual and on the labels of the machine to warn of the possibility of personal injury. Read these instructions carefully. It is essential that you read these instructions before you attempt to operate the machine.

DANGER

Identifies an immediate hazard which, if not avoided, will result in death or serious injury.

WARNING

Identifies a potential hazard which, if not avoided, could result in death or serious injury.

CAUTION

Identifies a potential hazard which, if not avoided, could result in minor or moderate injury and/or could result in damage to equipment.

IMPORTANT:

Indicates equipment or property damage could result if instructions are not followed.

NOTE:

Gives helpful information.

Read and understand this safety section carefully before operating the machine.

BEFORE OPERATION

1. Carefully read and understand this manual before operating or servicing the machine. Keep the manual with the machine at all times. If your manual is lost or damaged, contact National Flooring Equipment (NFE) for a replacement.



2. Do not allow anyone to use this machine until they have been informed of the work to be done and they have read and understood this manual. Know your equipment and its limitations. Personnel must be properly trained before operating or servicing this machine.
3. Safety labels carry important information. Obey the danger, warning and caution labels attached to the machine. If unreadable or missing, contact NFE for a replacement.

4. Dress properly and wear adequate safety equipment. The operator and any other personnel in the proximity of the machine must wear eye protection, ear protection, safety shoes, safety gloves, hard hat, high visibility safety vest and dust mask. Do not wear loose clothing as it could get caught in moving parts and cause injury.



5. Do not operate the machine when tired, distracted or under the influence of drugs, alcohol or any medication that may cause decreased control.
6. Scraping of concrete and other materials can generate harmful dust which can cause serious injury or illness such as respiratory disease. The operator and any bystanders should always wear a safety mask.



7. Check the surrounding area before using the machine.
 - Be aware of protrusions (stud anchors, rebar, threaded rod, etc.), cracks and expansion joints.
 - Check for buried pipes and cables.
 - Observe location of electrical supplies and extension cords. Do not allow cutting edge to come into contact with any electrical supply or extension cord.
8. Keep work area tidy and well-lit. A cluttered or dark work area could lead to accidents.
9. Keep cutting edges sharp and clean.
10. Make sure blades, blade holders and weights are securely mounted.
11. Make sure the control handles are dry, clean and free of oil and grease.
12. Make sure to use the proper electrical supply for the machine requirements to avoid the possibility of electric shock.
13. The electrical supply must be equipped with a proper circuit breaker.
14. Guard against electric shock.
 - Prevent bodily contact with grounded surfaces such as pipes, radiators, ranges and refrigerators.
 - When scoring or making cuts, always check the work area for hidden wires or pipes.

ELECTRICAL CORDS

Electrical cords can be hazardous. Misuse can result in fire or death by electrical shock. Read carefully and follow all directions.



Always follow applicable electrical codes, standards and/or regulations. Consult your local electrical authority or a licensed electrician before attempting to modify an electrical installation. Ensure that circuit and ground fault protection devices and all other safety equipment are functioning properly.

1. Ensure the cord is suitable for the application and location. If you are unsure about your cord type, consult a qualified electrical professional or electrician.
2. Ground your equipment. The equipment must be plugged into an appropriate outlet, one which is properly installed and grounded in accordance with all codes and ordinances. Do NOT modify the plug provided with the equipment. Never remove the grounding prong from the plug.
3. Do not remove, bend or modify any metal prongs or pins of the plug. Modifications to power cords and/or plugs may result in injury and/or equipment damage.
4. Make sure both ends of the cord are fully seated.
5. Do not use excessive force to make connections.
6. Never unplug by pulling the cord from the outlet. Pull plug rather than cord to reduce the risk of damage.
7. Regularly examine your extension cord and ensure it is in good electrical condition. Never use a damaged cord—either replace it or have it repaired by a qualified person.
8. Protect your extension cords from sharp objects, excessive heat and damp or wet areas. Keep the cord away from oil, cutting edges and moving parts.
9. Do not drive, drag or place objects over cord.
10. Avoid overheating. Uncoil cord and do not cover it with any material.
11. Avoid accidental starting. Be sure equipment is turned off before plugging in. Do not use equipment if the power switch does not turn the equipment on and off.

SAFETY

12. Make sure equipment is not running before disconnecting cord.
13. Unplug equipment. When not in use and before changing accessories or performing maintenance, unplug the machine.

OPERATING THE MACHINE

1. The machine is equipped with an emergency stop switch (E-stop) and a lanyard kill switch. If either switch is activated, the machine will shut down and be inoperative.
2. Never remove or modify any of the safety features on the machine.
 - Carefully read the manual to understand the proper use of the safety features.
 - Make sure all safety features, including the emergency stop switch, lanyard kill switch and protective guards are in good operating condition. Repair or replace any inoperative or missing safety features.
3. Maintain control and stay alert. Keep proper footing and balance and maintain a firm grip.
4. Vibration—Device exceeds 2.5 m/s² exposure level. Consult local hand-arm vibration (HAV) guidelines for recommended exposure limits.



5. Always stay clear of moving parts. Clothing, hands or other body parts can become caught in moving parts of the machine and cause personal injury.
6. Beware of hot surfaces such as blades and motor components. Always wear safety gloves.



7. Blades are sharp, use extreme caution.
 - Always wear safety gloves when handling blades.
 - Never change blade holder or service the blade while machine is running.



8. Beware of pinch point locations.
 - Handle:
 - Gap below handle hinge
 - Between handle and machine with handle adjusted all the way forward
 - Between handle and transport wheels with handle adjusted all the way back
 - Between handle and machine while installing handle
 - Between weights and machine when removing and installing weights
 - Rear access cover while closing (both sides)
 - Tooling holder at blade holder insertion location
 - Between machine and floor while laying machine on its side



9. Use care when handling the weights. Weights are very heavy and create a crushing hazard.



10. Always check the surrounding area for any possible conditions that could create a dangerous situation.
 - Operator should be aware of who is around them and their proximity. Never allow people to approach the vicinity of the machine while the machine is running.
 - Bystanders should stay a minimum of 3 ft away from the machine during operation.
 - Keep children away from the machine and work area at all times.
 - Be aware of blind spots to the rear and always check behind you before backing up.
 - Provide barriers or shields as needed to protect others in the work area from flying debris and machine operation.
11. Electrical cords create a tripping hazard. Be careful not to trip over the extension cord while operating the machine.
12. Never allow people to ride on the machine.
13. Never step on the debris deflector during operation, as loss of balance and personal injury could occur.
14. Avoid leaning forward over the handle during operation. If machine is operated in reverse, drive wheel could roll over operator's foot causing possible injury.
15. Never lean on the handle. Putting weight onto machine could damage the handle and cause operator to lose balance.
16. Avoid driving the machine over any obstacles which could cause a loss of control.
17. Use caution when operating the machine on inclines or uneven surfaces.
 - The weight of the machine may become distributed differently if on an uneven surface. Too much of an angle could cause the machine to roll unexpectedly or roll over.
 - Max. working grade (scrapping applications): 5%
 - Max. transportation grade (ramp use): 36%
18. Do not use on largely uneven surfaces.
19. Use caution when operating on slippery surfaces.
20. Avoid use in dangerous environments. Do not use in the presence of explosive atmospheres (gaseous fumes, dust or flammable materials). Remove materials or debris that may be ignited by sparks.
21. Machine is only to be used indoors. Do not use in wet environments.
 - Do not operate near standing water.
 - Do not use to scrape waterlogged carpet.
22. Do not block the machine's air flow. Blocking ventilation slots or air flow could result in damage to the machine. Leave space for air to flow freely during operation.
23. If abnormal noise or vibration occurs, turn off the machine immediately.
24. Do not force equipment. Equipment will perform best at the rate for which it was designed. Excessive force only causes operator fatigue, increased wear and reduced control.

TRANSPORTING THE MACHINE

1. Dress properly and wear adequate safety equipment when transporting the machine. All personnel in the proximity of the machine must wear eye protection, ear protection, safety shoes, safety gloves, hard hat, high visibility safety vest and dust mask. Do not wear loose clothing as it could get caught in moving parts and cause injury.
2. The machine is very heavy! Machine weight is shown in "MACHINE SPECIFICATIONS" section and on serial number label.
3. Never attempt to manually lift the machine. Hands could slip off causing serious injury.
4. Never lift machine by the handle, weights, blade holder or tooling holder. Weights and handle could detach causing injury. The machine could be damaged.
5. Use only proper lifting points and tie-down locations.
6. See "TRANSPORTING THE MACHINE" section for detailed safety instructions.

SAFETY

MAINTENANCE

1. Dress properly and wear adequate safety equipment. All personnel in the work area must wear eye protection, ear protection, safety shoes, safety gloves, hard hat, high visibility safety vest and dust mask. Do not wear loose clothing as it could get caught in moving parts and cause injury.
2. Maintenance should only be performed by qualified personnel.
3. Always turn off machine, disconnect from power and discharge stored energy before performing maintenance. Variable frequency drives (VFDs) hold stored energy and pose a serious electrical shock hazard. Always perform the following procedure before beginning any work on machine:
 - A. Turn off machine.
 - B. Leave power cord plugged in 5 minutes.
 - C. Disconnect power cord.
 - D. Wait an additional 5 minutes before performing any service on the machine.



4. Allow the machine to cool down sufficiently before performing maintenance.
 - Blade and motor may be very hot immediately after the machine has been running. Allow these parts to cool sufficiently before touching.



5. Always stay clear of moving or rotating parts. Clothing, hands or other body parts can become caught in moving parts of the machine and cause personal injury.
6. Always attach a "DO NOT OPERATE" tag whenever performing any kind of maintenance or repair.
7. Make sure you have the proper tools on hand. Do not use defective or damaged tools. Always use tools that are appropriate for the task to be done.

8. Make sure the work area is clear and safe. Be sure to work on a firm, level surface with adequate lighting. Work in a well-ventilated area if indoors. Make sure the area is free from any potentially dangerous conditions such as obstacles, slippery surfaces, etc.
9. Prohibit unauthorized persons from entering work area.
10. Make sure the machine is secured before beginning maintenance work.
 - Chock the wheels to prevent the machine from rolling.
11. Be sure the machine is clean and free of debris before performing any maintenance work.
12. Motors run at high temperatures under normal conditions. Clean debris from motors more frequently when working in severe conditions.
13. Never use a pressure washer or hose to clean the machine. Water can seep into the electrical components causing an electrical shock hazard or malfunction of controls.
14. Use caution when tilting back the machine to change the blade holder:
 - Before tilting back, position slide weights rearward to make tilting easier.
 - Always block the front of the machine to prevent the machine from falling forward unexpectedly.



15. The machine has components that are at high temperatures under normal operating conditions. The primary source of high temperatures are the motors. The electrical system, if damaged or incorrectly maintained, can be a source of arcing or sparks. The following guidelines will help keep the machine running efficiently and keep the risk of fire to a minimum.
 - Clean accumulated flammable debris from hot components. Clean more frequently when working in severe conditions.
 - Remove rags, tools, supplies, etc. from the machine after maintenance is completed.
 - Check electrical wiring and connectors frequently for damage. Repair any wires that are loose or frayed before operating the machine. Clean and tighten all electrical connections as necessary.

16. Do not permanently remove a guard or other safety device when performing maintenance on the machine.
17. Check for loose or damaged parts, misalignment, improper mounting, binding of moving parts, and any other conditions that may affect operation.
 - Retighten all loose parts. Replace damaged parts immediately. Use only NFE parts.
 - Do not use damaged equipment until repaired.
 - Use only NFE-approved or recommended parts and accessories. Using any that are not recommended may be hazardous and will void factory warranty.
18. Do not modify the machine without written authorization from NFE.
19. Always carefully check the machine after performing any maintenance or repairs. Remove all traces of cleaning fluids from the machine.
20. Use proper cleaning agents. Ensure that all cleaning rags are fiber-free. Do not use any aggressive cleaning products.
21. Waste material
 - Consult local regulations and codes when disposing of potentially harmful and hazardous materials or substances. Dispose of waste material properly to avoid pollution and contamination of the environment.

SAFETY

SAFETY LABELS

406603



Eye Protection, Ear Protection, Hard Hat,
Safety Shoes, Safety Gloves, Dust Mask,
High Visibility Safety Vest, Read Manual

406581



Airborne
Contaminants

407151



Team Lift

406110



Team Lift, Do Not Stand

407124



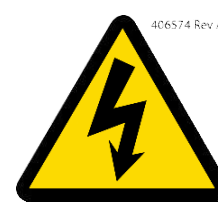
Hot Blade, Pinch Point, Sharp Blade

407125



Pinch Point

406574



Electrical Hazard

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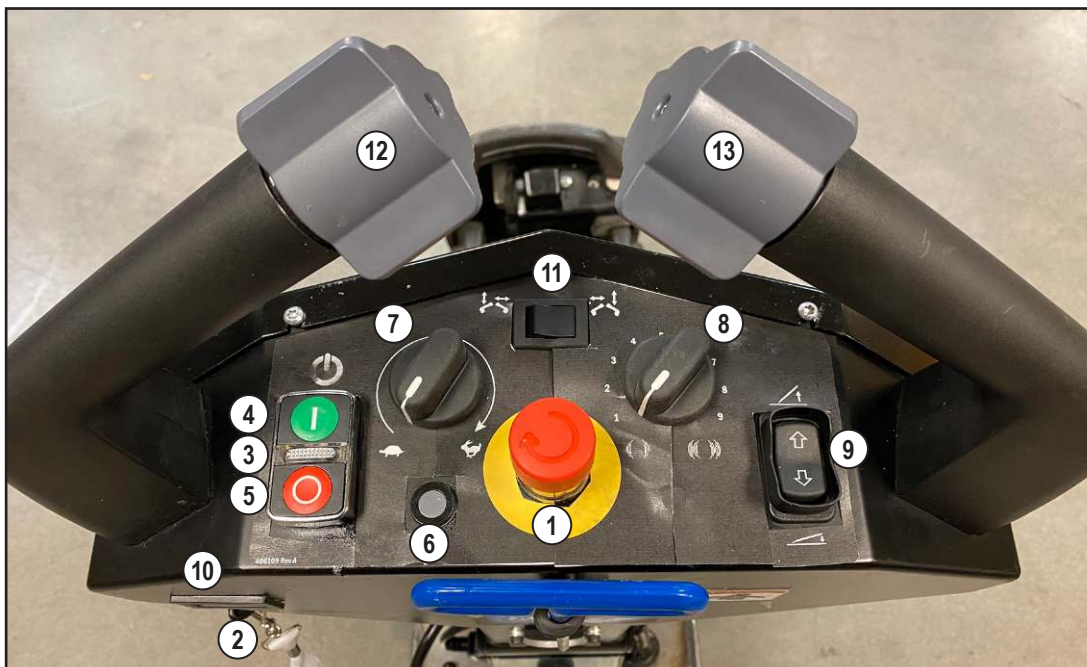
MACHINE OVERVIEW



- (1) Tooling holder
- (2) Debris deflector
- (3) Front weight
- (4) Middle weight
- (5) Slide weight
- (6) Lifting eyes
- (7) Drive wheel
- (8) Coupling flange

- (9) Wheel cleaner
- (10) Handle
- (11) Control panel
- (12) Left control handle
- (13) Right control handle
- (14) Hood (Body panel weldment)
- (15) Kickplate

OPERATING CONTROLS



[1] Emergency Stop Switch (E-Stop)

Push to immediately shut down the machine in case of emergency.

- **Reset Procedure**

If engaged, must be reset before the machine can be restarted. To reset, twist red button clockwise to release.

[2] Lanyard Kill Switch

Operator presence control (OPC) that immediately shuts down the machine if the operator gets separated from the machine's controls. The switch is held open by a key attached to a lanyard that is tethered to the operator. If the operator moves too far from the switch, the lanyard pulls the key from the switch shutting down the machine.

- **Reset Procedure**

If engaged, must be reset before the machine can be restarted. To reset, reinsert the key into the kill switch.

[3] Power Indicator

The power indicator illuminates when the machine is connected to power.

[4] ON Button

Push the green "ON" button to turn on the controls. The system indicator will pulsate green.

[5] OFF Button

Push the red "OFF" button to disable the controls.

[6] System Indicator

Indicates system status:

- Amber indicates startup mode.
- Pulsating green indicates machine is ready to operate.
- Flashing red indicates a system fault. Reference "TROUBLESHOOTING" section for fault codes.

[7] Drive Speed Control

Sets the maximum drive speed of the machine.

[8] Orbital Motor Speed Control

Adjusts the oscillation rate of the tooling holder.

[9] Blade Angle Control

Adjusts the angle of the blade.

[10] Hour Meter

Displays operating hours.

[11] Left/Right-Hand Preference Switch

Determines functionality of the control handles based on operator preference.

[12] [13] Left and Right Control Handles

The control handles are used to control the travel direction, turning and drive speed of the machine. Reference the "MACHINE OPERATION" section for detailed information.

INITIAL SETUP

INSTALLING THE POWER CORD

1. Remove the two cable clamps on handle.
2. Route power cord (packaged with machine) through clamps.
3. Reinstall clamps. Use of threadlocker on bolt threads is recommended.

NOTE:

- Make sure there is no excess slack in the power cord.



Installed power cord

INSTALLING THE BLADE HOLDER

See “CHANGING THE BLADE HOLDER” section for installation process.



Power cord should NOT have excess slack.

MACHINE OPERATION

WARNING

To avoid personal injury:

- Always turn off machine, disconnect from power and discharge stored energy before performing maintenance. Variable frequency drives (VFDs) hold stored energy and pose a serious electrical shock hazard. Always perform the following procedure before beginning any work on machine:
 1. Turn off machine.
 2. Leave power cord plugged in 5 minutes.
 3. Disconnect power cord.
 4. Wait an additional 5 minutes before beginning any work.

ADJUSTING THE HANDLE

CAUTION

To avoid personal injury, be careful not to pinch hands in the following locations:

- Gap below handle hinge
- Between handle and hood with handle adjusted all the way forward.
- Between handle and transport wheels with handle adjusted all the way back.

While pulling the handle release lever, slowly move the handle to the desired position. Handle will “click” into place.



Adjusting handle.

ADJUSTING THE WHEEL SCRAPERS

1. Loosen the nuts.
2. Adjust wheel scrapers so there is a gap of .13-.18" (3-5 mm) between the scraper and wheel.
3. Retighten nuts.

NOTE:

- Scraper should not contact the wheel, as damage to wheel could occur.



Wheel cleaner adjusted to proper gap.



Wheel cleaner should NOT contact wheel.

MACHINE OPERATION

WEIGHTS

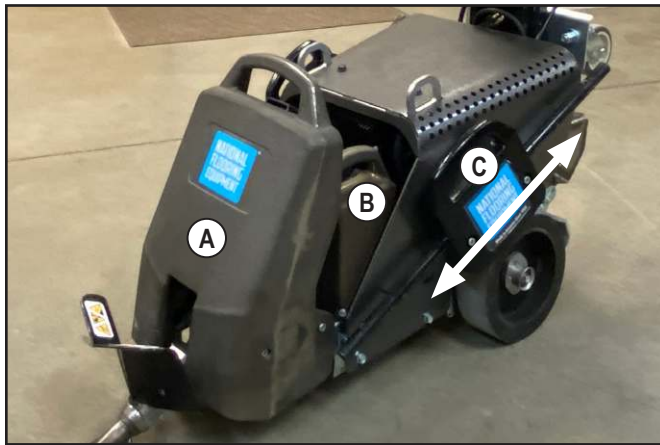
WARNING

To avoid personal injury:

- Weights are very heavy and create a crushing hazard. Use care when handling the weights.
- Beware of pinch point locations between weights and machine while installing weights.
- Make sure to properly secure the weights after installing. Unsecured weights could fall off causing injury.

NOTE:

- The front weight must be installed for all scraping applications to ensure proper machine operation. Do not perform scraping without the front weight.
- Middle and slide weights should remain installed for the majority of applications.
- Use the 6 mm extended “T” wrench (supplied) to loosen the locking screws.



- (A) Front weight
(B) Middle weights
(C) Slide weights

■ Removing Front Weight

WARNING

To avoid personal injury:

- The person lifting front weight should have the ability to lift 70 lbs. Otherwise a team lift of two people is highly recommended.
- When removing the front weight, make sure weight doesn't bind with the locating posts causing machine to be lifted along with the weight. Machine could detach from the weight causing serious injury.

- 1 weight, 66 lbs (29.9 kg)

1. Loosen locking screws a few turns but do not remove.
2. Carefully remove weight as shown.



Loosening front weight locking screws. (Right side not shown.)



Removing front weight.

MACHINE OPERATION

■ Removing Middle Weights

- 2 weights (1 weight per side), 28 lbs (12.7 kg) each
1. Loosen locking screws a few turns but do not remove. The rearward screw is accessed through the opening in the hood.
 2. Carefully remove weight.



Loosening middle weight locking screws.



Removing middle weight.

■ Removing/Adjusting Slide Weights

⚠ CAUTION

To avoid personal injury:

- When adjusting or removing the slide weights, be sure to hold the weight with one hand while loosening the screws. Otherwise, weight will slide causing possible injury.

- 2 weights (1 weight per side), 28 lbs (12.7 kg) each

NOTE:

- The slide weights are adjustable:
 - Position forward for more blade pressure.
 - Position rearward to provide better traction for the drive wheels.
 - Always position rearward before tilting machine back.

◆ Adjusting Slide Weights

1. Loosen locking screws about one turn but do not remove.
2. Slide weight along rail to desired position. Make sure weight is not resting against hood.
3. Retighten screws.

◆ Removing Slide Weights

1. Loosen locking screws about one turn but do not remove.
2. Carefully slide weight from top of rail.



Adjusting slide weight.

MACHINE OPERATION

WHEEL MODES

The wheels engage and disengage for better maneuverability.

- When the wheels are disengaged (freewheel mode), the coupling flanges disengage the wheels from the axle so the machine can be freewheeled when not under power.
- When the wheels are engaged (drive mode), the coupling flanges engage the wheels with the axle so the machine can be driven under power.

■ Disengaging Wheels

CAUTION

To avoid personal injury:

- Always make sure machine is on level ground before disengaging wheels.

Pull out each coupling flange and rotate 45° so it does not retract.

NOTE:

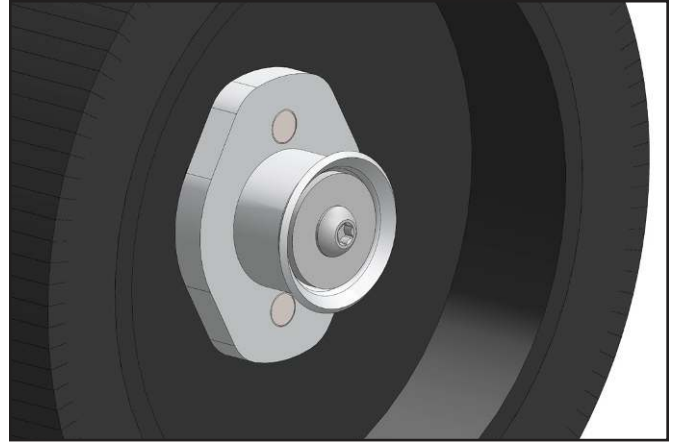
- If the coupling flange is difficult to pull out, turn the wheel slightly to reduce the friction and try again.



Wheel disengaged. Coupling flange is pulled out.

■ Engaging Wheels

1. Rotate each coupling flange until it “clicks” into place.
2. Move the machine slowly forward to rotate the wheels until both wheels fully engage.



Wheel fully engaged. Coupling flange is fully retracted.

JOBSITE EXPECTATIONS

- Make sure the jobsite is equipped with the proper power source for the machine requirements.
- Keep work area well-lit.
- Keep work area clean and clear of debris. After removing a portion of material, move it out of the way.
- Pound down or remove any nails or metal obstruction on wood or wood-like floors to avoid blade damage.

PREPARING FOR OPERATION

Complete the following before starting the machine:

1. Inspect wheels, tooling holder, blade holder, handle harness and power cord for damage. Check for loose or missing fasteners.
2. Clean built-up glue and debris from wheels, front weight and blade holder.

STARTING THE MACHINE



CAUTION

To avoid personal injury:

- **Avoid excessive pushing, pulling and twisting of control handles, as machine could be damaged.**

1. Install desired tooling.
2. Make sure the wheels are engaged.
3. Make sure the orbital motor speed is set “below 1”.
4. Plug machine into power source. Verify the power indicator illuminates.
5. Verify the E-stop and lanyard kill switch are not engaged.
6. Tether lanyard kill switch to wrist.
7. Push the “ON” button to turn on the machine. The system indicator will turn amber during startup mode (approximately 10 seconds), then pulsate green indicating machine is ready to operate.
8. Adjust the maximum drive speed.
9. Adjust orbital motor speed to the desired oscillation rate.

NOTE:

- NFE recommends adjusting the orbital motor speed only as high as necessary to perform the job. Lower speeds reduce hand-arm vibration and noise levels.
10. Adjust blade angle to the angle at which the material comes up the easiest.
 11. Set left/right-hand preference switch for desired functionality of the control handles.
 12. Use the control handles to control the travel direction, speed and turning of the machine.

STOPPING THE MACHINE

1. Turn the orbital motor speed control fully counterclockwise to the “below 1” position.
2. Push the “OFF” button.

AFTER OPERATION

1. Disconnect machine from power.
2. Clean built-up glue and debris from wheels, front weight and blade holder.
3. **IMPORTANT:**
 - Relubricate the wheel bearings after daily use by disengaging the wheels, then pushing the machine ahead in freewheel mode allowing the wheels to rotate at least three turns.
4. Engage the wheels so the machine is in drive mode.
5. Remove tooling.
6. Store machine in a dry, secure place.

MACHINE OPERATION

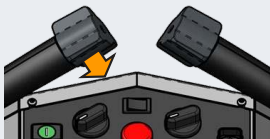
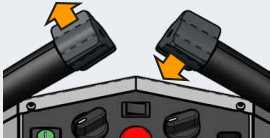
DRIVING THE MACHINE

- The left/right-hand preference switch determines the functionality of the control handles.
- The control handles are proportional controls, meaning the more you rotate the control, the faster the machine moves.

■ Left-Hand Preference

- Left Control Handle = Forward/Reverse
- Right Control Handle = Turn



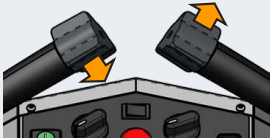
Control Handle Functions	Machine Movement	Control Handle Functions	Machine Movement
			
			
			
			
			

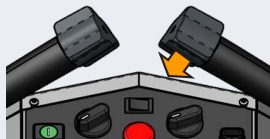
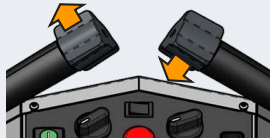
DRIVING THE MACHINE (CONT'D)

■ Right-Hand Preference

- Right Control Handle = Forward/Reverse
- Left Control Handle = Turn



Control Handle Functions	Machine Movement
	
	
	
	

Control Handle Functions	Machine Movement
	
	
	
	
	
	

MACHINE OPERATION

CHANGING THE BLADE HOLDER

WARNING

To avoid personal injury:

- Before tilting machine back, position the slide weights rearward to make tilting easier.
- Always block the front of the machine to prevent the machine from falling forward unexpectedly.
- Always wear safety gloves when handling blade holders. Blade holders get very hot while scraping. Blades are sharp.

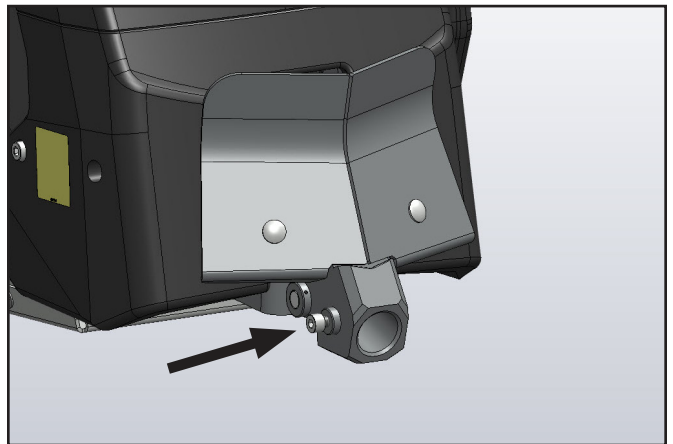
1. Position the slide weights rearward.
2. Slowly tilt the machine back using the kickplate.
3. Block up machine. Place block under linkage.
4. While pushing button, remove blade holder from the tooling holder.
5. Insert the new blade holder into the tooling holder. Make sure the blade holder is fully engaged and secure.

NOTE:

- The blade holder should swivel freely in the tooling holder. This allows the blade to stay in contact with the floor. White lithium grease may need to be applied to the shaft of the blade holder before inserting.
- The swivel-lock feature allows the blade holder to be locked into place for certain applications. To prevent the blade holder from swiveling, tighten the screw on the side of the tooling holder using the 6 mm extended "T" wrench (supplied).



Installing the blade holder.



Swivel-lock feature

CHANGING THE BLADE

WARNING

To avoid personal injury:

- Always wear safety gloves when handling blades. Blades are sharp and could be very hot.
- Remove blade holder from tooling holder and place on level surface before replacing blade.

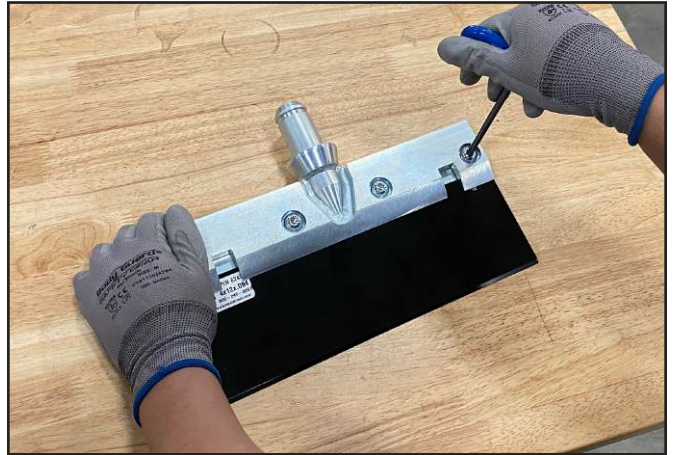
1. Remove blade holder from machine.
2. Loosen the hex head cap screws keeping hand safely away from sharp edge of the blade. It is not necessary to remove the screws.
3. Remove old blade.
4. Place new blade into the blade holder and slide back until fully seated against the notch.

IMPORTANT:

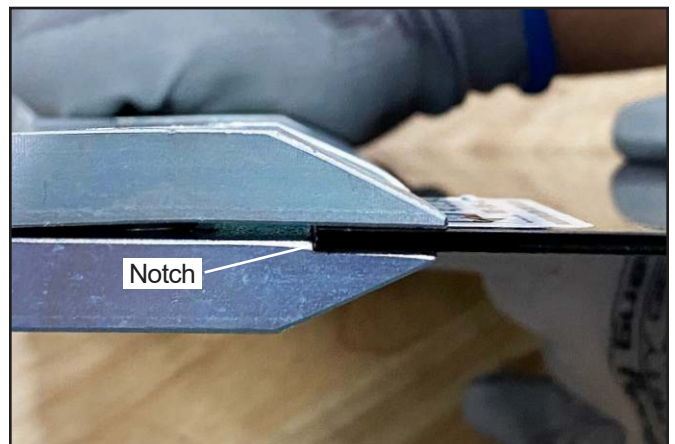
- Do not insert blade all the way back to the screws. Incorrect installation will cause insufficient clamping leading to premature blade wear and damage.

If the blade is wider than the blade holder, center the blade in the holder. If the blade is smaller than the blade holder, the blade should be mounted in the center of the holder during the first pass. After the first pass is made, the blade can be offset in the holder to allow the wheels to keep even contact with the floor and provide easy access to the wall.

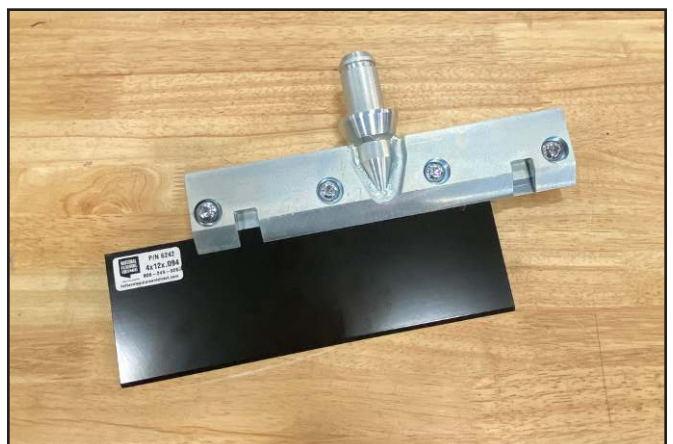
5. Tighten the screws.
6. Reinstall blade holder.



Removing the blade.



Blade fully seated against notch.



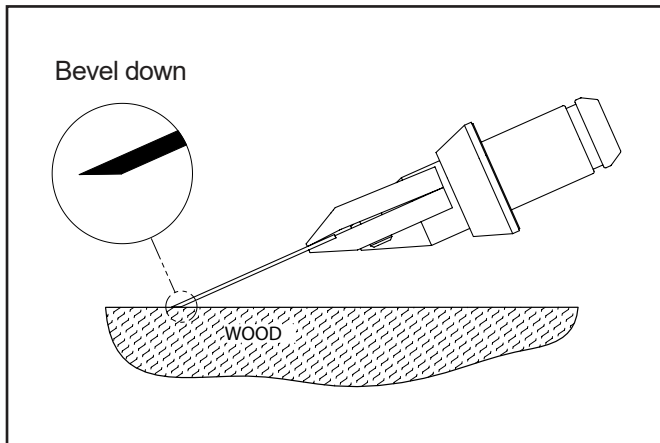
Offset blade

MACHINE OPERATION

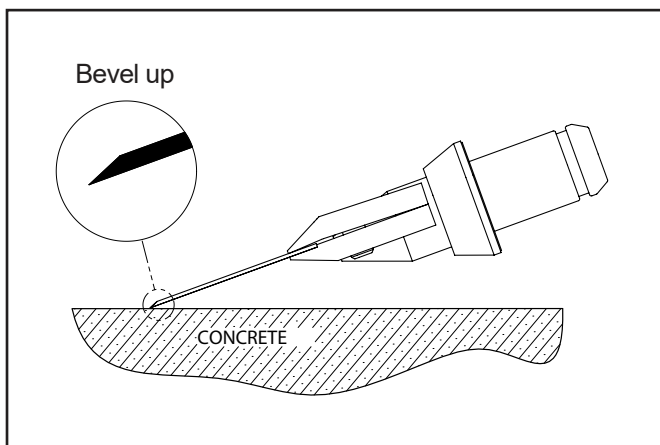
BLADES

■ Blade Setup

- Dull blades greatly affect the performance of the machine and reduce cutting ability. Sharpen or replace as needed.
- Depending on the material and sub-floor type, proper blade size and placement will affect performance.
- For harder jobs, use a smaller blade.
- Start with a narrow blade, then increase blade size to optimize cutting pass. Narrower blades work easier than wider blades, and usually clean the floor better. Wider is not always better or faster.
- Normally the bevel on the blade is down for wood, bevel up for concrete.



Standard blade in blade holder, bevel down for wood.

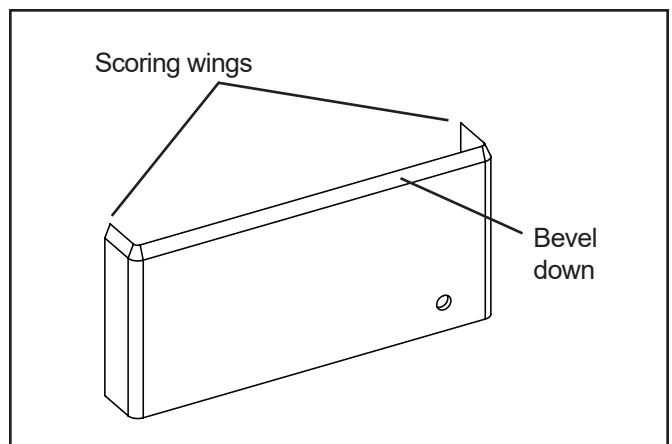


Standard blade in blade holder, bevel up for concrete.

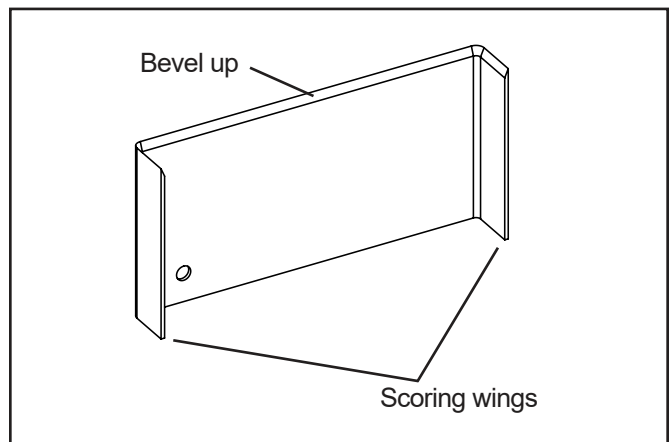
- Blades can be offset in the blade holder for easier access to toe kicks or for removal along the wall.

■ Self-Scoring Blades

- Self-scoring blades eliminate the need for pre-scoring material and are designed for monolithic flooring, laminate, carpet and sheet materials. Depending upon the type of material being removed and the sharpness of the blade and scoring wings, the self-scoring blades may make it harder to control the machine. Keep scoring wings sharp at all times.
- Sheet vinyl, solid vinyl, rubber tile and urethane need to be scored for best results. NFE recommends using a self-scoring blade.



Bevel down self-scoring 90° blade



Bevel up self-scoring 90° blade

APPLICATIONS

The machine is designed for hard and soft goods removal applications:

■ VCT Tile

Never use a blade wider than the size of the tile being removed. If material still does not come up clean or machine jumps on top of material, reduce blade size or use a smaller portion of the blade.

■ Pure Vinyl Rubber Tile

A 10" (25.4 cm) self-scoring blade is recommended for this application.

■ Ceramic

Carbide shanks are most effective for removing ceramic. On small block-styles of tile, pre-breaking may not be necessary. Open an area large enough for machine or blade to fit in, or start from a doorway. Use slow speed.

■ Direct-Glued Carpet

NFE recommends using a self-scoring blade. Normally 6-14" (15.2-35.6 cm) self-scoring blades are used on direct-glued carpet, secondary-backed, unitary, double-glued, vinyl foam and urethane foam.

■ Wood

Wood floor shank (#7082-8GV) will usually work best. In most instances it is necessary to pre-score the wood floor every 6-8" (15.2-20.3 cm), 90% through the floor, in a cross-grain fashion. Adjust blade angle to keep the shank low to the floor. Using the machine on a slow speed will help.

■ Thin Coatings

Use 1" (2.5 cm) blades with a razor blade blade holder or a carbide shank. Experiment to see which method works the best for the job application.

■ Re-Scrape

Use razor blades with a razor blade blade holder or a .062" standard blade. Turn off oscillation. Use a steeper angle of attack if necessary. Experiment to see which method works the best for the job application.

■ Subfloor Surfaces

◆ Glued Hardwood Flooring

A 10" (25.4 cm) blade is recommended for regular adhesive; a 6" (15.2 cm) blade for epoxy. For proper removal of hardwood flooring (plank solid, plank laminated, parkay laminated), flooring must be scored to blade width. NFE recommends using an NFE scarifier equipped with a wood-scoring scarifier drum. Set scarifier at a depth of 99% of the thickness of the board, just missing the subfloor surface when on concrete. For true parkay flooring, scoring is not necessary. It will come up in small pieces. Open an area large enough to fit machine or start from a doorway.

◆ Wood

When working over plywood sub-flooring, run machine in the same direction as the grain in the wood. Blade works best bevel down. On solid wood floors (e.g., plank), run in the same direction as the plank, not perpendicular to grain or plank. Removing the front weight will help on all soft surfaces.

◆ Concrete

For best performance, position blade bevel up when working on a concrete slab or cleaning adhesive. On occasion, bevel down gives better blade life. Test each job for best performance.

◆ Gypcrete and Soft-Poured Flooring

Position blade bevel down to create a better wearing surface, although bevel up may work if front weight is removed.

TRANSPORTING THE MACHINE

TRANSPORT WHEELS

Transport wheels are used to move the machine around the jobsite or for loading the machine onto a vehicle. They allow for easier movement and provide stability.

WARNING

To avoid personal injury:

- Before tilting machine back, position the slide weights rearward to make tilting easier.
- Always block the front of the machine to prevent the machine from falling forward unexpectedly.

1. Position the slide weights rearward.
2. Slowly tilt the machine back using the kickplate.
3. Block up machine. Place block under linkage.
4. Insert the transport wheels into the tooling holder. Make sure the transport wheels are fully engaged and secure.
5. For better maneuverability, adjust the blade angle so the transport wheels bracket is parallel to the floor.

NOTE:

- When not in use, store transport wheels on the handle orientated as shown.



Installing transport wheels.



Good maneuverability—bracket parallel to floor.



Poor maneuverability—bracket NOT parallel to floor.



Proper orientation for transport wheels in stowed position

TRANSPORTING THE MACHINE

VEHICLE WITH POWER LIFTGATE

Using a truck or van equipped with a power liftgate is the recommended way of transporting the machine by vehicle.

WARNING

To avoid personal injury:

- Instructions for safe transporting using a vehicle equipped with a power liftgate are described below. Read these instructions carefully before transporting. Personnel in proximity of the machine must wear adequate safety equipment.

IMPORTANT:

- Make sure the load capacity of the liftgate is greater than the weight of the operator and machine.
- Machine weight is shown in "MACHINE SPECIFICATIONS" section and on serial number label.
- Make sure weights are properly secured to the machine.
- Use the transport wheels when loading and unloading.
- Engage wheels and use wheel chocks to stabilize machine on liftgate.
- Before tying down machine, engage wheels and install empty blade holder for stability.
- Use appropriate tie-down hardware to secure machine.
- Always inspect the tie-down hardware before each use. Do not use if worn or damaged.
- Use only proper tie-down locations. Do not attach the tie-down hardware to handle, weights, blade holder or tooling holder. Weights and handle could detach causing injury. The machine could be damaged.
- Load disengagement can cause severe injury or property damage. Always make sure tie-down hardware is properly connected.
- Make sure all attachments are properly secured during transport.
- Follow your company's safety guidelines to avoid injury.

1. Make sure transport wheels are installed.
2. Move machine onto liftgate.
3. Engage wheels and chock wheels to stabilize machine on liftgate.
4. Move machine into truck.
5. Before tying down machine, engage wheels and install empty blade holder for stability.
6. Tie down the machine using proper tie-down locations.



Transporting with power liftgate



Tie-down locations

TRANSPORTING THE MACHINE

VEHICLE WITH RAMP

If a liftgate is not available, a ramp may be used to load and unload the machine.

WARNING

To avoid personal injury:

- Instructions for safe transporting using a vehicle equipped with a ramp are described below. Read these instructions carefully before transporting. Personnel in proximity of the machine must wear adequate safety equipment.

IMPORTANT:

- Make sure the load capacity of the ramp is greater than the weight of the operator and machine.
- Machine weight is shown in "MACHINE SPECIFICATIONS" section and on serial number label.
- Make sure the ramp is not damaged and properly secured to the truck/trailer bed.
- Do not use the machine on a ramp that exceeds a 36% grade (20° incline).
- Remove all weights from machine before loading and unloading. Make sure weights are properly secured during transport.
- Use the transport wheels when loading and unloading.
- Drive the machine under power when moving the machine up or down the ramp. Using the freewheel mode could result in loss of control causing serious injury.
- Operator should never be positioned below machine on the ramp. Always back the machine up the ramp and drive the machine down the ramp.
- Drive the machine slowly. Do not make directional changes when machine is on the ramp.
- Electrical cords create a tripping hazard. Be careful not to trip over the extension cord while driving the machine.
- Before tying down machine, make sure wheels are engaged and install empty blade holder for stability.
- Use appropriate tie-down hardware to secure machine.
- Always inspect the tie-down hardware before each use. Do not use if worn or damaged.
- Use only proper tie-down locations. Do not attach the tie-down hardware to handle, weights, cutting head or tooling holder. Weights and handle could detach causing injury. The machine could be damaged.
- Load disengagement can cause severe injury or property damage. Always make sure tie-down hardware is properly connected.
- Make sure all attachments are properly secured during transport.
- Follow your company's safety guidelines to avoid injury.



Tie-down locations

■ Ramp Loading

1. Remove weights.
2. Make sure transport wheels are installed.
3. Engage the wheels so the machine is in drive mode.
4. Plug machine into power source.
5. Turn on the machine and slowly back up the ramp.
6. Turn off machine and unplug from power source.
7. Remove transport wheels and install empty blade holder for stability.
8. Tie down the machine using proper tie-down locations.

■ Ramp Unloading

1. Make sure weights are removed.
2. Remove blade holder and install transport wheels.
3. Make sure the wheels are engaged so the machine is in drive mode.
4. Plug machine into power source.
5. Turn on the machine and slowly drive down the ramp.

NOTE:

- Use caution when driving down ramp as the machine will overrun the drive motor speed. Pulsate the control handle knob in reverse to "brake" the machine.
6. Turn off machine and unplug from power source.
 7. Attach weights making sure to properly secure to machine.

TRANSPORTING THE MACHINE

HOISTING

WARNING

To avoid personal injury:

- Instructions for safe hoisting are described below. Read these instructions carefully before hoisting. Personnel in proximity of the machine must wear adequate safety equipment.

IMPORTANT:

- Choose lifting hardware appropriate for the weight and configuration of the machine.
- Machine weight is shown in “MACHINE SPECIFICATIONS” section and on serial number label.
- Do not lift loads that exceed the maximum rated capacity of the hoist and the lifting hardware.
- Be sure the hooks have a safety latch.
- Always inspect the lifting hardware before each use. Do not use if worn or damaged.
- Be sure the weights and blade holder are properly secured to the machine before hoisting.
- Use only proper lifting points. Do not attach lifting hardware to handle, weights, blade holder or tooling holder. Weights and handle could detach causing injury. The machine could be damaged.
- Do not enter and do not allow others to enter the working area under the suspended load. Do not move the load over people.
- Load disengagement can cause severe injury. Always make sure lifting hardware is properly connected.
- Follow your company’s safety guidelines to avoid injury.

1. Shut off machine and unplug from power source.
2. Bundle the cord and tuck in front of the handle to prevent cord from dragging on the floor.
3. Attach lifting hardware to the proper lifting points.
4. Using hoist, lift the machine slowly.



Lifting points

MAINTENANCE

WARNING

To avoid personal injury:

- Always turn off machine, disconnect from power and discharge stored energy before performing maintenance. Variable frequency drives (VFDs) hold stored energy and pose a serious electrical shock hazard. Always perform the following procedure before beginning any work on the machine:
 1. Turn off machine.
 2. Leave power cord plugged in 5 minutes.
 3. Disconnect power cord.
 4. Wait an additional 5 minutes before beginning any work.

To ensure the machine operates safely for a long time, perform regular maintenance according to the following schedule.

MAINTENANCE SCHEDULE

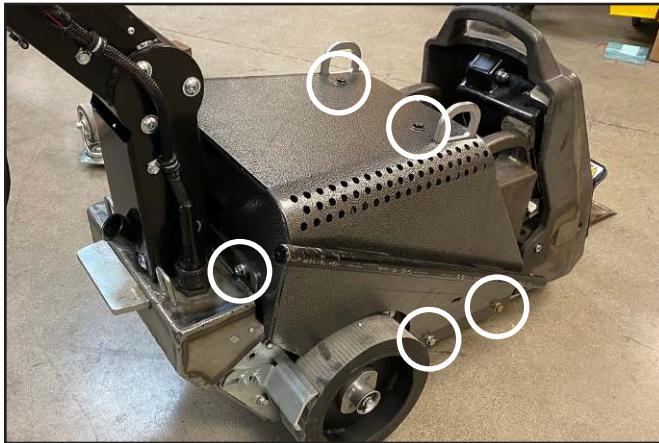
MAINTENANCE TO BE PERFORMED	SERVICE INTERVAL			
	Daily	Monthly	Every 500 hrs	Every 1000 hrs
Inspect wheels, tooling holder, blade holder, handle harness and power cord for damage. Check for loose or missing fasteners.	•			
Clean built-up glue and debris from wheels, wheel cleaners, front weight, deflector and blade holder.	•			
Test E-stop and lanyard kill switch for proper functioning.		•		
Test GFCI for proper functioning.		•		
Inspect linear actuator foam pads and wear liners for excessive wear. Replace as needed.			•	
Remove wheel coupling flanges and clean any built-up debris.				•
Inspect isolators. Replace as needed.				•
Inspect and grease cutting head bearing. Replace as needed.				•
Inspect blade angle linkage for excessive play. Grease linkage.				•

REASSEMBLING COMPONENTS

Use of threadlocker on fasteners is recommended when reassembling components after performing maintenance.

REMOVING THE HOOD

1. Remove the slide weights.
2. Remove the top screws.
3. Remove the rear screws.
4. Loosen the side screws but do not remove.
5. Remove the hood.



Hood screw locations (left side not shown)



Removing hood.

INSPECTING FOR DAMAGE

SERVICE INTERVAL:

- Daily

Inspect wheels, tooling holder, blade holder, handle harness, power cord for damage. Check for loose or missing fasteners.

CLEANING DEBRIS BUILDUP

WARNING

To avoid personal injury:

- Never use a pressure washer or hose to clean the machine. Water can seep into the electrical components causing an electrical shock hazard or malfunction of controls.

SERVICE INTERVAL:

- Daily

Clean built-up glue and debris from wheels, wheel cleaners, front weight, deflector and blade holder.

TESTING THE SAFETY CIRCUIT

SERVICE INTERVAL:

- Monthly

■ Emergency Stop Switch

1. Start machine.
2. Push the emergency stop switch and verify machine shuts down.
3. Reset emergency stop switch.

■ Lanyard Kill Switch

1. Start machine.
2. Pull the lanyard from the kill switch and verify the machine shuts down.
3. Reset the lanyard kill switch.

MAINTENANCE

TESTING THE GROUND FAULT CIRCUIT

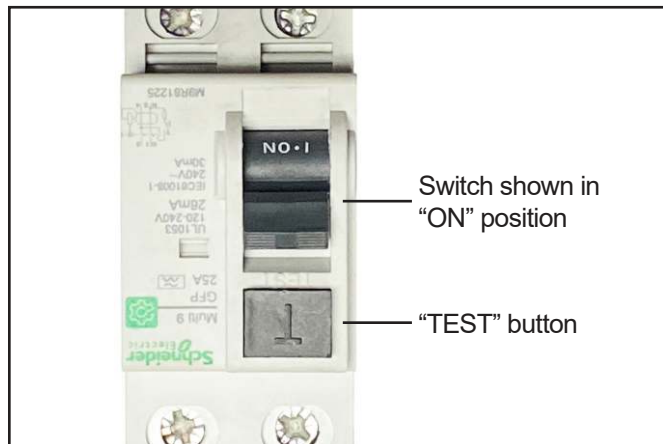
WARNING

To avoid personal injury:

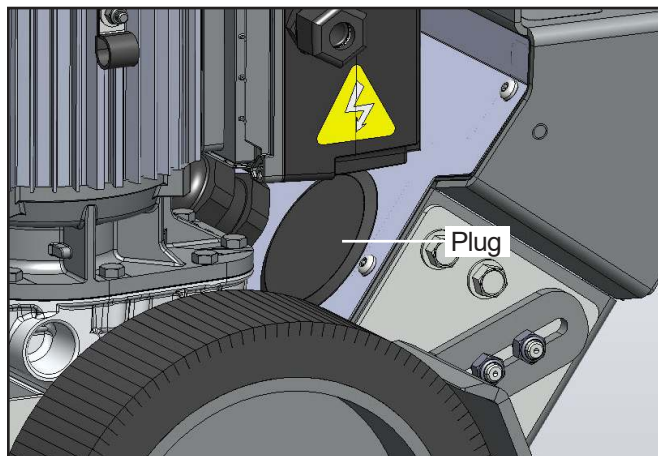
- Be sure to follow all electrical safety instructions described in “SAFETY” section.
- The ground fault circuit interrupter (GFCI) must be tested with the machine plugged into a power source and turned off.

SERVICE INTERVAL:

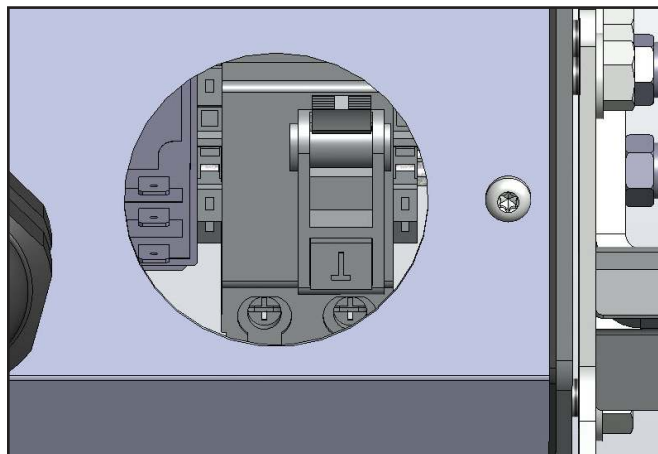
- Monthly
1. Remove the hood.
 2. Pry up the plug using a flat head screwdriver.
 3. Push “TEST” button. The GFCI should trip.
 4. Reset GFCI by flipping switch upward to “ON” position.



Ground fault circuit interrupter (GFCI)



GFCI access port with plug installed

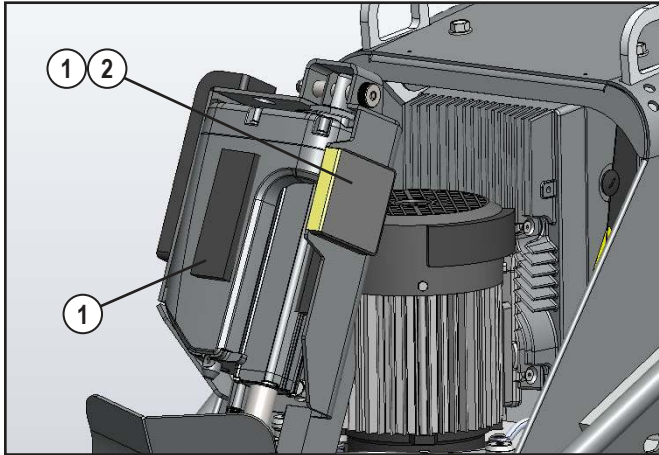


GFCI access port with plug removed (some components not shown for clarity)

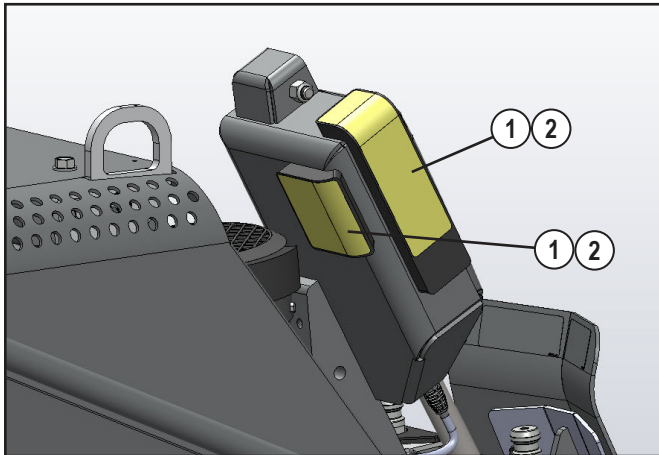
INSPECTING THE PADS AND LINERS

SERVICE INTERVAL:

- Every 500 hours
1. Remove the front weight to access the linear actuator assembly.
 2. Inspect foam pads (1) and wear liners (2) for excessive wear. Replace as needed.



Foam pads and wear liners (weights not shown for clarity)

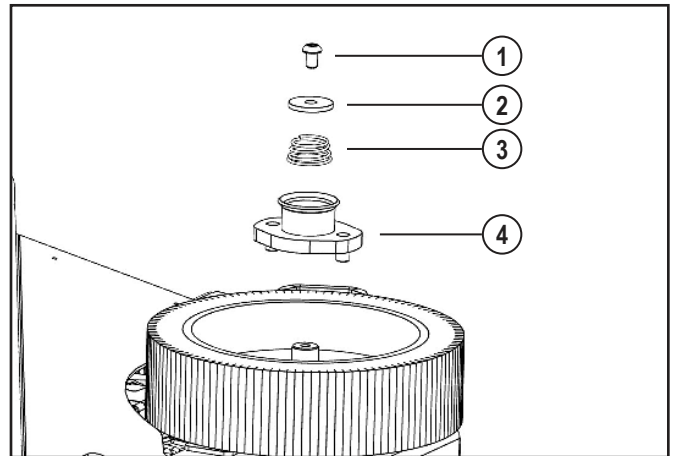


Foam pads and wear liners (weights not shown for clarity)

CLEANING THE COUPLING FLANGES

SERVICE INTERVAL:

- Every 1000 hours
1. Remove front and slide weights.
 2. Carefully lay the machine on its side.
 3. Remove retaining screw (1), washer (2), spring (3) and coupling flange (4).
 4. Clean built-up debris from the coupling flange.
 5. Clean built-up debris from the wheel holes.



Coupling flange disassembly

MAINTENANCE

ISOLATORS AND CUTTING HEAD BEARING

SERVICE INTERVAL:

- Inspect isolators and cutting head bearing every 1000 hours. Replace as needed.
- Grease cutting head bearing during inspection.

■ Inspection

1. Remove front and slide weights.
2. Remove the bottom cover.
3. Carefully lay the machine on its side so the isolators (1) and cutting head bearing (5) are accessible.
4. Inspect the isolators and cutting head bearing for damage, wear and excessive play.
5. Grease the cutting head bearing using Chevron SRI Grease 2 or equivalent.
6. If isolators and cutting head bearing are in good condition, reverse Steps 1-3. If replacement is needed, continue to Step 7.

■ Removal and Replacement

7. Carefully lift machine to its upright position.
8. Remove middle weights.
9. Remove hood.
10. Carefully lay the machine on its side so the isolators and cutting head bearing are accessible.
11. For each isolator (1), hold the nut (2) on top side of frame and remove the hex head screw (4) and washer (3).
12. Snip cable ties and disconnect plug (9).
13. Using a swiveling and rocking motion, pull the full subassembly away from the eccentric (8).
14. If not replacing the cutting head bearing skip to Step 19.

◆ Removing/Replacing the Cutting Head Bearing

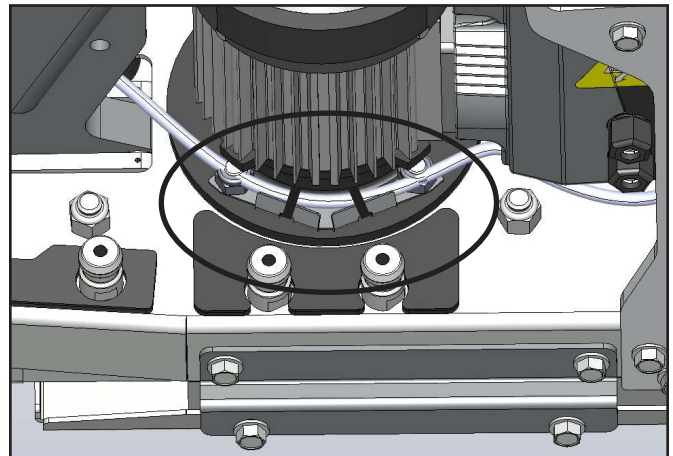
15. Hold nuts (6) on top side of frame and remove the cap screws (7).
16. Remove worn bearing (5).
17. Visually center the new bearing with the plate opening.
18. Install new bearing and secure using nuts (6) and cap screws (7).

◆ Removing/Replacing the Isolators

19. Remove worn isolators (1).
20. Install new isolators.

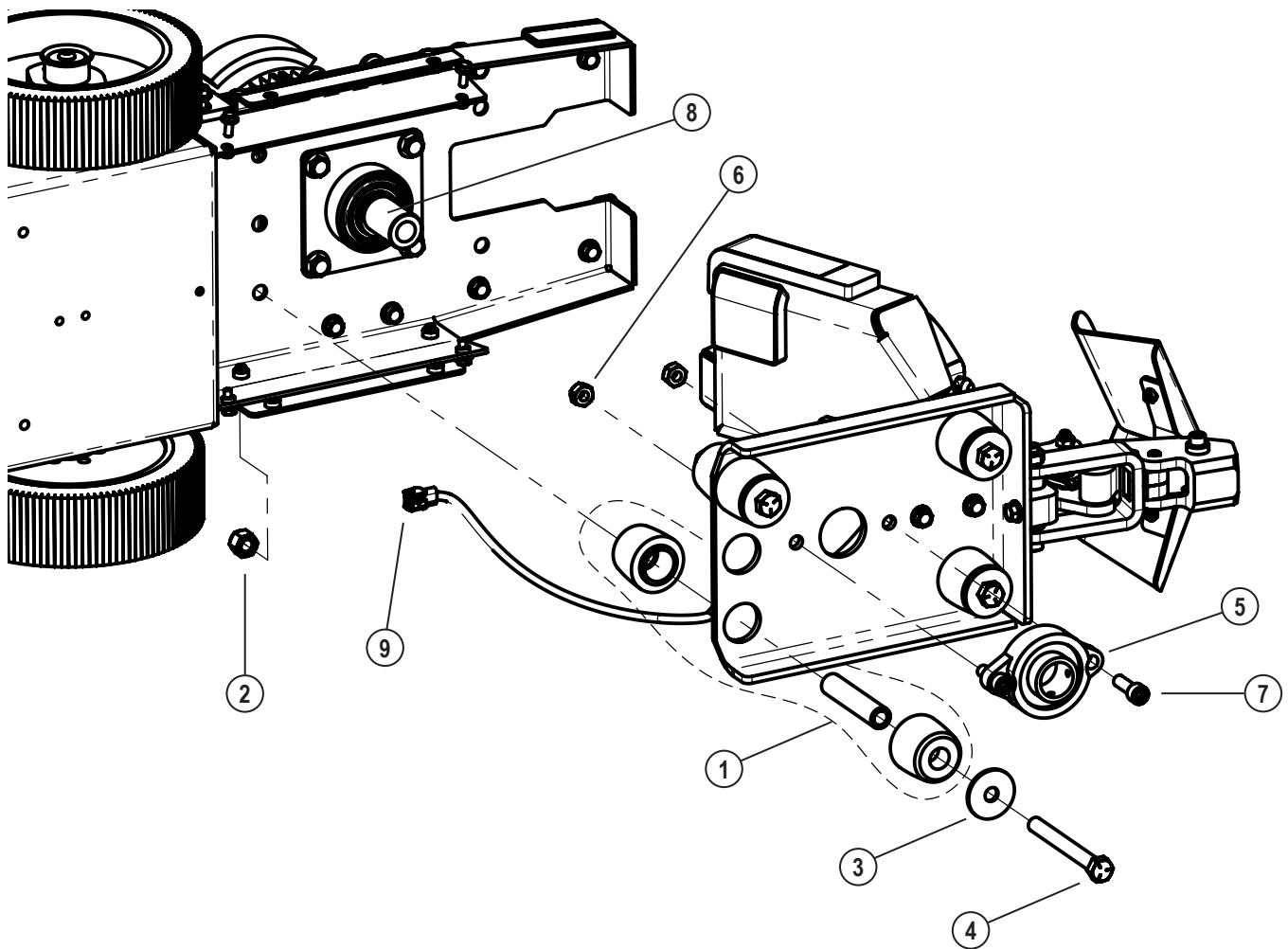
NOTE:

- Each isolator (1) consists of 2 rubber halves and a steel tube. Both rubber halves have a boss which must be centered in the plate opening.
21. Move the full subassembly back into position by sliding the bearing (5) over the eccentric (8).
 22. Secure the full subassembly using the hex head screws (4), washers (3) and nuts (2). Tighten the screws until you bottom out on the steel tubes of the isolators.
 23. Reconnect the plug (9). Route cable as shown, securing with two cable ties.
 24. Replace hood.



Proper cable routing

ISOLATORS AND CUTTING HEAD BEARING (CONT'D)

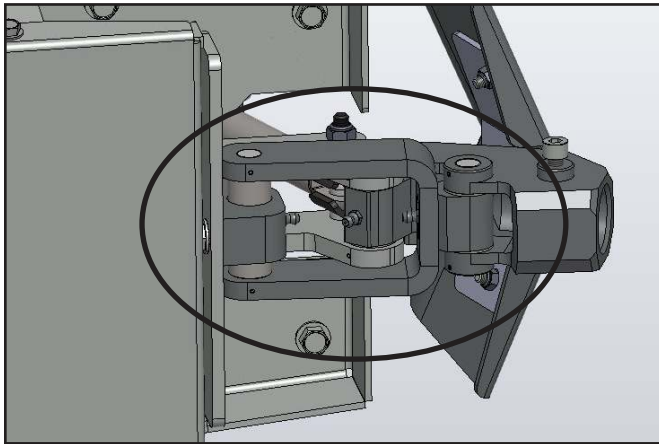


MAINTENANCE

INSPECTING/GREASING THE BLADE ANGLE LINKAGE

SERVICE INTERVAL:

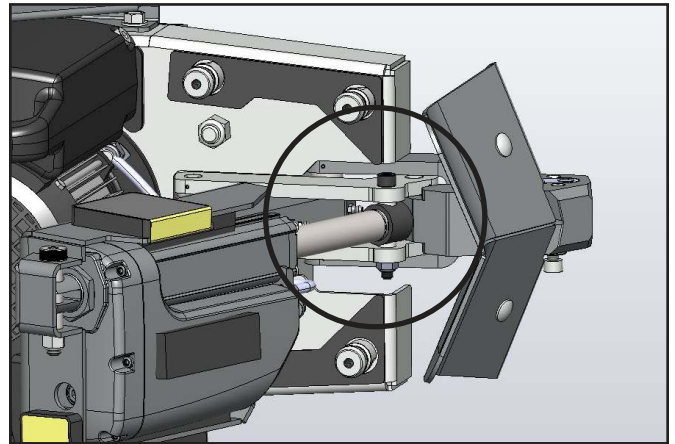
- Every 1000 hours
1. Remove front and slide weights.
 2. Carefully lay the machine on its side.
 3. Inspect blade angle linkage for excessive play.
 - If there is excessive play in the linkage, contact NFE technical services for assistance.
 4. Grease the four Zerk fittings using a mineral-based, lithium-thickened grease with graphite additive (McMaster-Carr part number 10195K823 or suitable equivalent).



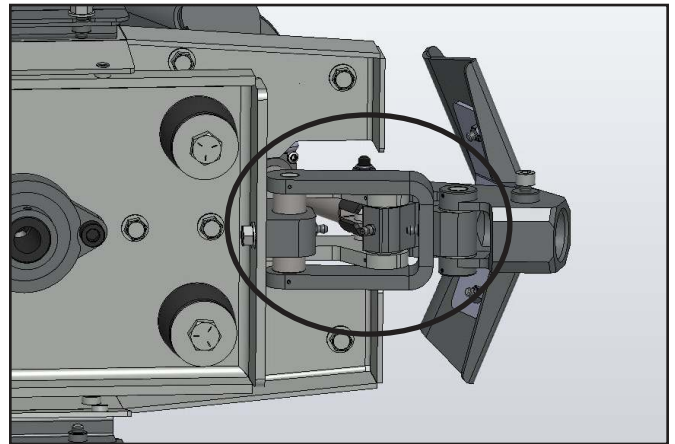
Blade angle linkage

CLEARING JAMS

1. Remove front and slide weights.
2. Remove the bottom cover.
3. Carefully lay the machine on its side.
4. Inspect the area around the linear actuator and blade angle linkage for any debris or obstructions.
5. Remove obstruction.



Actuator area



Linkage area

REMOVING/REPLACING THE WHEELS

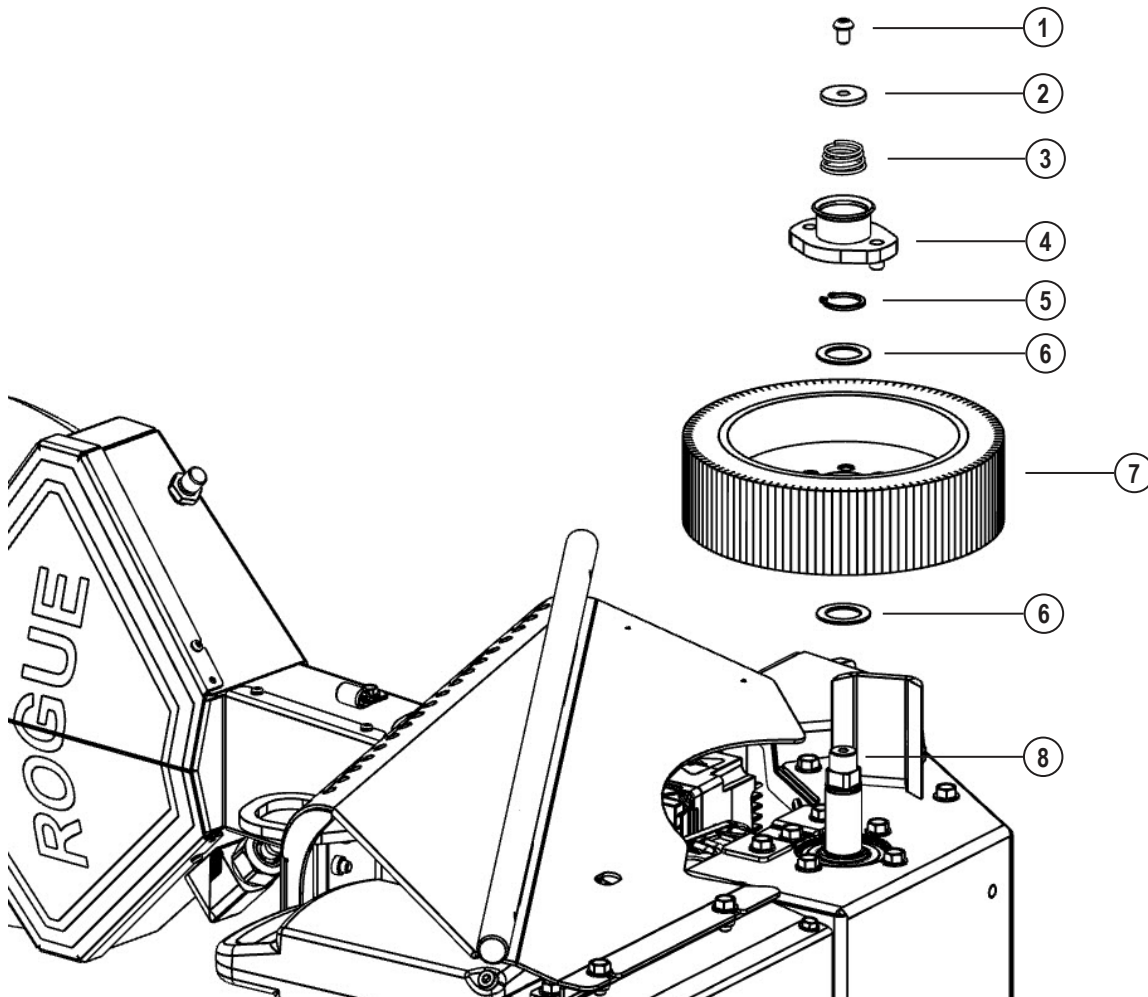
The wheels can be removed to more easily reach obstructions.

■ Removing Wheel

1. Remove front and slide weights.
2. Carefully lay the machine on its side.
3. Remove retaining screw (1).
4. Remove washer (2), spring (3) and coupling flange (4).
5. Remove retaining ring (5).
6. Remove shim (6) and drive wheel (7).
7. Remove shim (6).

■ Replacing Wheel

8. Wipe axle (8) clean and lubricate with white lithium grease.
9. Repack both wheel bearings with white lithium grease.
10. Replace shim (6).
11. Replace drive wheel (7) and shim (6).
12. Reinstall retaining ring (5).
 - Make sure the retaining ring was not overly flexed and snaps tight into the groove.
13. Replace coupling flange (4), spring (3) and washer (2).
14. Replace retaining screw (1) and tighten.



MAINTENANCE

REMOVING/REINSTALLING THE HANDLE

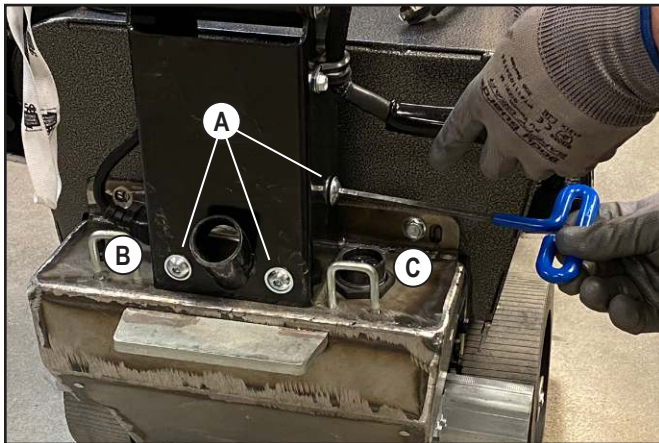
⚠ CAUTION

To avoid personal injury, be careful not to pinch hands in the following locations:

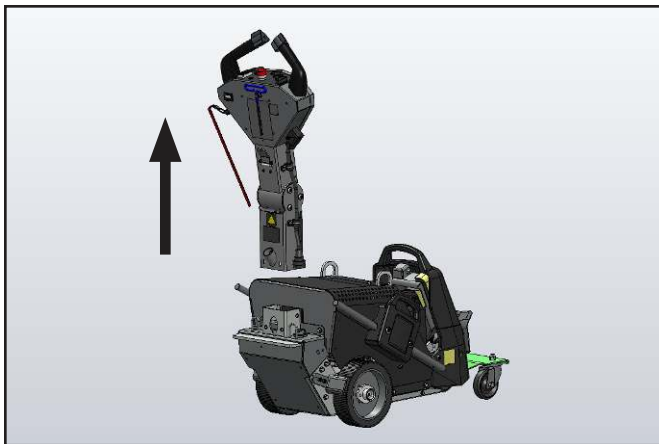
- Between the handle and machine while reinstalling handle.

■ Removing Handle

1. Unplug power cord from base of handle.
2. Unplug handle harness.
3. Using the 6 mm extended "T" wrench (supplied), remove the 4 mounting screws at the base of handle.
4. Carefully lift handle from machine.



- (A) Handle mounting screws (left side not shown)
(B) Power cord plug
(C) Handle harness plug



Removing handle.

■ Reinstalling Handle

To reinstall the handle, reverse the previous steps. Make sure all the screws are tightened.

NOTE:

- When plugging in the handle harness, be sure to properly orientate the harness plug with the socket.
- Make sure there is no excess slack in the power cord.



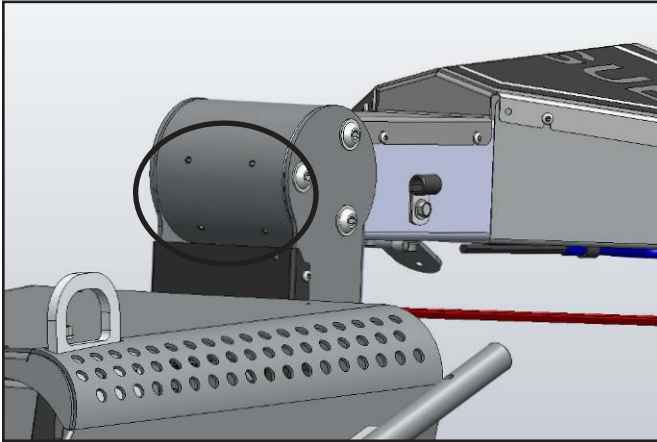
Proper slack in power cord



Power cord should NOT have excess slack.

ADJUSTING HANDLE PIVOT

The handle pivot tension can be adjusted by turning the four set screws on the handle hinge.



Pivot tension adjustment screws

ADJUSTING HANDLE RELEASE LEVER

1. Remove the small handle cover by loosening the four Torx screws.
2. Using a small wrench, turn the adjustment nut to remove all of the end play in the threaded rod and avoid dead travel with the release lever.

IMPORTANT:

- Only remove the end play. Do not overtighten nut as the handle hinge could unexpectedly release.



Adjusting the handle release lever.

ADJUSTING CONTROL HANDLE KNOBS

The position of the control handle knobs may be adjusted depending on operator preference.

1. Remove screw.
2. Remove knob and reinstall to desired orientation.
3. Reinstall screw.



Control handle knob removed.

MAINTENANCE

MANUAL OVERRIDE OF THE LINEAR ACTUATOR

In case of unexpected loss of power, the blade angle can be adjusted by manually moving the linear actuator. This allows for power-free movement of the actuator.

1. Remove the front weight.
2. Using the 6 mm extended "T" wrench (supplied), remove the plug covering the manual override.
3. Use the wrench to turn the manual override clockwise or counterclockwise as needed to move the actuator.

IMPORTANT:

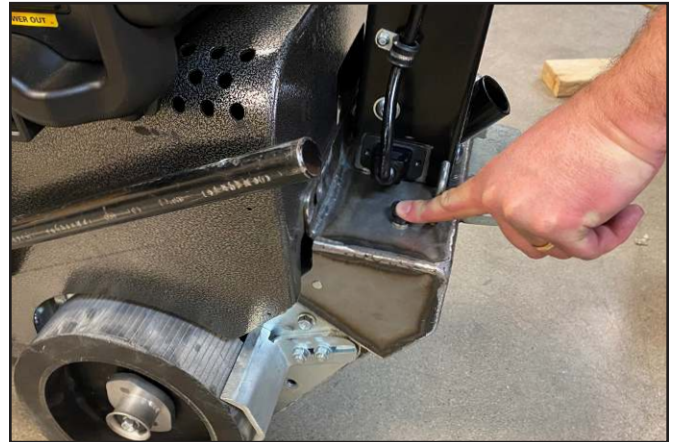
- Do not manually overtravel the actuator. The internal limit switches that limit travel will not function during manual adjustment.



Manually adjusting the linear actuator.

RESETTING THE ONBOARD CIRCUIT BREAKER

If the onboard circuit breaker has been tripped, the machine will not run. Push the overload reset button to reset.



Resetting the onboard circuit breaker.

LONG TERM STORAGE

⚠ WARNING

To avoid personal injury:

- Never use a pressure washer or hose to clean the machine. Water can seep into the electrical components causing an electrical shock hazard or malfunction of controls.

1. Disconnect machine from power.
2. Clean built-up glue and debris from wheels, wheel scrapers, front weight, deflector and blade holder.
3. Relubricate the wheel bearings by disengaging the wheels, then pushing the machine ahead in freewheel mode allowing the wheels to rotate at least three turns.
4. Engage the wheels so the machine is in drive mode.
5. Remove tooling.
6. Store machine in a dry, secure place.
7. Cover machine.

TROUBLESHOOTING GUIDE

PROBLEM	CAUSE	SOLUTION
Machine will not start.	Insufficient power	Ensure machine is plugged into a proper power source with a proper extension cord. The power indicator illuminates when the machine is plugged into a power source.
	Power cord plug not fully inserted.	Firmly press the power cord into the inlet in the base of handle.
	E-stop engaged.	Reset E-stop by twisting clockwise, red button will pop up.
	Lanyard kill switch engaged.	Ensure lanyard key is properly inserted into kill switch.
	Onboard circuit breaker is tripped.	Reset the onboard circuit breaker by pushing the overload reset button. Contact NFE technical services if the breaker unexpectedly trips.
	Handle harness plug is disconnected.	Ensure the handle harness plug is properly seated and locked.
	"ON" button was not pushed	Push "ON" button to boot up machine. Allow a few seconds to boot up, the status indicator will pulsate green.
	System fault	The status indicator flashing red indicates a system fault. See "TROUBLESHOOTING" section for fault blink codes.
	"ON" button is pushed too quickly after machine is shut down (e.g., "OFF" button is pushed, machine is unplugged, E-stop or lanyard kill switch are engaged).	The electronics need to dissipate stored energy while powering down. Allow 10 seconds before restarting machine. Failing to do so may result in a system fault.
	System indicator is pulsating green, but nothing is happening.	When orbital motor speed is set "below 1" the orbital motor is off. Turn dial to increase the oscillation rate.
Machine will not move under power.	Handle harness plug is damaged.	Unplug the handle harness and inspect the contact pins for damage. Replace as necessary.
	GFCI is tripped.	Reset GFCI. See "MAINTENANCE" section.
Machine will not move without power.	Wheels are disengaged.	Rotate coupling flanges until they "click". Move the machine forward slowly to engage the wheels.
Machine is difficult to move.	Wheels are engaged.	Disengage wheels by pulling out coupling flanges and rotating 45° so they do not retract.
	Wheels are obstructed.	Inspect wheels for debris that could be obstructing them. If obstructions are present, see "MAINTENANCE" section for wheel removal procedure. Remove obstruction.
Machine will not move.	Wheel scrapers are contacting wheels.	Ensure there is a slight gap between each wheel and scraper.
	Tracking out of adjustment.	Contact NFE technical services for assistance.
Machine veers to left or right when driving straight ahead.	One of the wheel couplers is engaged and the other is disengaged.	Make sure both wheel couplers are engaged.
Machine is tripping external circuit breaker.	A circuit overload is occurring.	Look for any obstructions that could be causing excessive overloading. Contact NFE technical services to further diagnose.

TROUBLESHOOTING

TROUBLESHOOTING GUIDE (CONT'D)

PROBLEM	CAUSE	SOLUTION
Blade holder is not oscillating.	Orbital motor speed is set "below 1".	When orbital motor speed is set "below 1" the orbital motor is off. Turn dial to increase the oscillation rate.
	Orbital motor speed is set "above 1" but there is still no oscillation.	If status indicator is pulsating green, shut off machine and check for any obstructions. See "MAINTENANCE" section for clearing jams procedure.
Control handles are operating in reverse.	Left/right-hand preference switch is set to the wrong preference.	Change switch to reverse control handle functionality.
Machine is too loud or experiencing excessive vibration.	Orbital motor speed is set too high.	NFE recommends adjusting the orbital motor speed only as high as necessary to perform the job. Lower speeds reduce hand-arm vibration and reduce noise levels.
	Scraping with front weight removed.	The front weight must be installed for all scraping applications. Replace the front weight.
	Weights vibrating.	Secure all weights by tightening the locking screws.
	Slide weights chattering against hood.	Loosen the locking screws, rotate weight away from hood, then retighten screws.
	Hood screws missing.	Ensure that all hood screws are in place. Start all fasteners before tightening down.
	Handle screws not secured.	Ensure handle mounting screws are secure.
	Operating near an undesirable frequency.	Certain frequencies known to cause undesirable vibration have been disabled; however, it may still improve performance to slightly increase or decrease orbital speed.
Blade angle will not adjust.	End of travel	Blade angle adjustment is limited. Verify the blade will adjust in the opposite direction.
	Internal overload protection tripped.	Wait several minutes for the internal overload built into the wire harness to cool and reset (it is self-resetting). Check for obstruction causing the overload.
	Obstruction	If a noise can be heard when adjusting the blade angle, it may be due to a blockage or binding. Contact NFE technical services to further diagnose.
Orbital motor heating up.	Broken/obstructed cooling fan	The orbital motor operates with free airflow from the fan cover. A damaged fan cover or fan blade could result in overheating. Replace/repair as needed.
	Obstructions in orbital cutting head plate	See "MAINTENANCE" section for inspection procedure. The eccentric can be turned back and forth to ensure free movement.
	Cutting head bearing failure	Replace bearing. See "MAINTENANCE" section.
	Isolators worn out.	Replace isolators. See "MAINTENANCE" section.
Blade holder does not swivel freely in tooling holder.	Rotation is locked.	Loosen the screw on the side of the tooling holder.

TROUBLESHOOTING

TROUBLESHOOTING GUIDE (CONT'D)

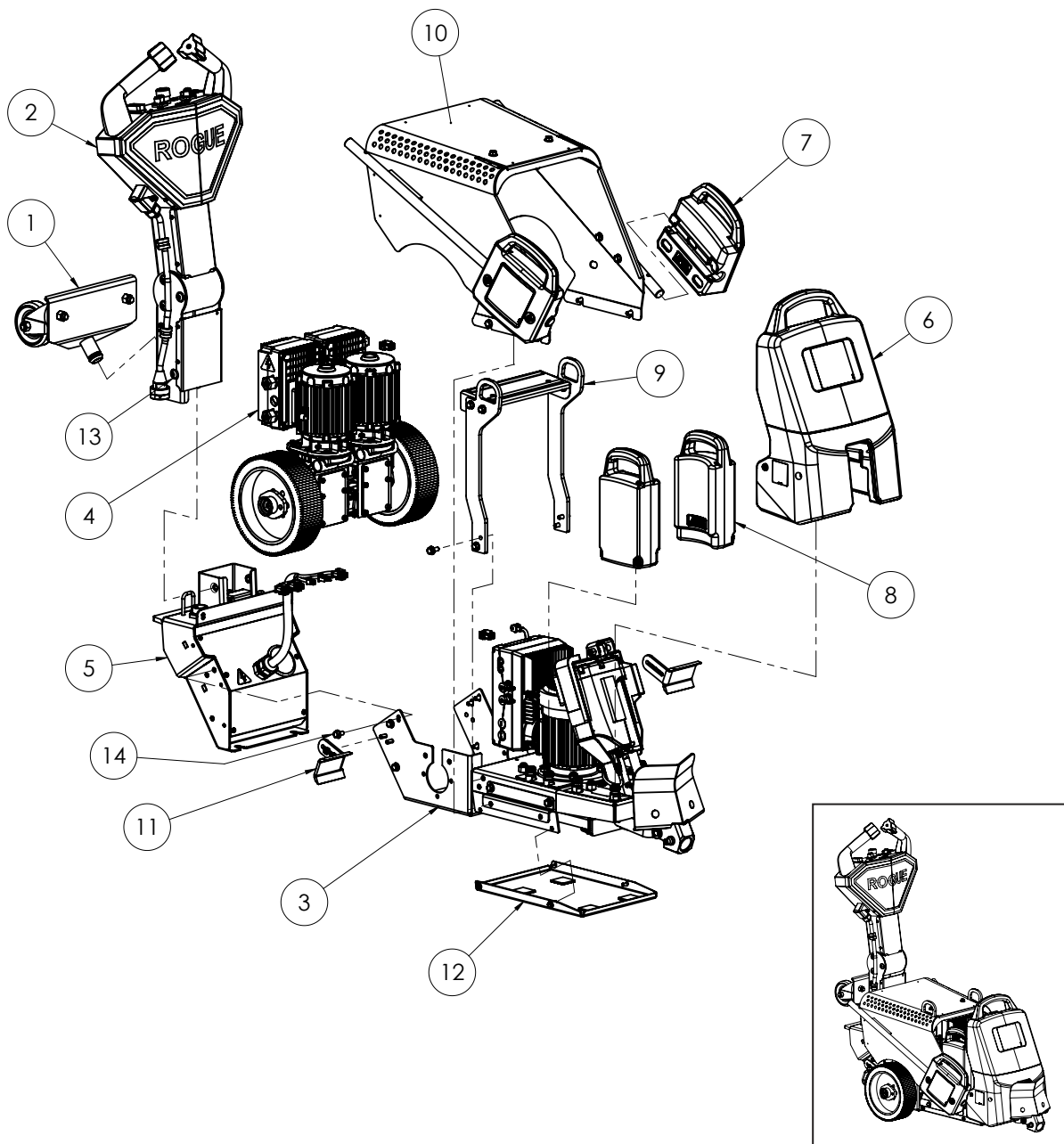
PROBLEM	CAUSE	SOLUTION
Wheels unexpectedly engage while in freewheel mode.	Debris from wheel turns the coupling flange and re-engages the wheel.	Remove flange retaining screw, washer and spring. Clean debris that could be contacting the flange pins causing them to engage.
	Missing or improperly installed wheel retaining ring	Remove flange retaining screw, washer and spring. Ensure retaining ring is present and fully seated.
Machine is difficult to tilt back.	Slide weights are positioned forward.	Before tilting machine back, position the slide weights rearward to make tilting easier. Block up machine to prevent machine from falling forward unexpectedly.
Can't remove front weight.	Locking screws not sufficiently loosened	Loosen the four locking screws a few turns so screws clear the locating posts. It is not necessary to remove screws.
	Weight is binding with locating posts.	Pulling the weight forward during removal causes weight to bind with the locating posts. See "MACHINE OPERATION" section for the proper removal procedure.
Can't remove middle weights.	Locking screws not sufficiently loosened	Each middle weight is secured with two locking screws. Loosen the locking screws a few turns so screws clear the locating posts. It is not necessary to remove screws.

FAULT CODES

FAULT BLINK CODE	DESCRIPTION	SOLUTION
1	Left VFD CAN communication	Contact NFE technical services to further diagnose.
2	Left VFD error active	
3	Right VFD CAN communication	
4	Right VFD error active	
5	Left control handle signal	
6	Right control handle signal	
7	Max Speed pot signal	
8	Straight Trim pot signal	
9	Orbital VFD CAN communication	
10	Orbital VFD error active	
11	Orbital Speed pot signal	

PARTS LISTS

OVERALL MACHINE



NOTE:

- Part numbers with -X, -XXX and -XXXX suffixes indicate configurable items that are defined by the serial number of the machine. Contact NFE customer service for assistance.

OVERALL MACHINE (CONT'D)

Item No.	Part No.	Description	Qty.
1	406633	Assembly, Wheels, Transport, 1-1/4, Grooved	1
2	404863-XXX	Assembly, Handle, Rogue	1
3	405055-XXX	Assembly, Base, Scraper	1
4	405071-XXX	Installation, Drive Motors, Dual, Rogue	1
5	405751	Assembly, Tail, Base	1
6	405944-X	Assembly, Weight, Front	1
7	406062	Assembly, Slide Weight	2
8	406090	Assembly, Weight, Middle	2
9	406684	Lifting Bar	1
10	406685-X	Body Panels	1
11	406686	Wheel Scraper, Bi-directional	2
12	406687	Cover, Bottom	1
13	404281	Screw, Button Head Cap, M10-1.5x20, Flanged, Clear Zinc	4
14	406778	Bolt, Wizlock, M8-1.25x16, Clear Zinc, Class 8.8	6
15*	406994	Label, Template, CE, 1 x 3, Battery or Plug In, with IPX	1
16*	407221	Label, QR Code, Manuals, 3x1.5"	1

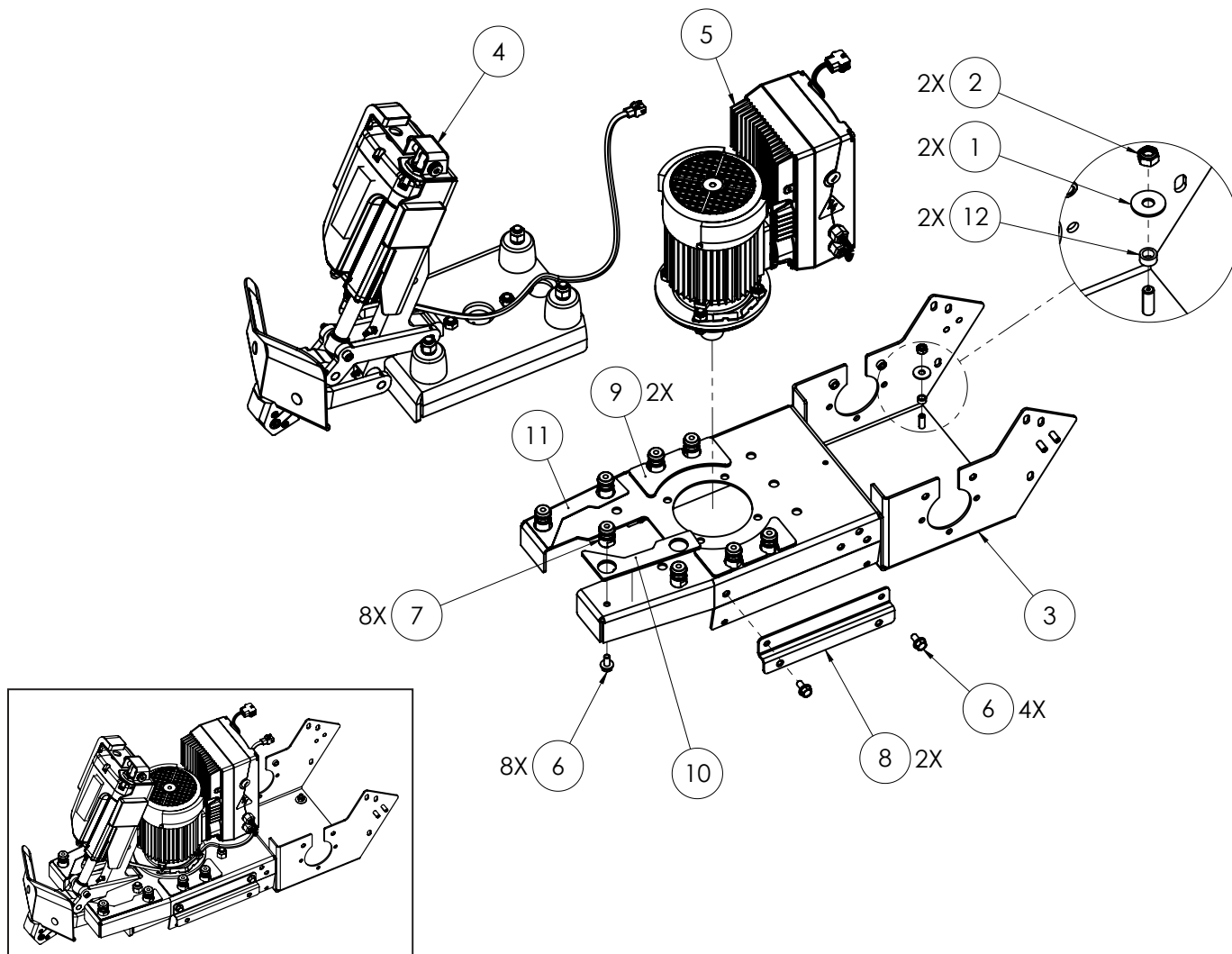
*Not shown

POWER CORD 407141-XXXX

Part No.	Region	Description
407141-04AU	Australia	Cord, Power, C19, AS3112, 16/3, 10ft, Australia
407141-14JP	Japan	Cord, Power, C19, JIS C 8303, 14/3, 10ft, Japan
407141-13US	North America	Cord, Power, C19, NEMA 5-15P, 14/3, 8ft, US
407141-03EU	Europe	Cord, Power, C19, CEE7/7, 16/3, 8ft, Europe
407141-23UK	United Kingdom (UK)	Cord, Power, C19, IEC 309 (4H), 12/3, 8ft, UK

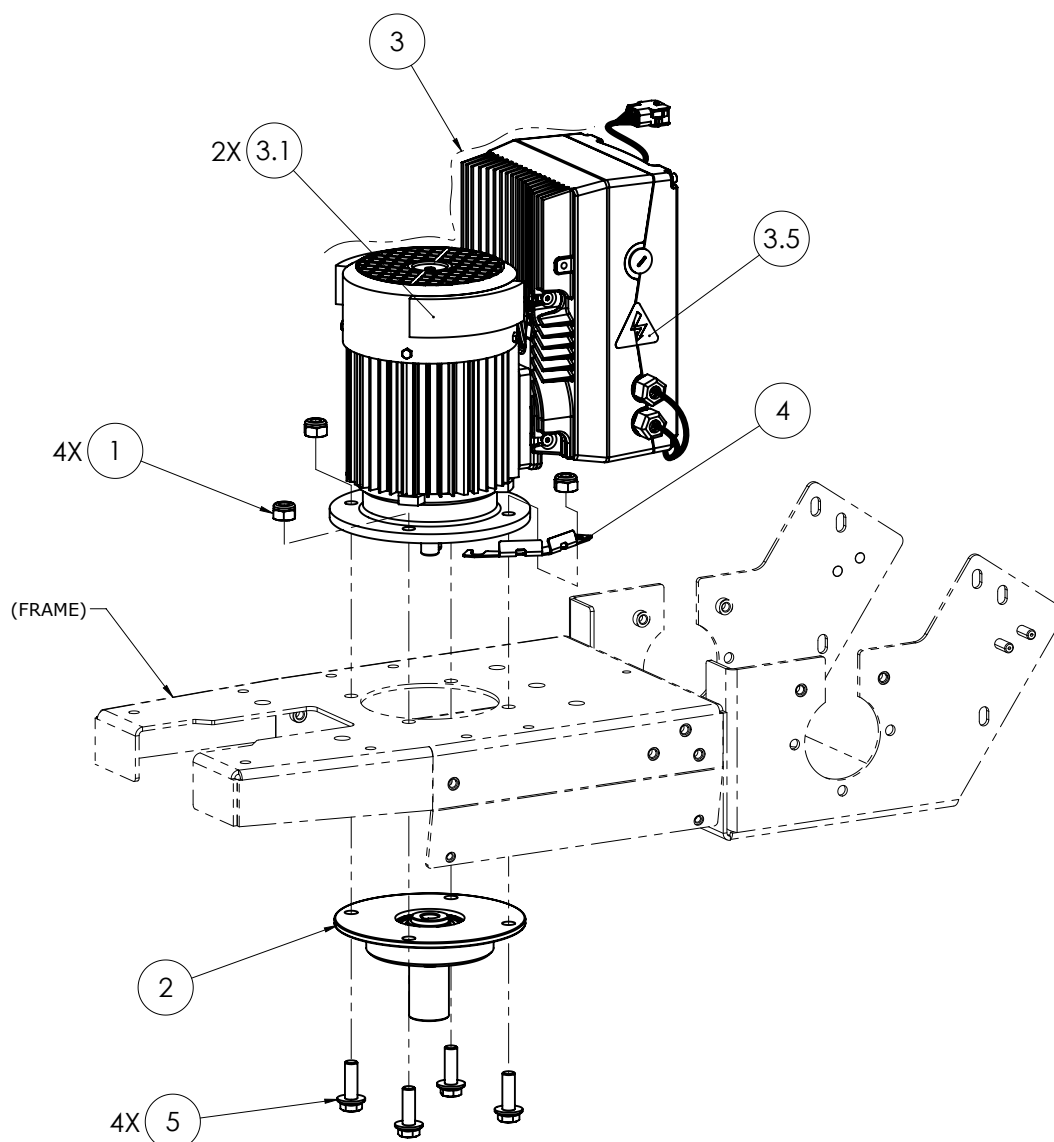
PARTS LISTS

SCRAPER BASE ASSEMBLY 405055-XXX



Item No.	Part No.	Description	Qty.
1	401349	Washer, Fender, M8, Clear Zinc	2
2	401509	Nut, Hex, Nylon Insert, M8-1.25, Clear Zinc	2
3	404702	Base, Frame	1
4	405056	Install, Cutting Head	1
5	405057-XXX	Installation, Orbital Motor, Rogue	1
6	406778	Bolt, Wizlock, M8-1.25x16, Clear Zinc, Class 8.8	12
7	406798	Post, Mounting, Weight	8
8	406845	Bracket, Mount, Panel, Body	2
9	406872	Pad, Middle Weight, Adh	2
10	406876	Pad, Front Weight, LH, Adh	1
11	406924	Pad, Front Weight, RH, Adh	1
12	407009	Spacer, Round, .322 x .472 x .236, Nylon	2

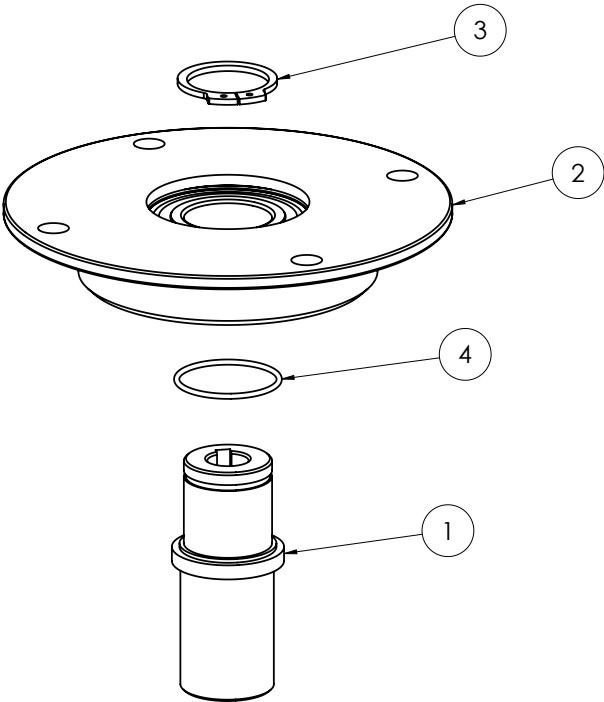
ORBITAL MOTOR ASSEMBLY 405057-XXX



Item No.	Part No.	Description	Qty.
1	402240	Nut, Hex, Nylon Insert, M10-1.5, Heavy, Clear Zinc	4
2	407353	Subassy, Bearing/Eccentric	1
3	406689-XXX	Motor/VFD, Wired/Programmed, Orbital	1
3.1	406875	Pad, Foam, 3/8 x 1-1/4, PVC/Neoprene, Adh	2
3.5	406574	Label, Pictogram, Electrical Hazard	1
4	406808	Guide, Cable, Actuator	1
5	74651	Bolt, Wizlock, M10-1.5 x 30mm, Class 8.8	4

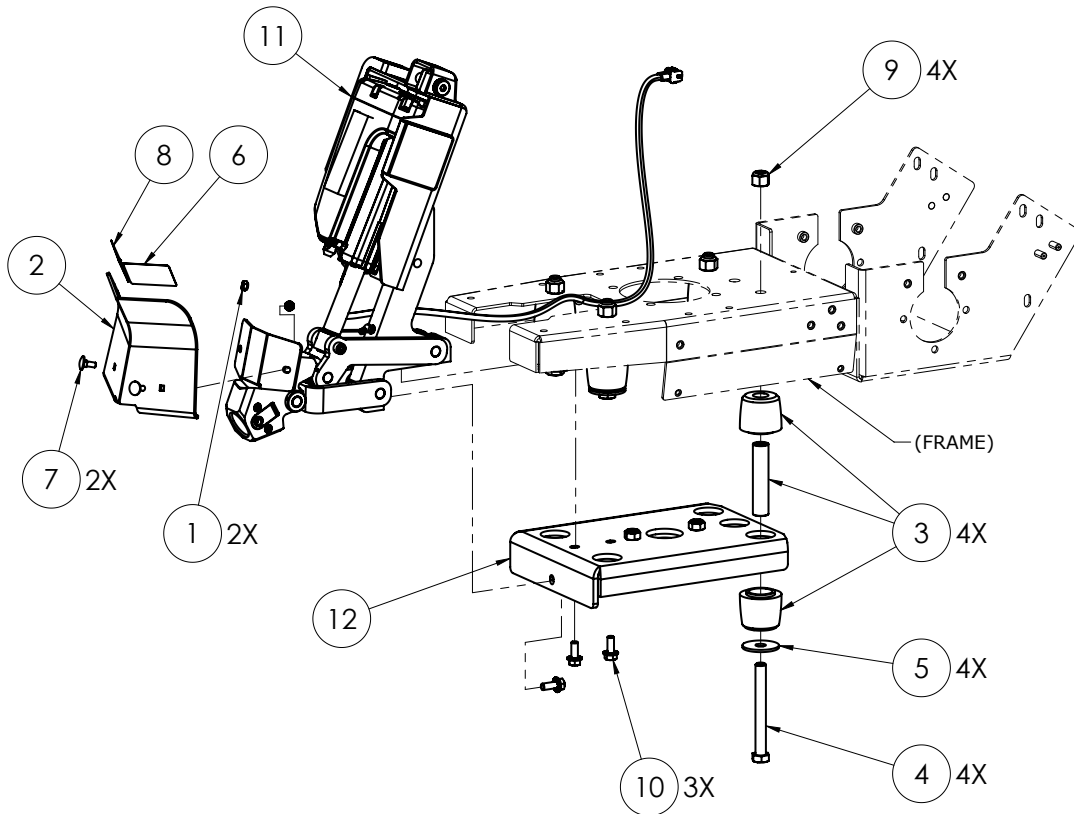
PARTS LISTS

ECCENTRIC ASSEMBLY 407353



Item No.	Part No.	Description	Qty.
1	404785	Eccentric, Cutting Head	1
2	406688	Subassy, Bearing/Housing	1
3	406094	Ring, Retaining, External, Axial, 30mm, Heavy, Phosphate	1
4	406093	O-ring, 1.301 x 1.441 x .070, Buna-N, 70A	1

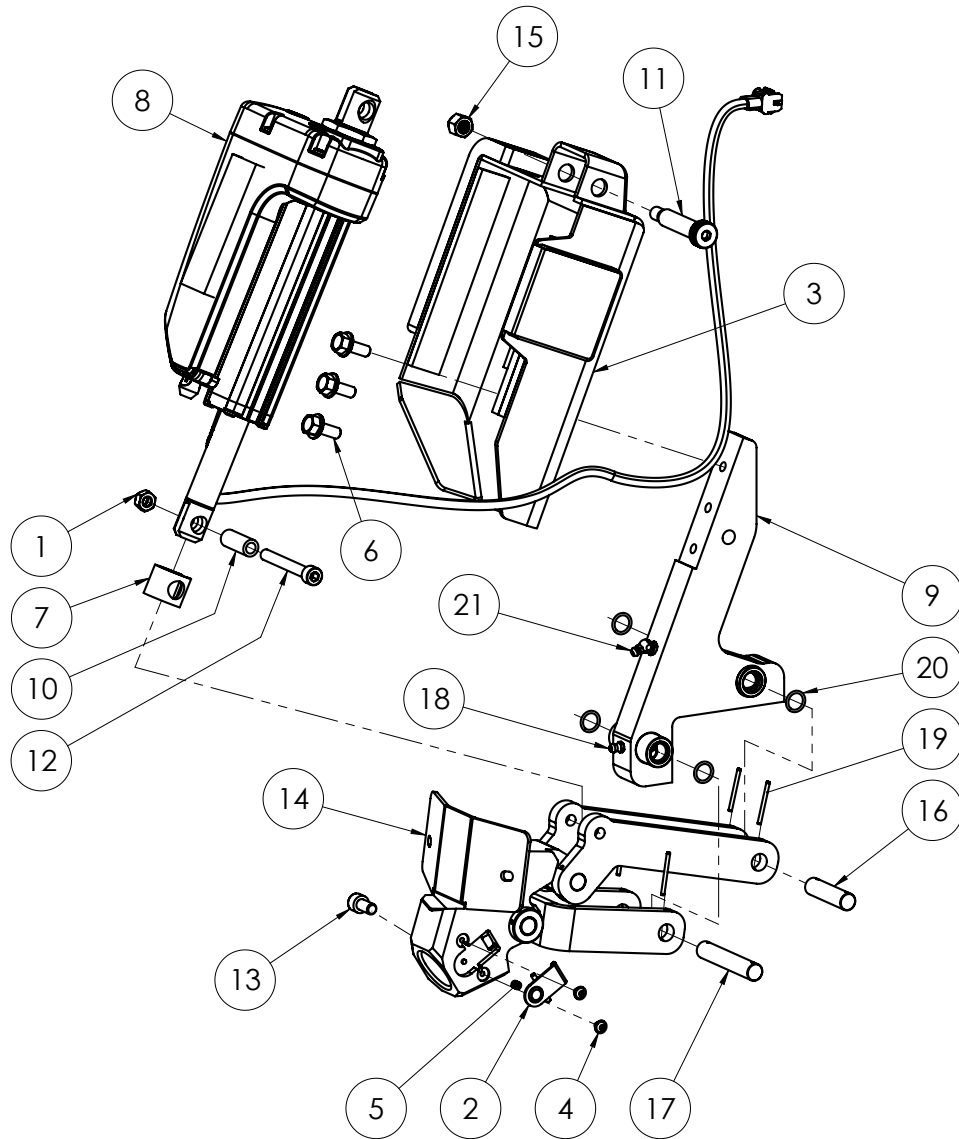
CUTTING HEAD ASSEMBLY 405056



Item No.	Part No.	Description	Qty.
1	401516	Nut, Hex, Nylon Insert, M6-1.0, Clear Zinc	2
2	405143	Deflector Weldment, Tool Holder	1
3	405922	Isolator, 3-piece, 2" x 3-1/2", 70A	4
4	406087	Screw, Hex Head Cap, 1/2-13x4-1/2, Clear Zinc	4
5	406088	Washer, Flat, 1/2 x 1-3/4, Clear Zinc	4
6	406110	Label, Warning, No Step/Team Lift	1
7	406666	Bolt, Carriage, M6-1.0 x 16, Clear Zinc	2
8	407124	Label, Warning, Hot Surface/Pinch/Sharp Edge	1
9	73402	Nut, Nylock, 1/2-13	4
10	406011	Bolt, Wizlock, M8-1.25 x 20, Clear Zinc, Class 8.8	3
11	407359	Actuator/Linkage Assembly, Tool Holder	1
12	407363	Subassy, Plate-Bearing, Cutting Head	1

PARTS LISTS

ACTUATOR/LINKAGE ASSEMBLY 407359

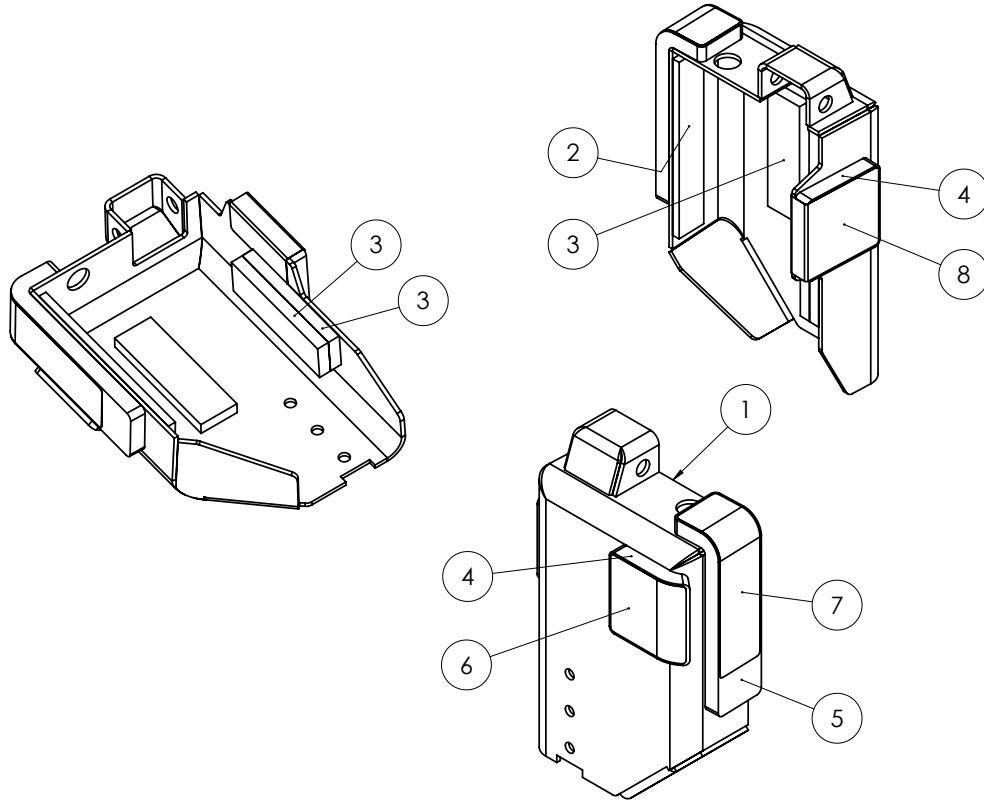


ACTUATOR/LINKAGE ASSEMBLY 407359 (CONT'D)

Item No.	Part No.	Description	Qty.
1	401509	Nut, Hex, Nylon Insert, M8-1.25, Clear Zinc	1
2	404999	Tab Wldt, Release, Lock, Tooling	1
3	407364	Subassy, Bracket with Pads, Cutting Head	1
4	405618	Screw, Button Head Cap, Flanged, M4-0.7x6, Clear Zinc, Patch	2
5	405619	Spring, Compression, .210 x .250 x .022, Music Wire	1
6	406011	Bolt, Wizlock, M8-1.25 x 20, Clear Zinc, Class 8.8	3
7	406084	Boot, Bottom, Actuator Mount, Adh	1
8	406089	Assy, Actuator, Linear, 24VDC, 100mm, 5kN	1
9	407414	Subassy, Mount, Riser	1
10	407045	Spacer, Round, .500 x .316 x 1.288	1
11	407093	Bolt, Shoulder, 1/2 x 2 x 3/8-16, Alloy	1
12	407094	Screw, Socket Head Cap, M8-1.25x65, Black Oxide	1
13	407150	Screw, Socket Head Cap, M8x1.25x16, Trilobe, Clear Zinc	1
14	407360	Linkage Subassembly, Tool Holder	1
15	73207	Nut, Hex, Nylon Insert, 3/8-16	1
16	407362	Pin, Pivot, .500 X 2.038	1
17	407409	Pin, Pivot, .500 x 2.918	1
18	407412	Fitting, Grease, Straight, M5	3
19	407405	Pin, Spring, 3/32 x 1-1/4, Plain	4
20	402197	O-ring, .489 ID X .629 OD X .070 W	4
21	407413	Fitting, Grease, 45, M8	1

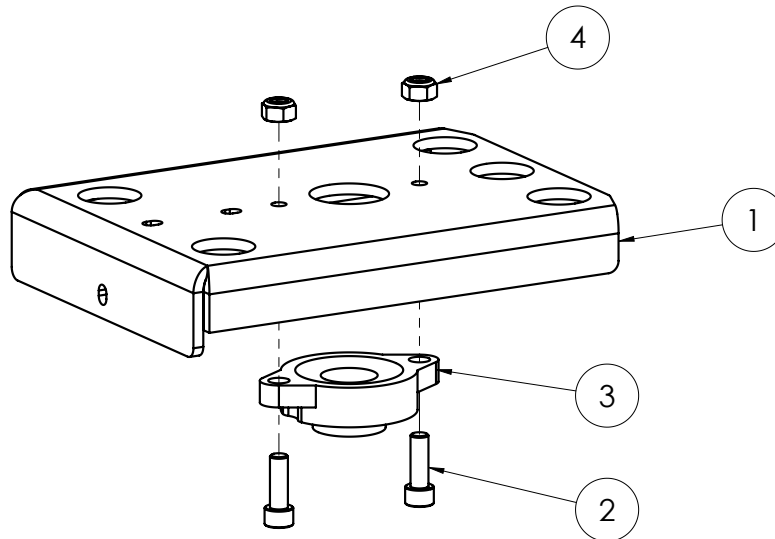
PARTS LISTS

BRACKET ASSEMBLY 407364



Item No.	Part No.	Description	Qty.
1	405227	Weldment, Mount, Actuator, LA33	1
2	406890	Pad, Foam, 1/4 x 1 x 6, PVC/Neoprene, Adh	1
3	406891	Pad, Foam, 3/8 x 1-1/4 x 4, PVC/Neoprene, Adh	3
4	407100	Pad, Foam, 1/2 x 2-3/4 x 2-3/4, Adh	2
5	407101	Pad, Foam, 1/2 x 1-3/4 x 7, Adh	1
6	407103	Liner, Wear, Actuator, 2-1/2 x 2-1/2, Adh	1
7	407104	Liner, Wear, Actuator, 1-5/8 x 6, Adh	1
8	407128	Liner, Wear, Actuator, 2-5/8 x 4-1/2, Adh	1

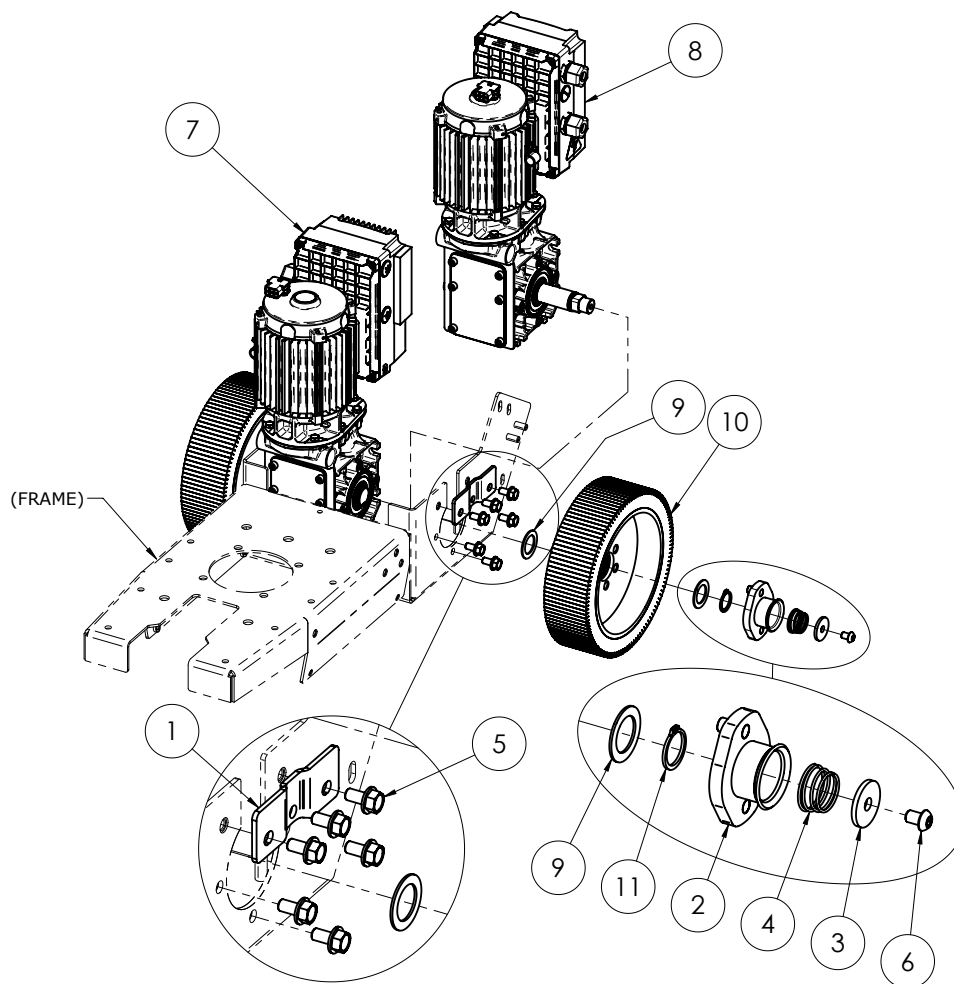
CUTTING HEAD PLATE 407363



Item No.	Part No.	Description	Qty.
1	404705	Plate, Cutting Head	1
2	405624	Screw, Socket Head Cap, M10-1.5x30, Black Oxide	2
3	71131	Bearing 1-1/4 ID, SBLF 206-20	1
4	74656	Nut, Hex, Nylon Insert, M10-1.5, Clear Zinc	2

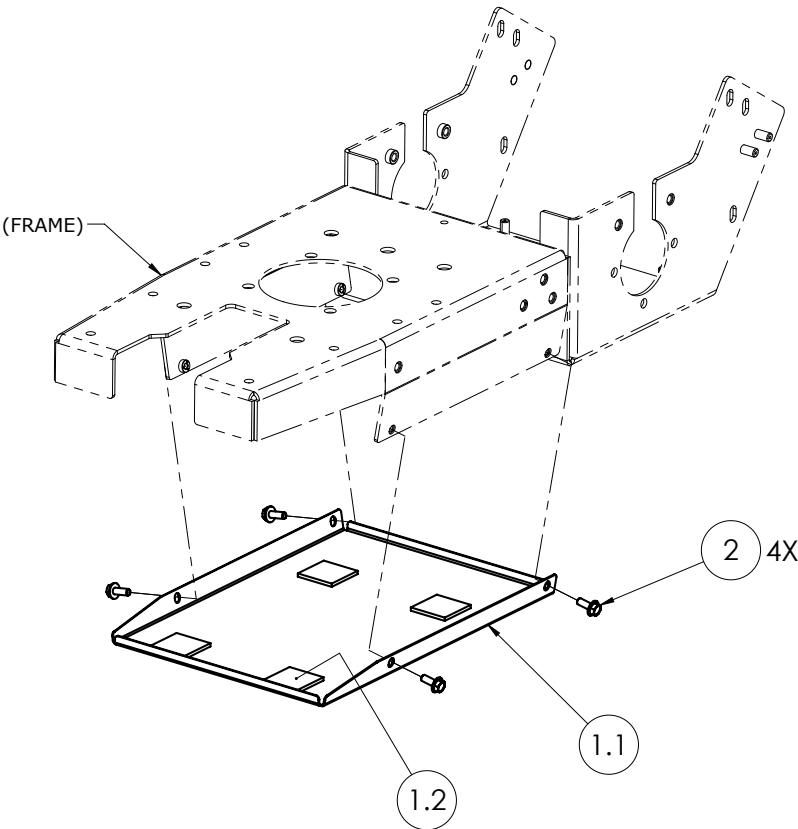
PARTS LISTS

DUAL DRIVE MOTORS ASSEMBLY 405071-XXX



Item No.	Part No.	Description	Qty.
1	404711	Strap, Frame, Axle Gap	2
2	405042	Assembly, Flange, Locking, Wheel	2
3	405046	Washer, Fender, 5/16 x 1-1/4, Clear Zinc	2
4	405074	Spring, Compression, Tapered, 1.28/1.03 x .89L x .067w	2
5	406778	Bolt, Wizlock, M8-1.25x16, Clear Zinc, Class 8.8	12
6	406096	Screw, Torx Button Head Cap, M8x1.25 x 12, Clear Zinc	2
7	407147-XXX	Assembly, Drive Motor, RH	1
8	407148-XXX	Assembly, Drive Motor, LH	1
9	407367	Shim, 1.000x1.500x.062, 1074 Steel	4
10	407371	Assembly, Wheel/Hub, Drive, 9"	2
11	6280-103A	Ring, Retaining, External, Axial, 1", Heavy, Phosphate	2

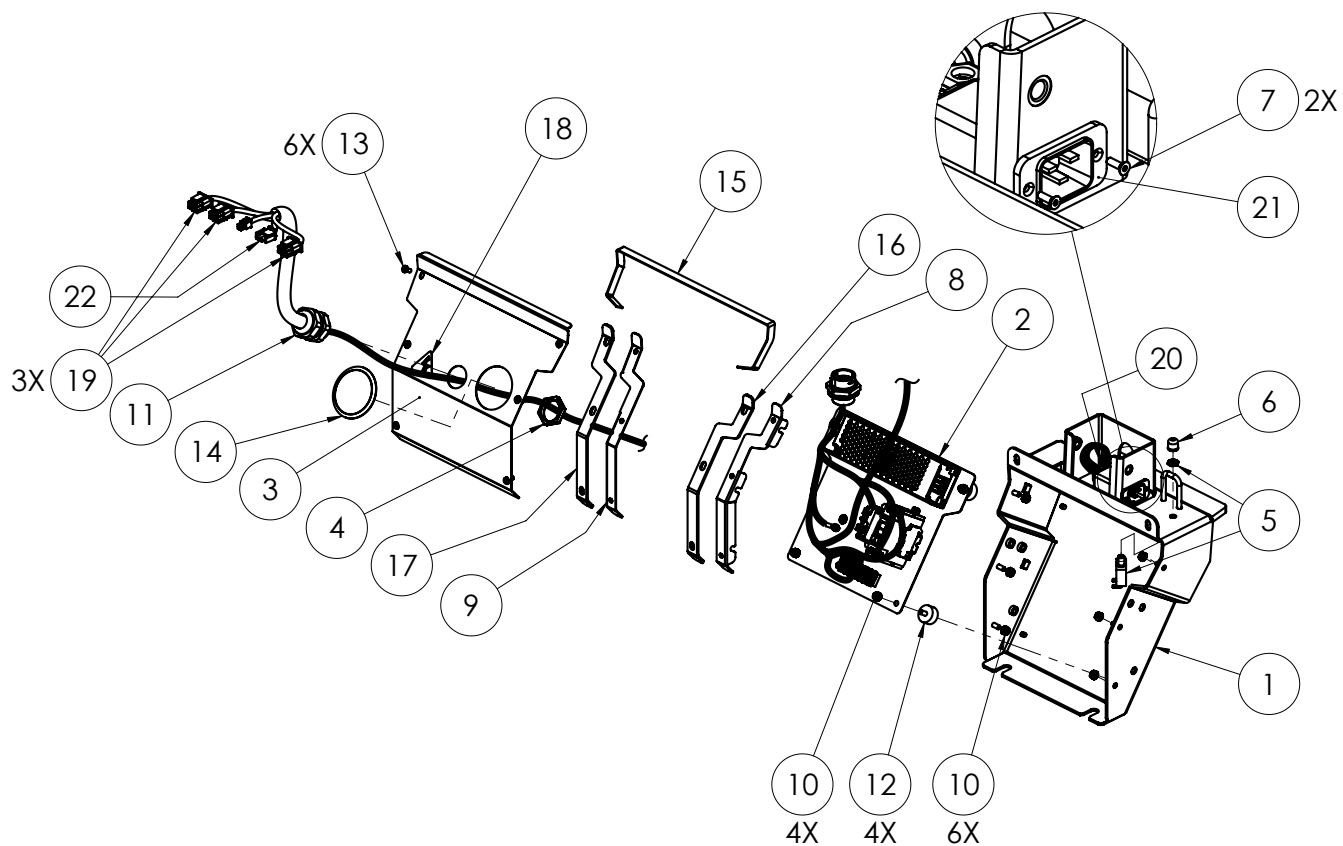
BOTTOM COVER 406687



Item No.	Part No.	Description	Qty.
1	407102	Cover with Pads, Bottom, Frame	1
1.1	404712	Cover, Bottom, Frame	1
1.2	407096	Pad, Rubber, 1/8 x 1-1/2 x 1-1/2, Adh	4
2	74636	Bolt, Wizlock, M6-1.0x16, Clear Zinc	4

PARTS LISTS

TAIL ASSEMBLY 405751

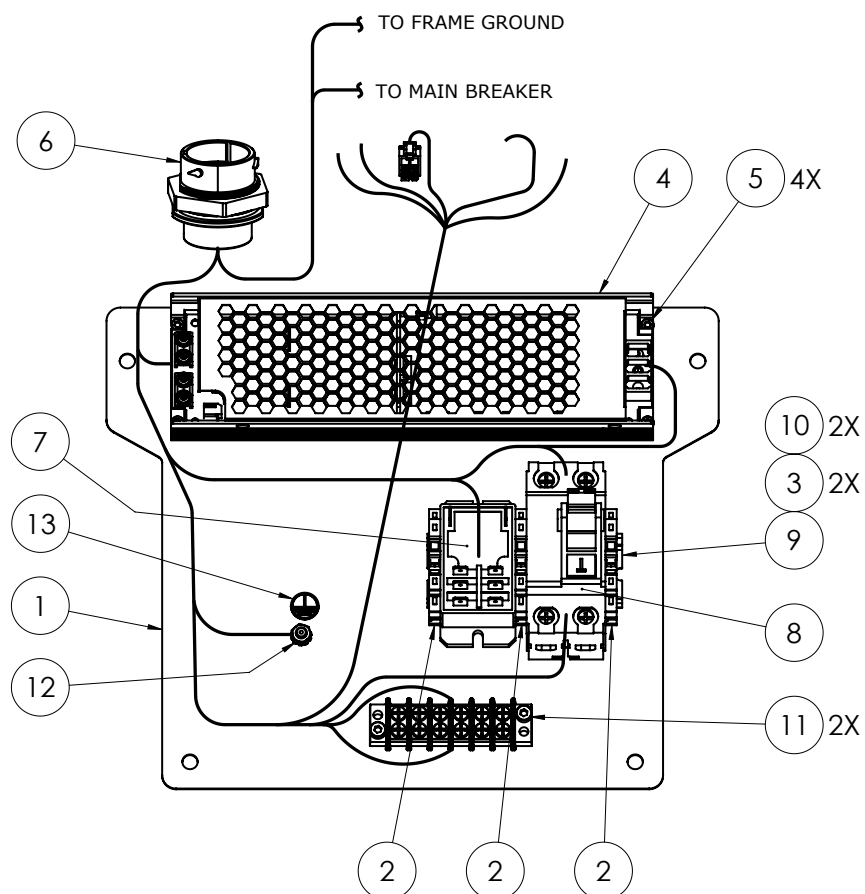


TAIL ASSEMBLY 405751 (CONT'D)

Item No.	Part No.	Description	Qty.
1	404995	Weldment, Tail, Base	1
2	405251	Assembly, Panel, Distribution, Power	1
3	405304	Cover, Elec, Tail	1
4	404906	Lock Nut, M32, Black Nylon	1
5	406101	Circuit Breaker, Panel Mount, 1P, 15A	1
6	407022	Seal, Button, Nut, 3/8-27	1
7	407008	Screw, Torx Flat Head Socket Cap, M3-0.5x10, Clear Zinc	2
8	407001	Bezel, Box, Elec, LH	1
9	407002	Bezel, Box, Elec, RH	1
10	403235	Nut, Keps, M6-1.0, Clear Zinc	10
11	406821	Strain Relief, M32, Black Nylon, 14-25mm ID	1
12	407003	Isolator, Vibration, 1 x 1/2, M/F, M6	4
13	407083	Screw, Torx Pan Head, M5-0.8x12, Clear Zinc	6
14	407088	Plug, Panel, Round, 2-1/2, Vinyl	1
15	407024	Gasket, 1/16 x 1/2 x 20, PVC/Neoprene, Adh	1
16	407089	Gasket, Foam, LH, Tail, Adh	1
17	407090	Gasket, Foam, RH, Tail, Adh	1
18	406574	Label, Pictogram, Electrical Hazard	1
19	407135-060	Plug, Mate-N-Lok Series, 6P	3
20	407379	Harness, Power, Rogue	1
21	407378	Inlet, IEC-C20, Enhanced Filter, 20A, 1/4" QCs	1
22	407135-020	Plug, Mate-N-Lok Series, 2P	1

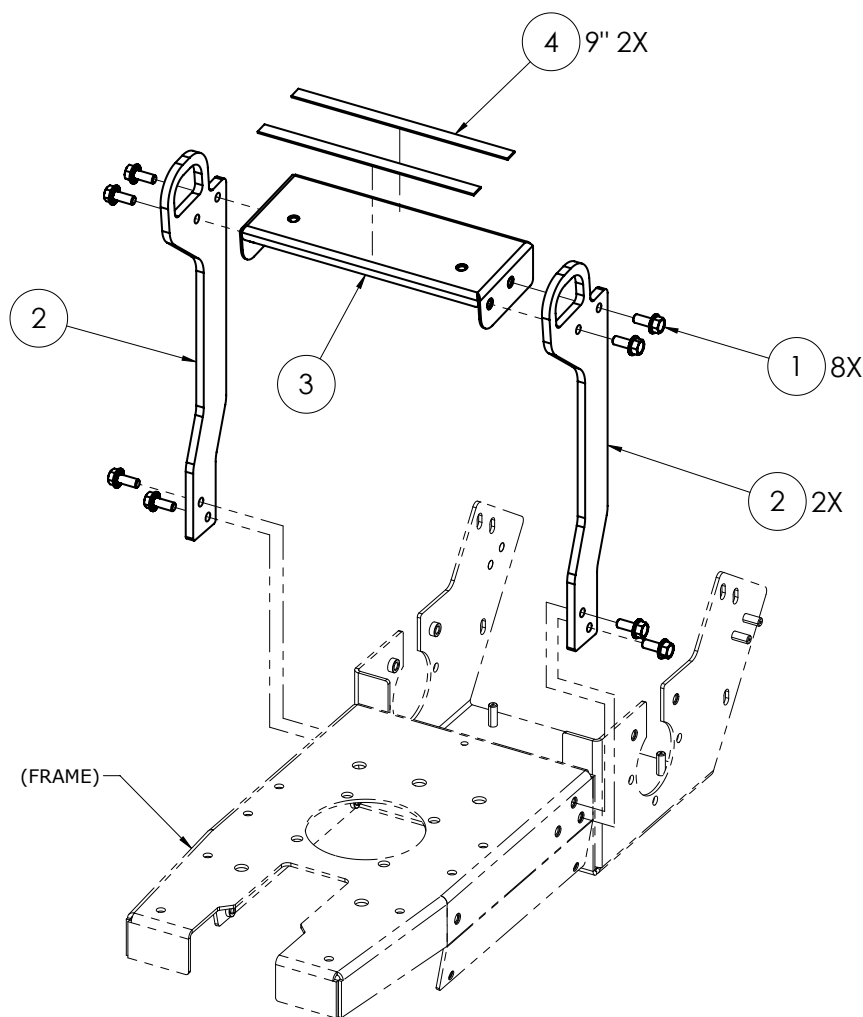
PARTS LISTS

POWER DISTRIBUTION PANEL ASSEMBLY 405251



Item No.	Part No.	Description	Qty.
1	405303	Panel, Elec, Tail	1
2	405783	End Stop, DIN Rail, 35mm, Slim	3
3	406005	Washer, Lock, Ext Tooth, M5, Clear Zinc	2
4	406044	Power Supply, 24VDC, 90-264VAC, 350W, Slim	1
5	406099	Screw, Socket Head Cap, M3X0.5X6, Black Oxide	4
6	406100	Harness, Base, Rogue	1
7	406102	Relay, 25A, 24VDC, DPST	1
8	407006	RCCB, Rail Mount, 2P, 30mA	1
9	407007	DIN Rail, 35mm x 3-1/2	1
10	407083	Screw, Torx Pan Head, M5-0.8x12, Clear Zinc	2
11	401653	Screw, Socket Head Cap, M4-0.7 x 12	2
12	402258	Nut, Keps, M5-0.8, Clear Zinc	1
13	403086	Label, Ground	1

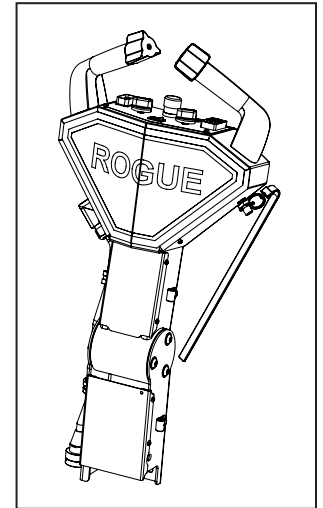
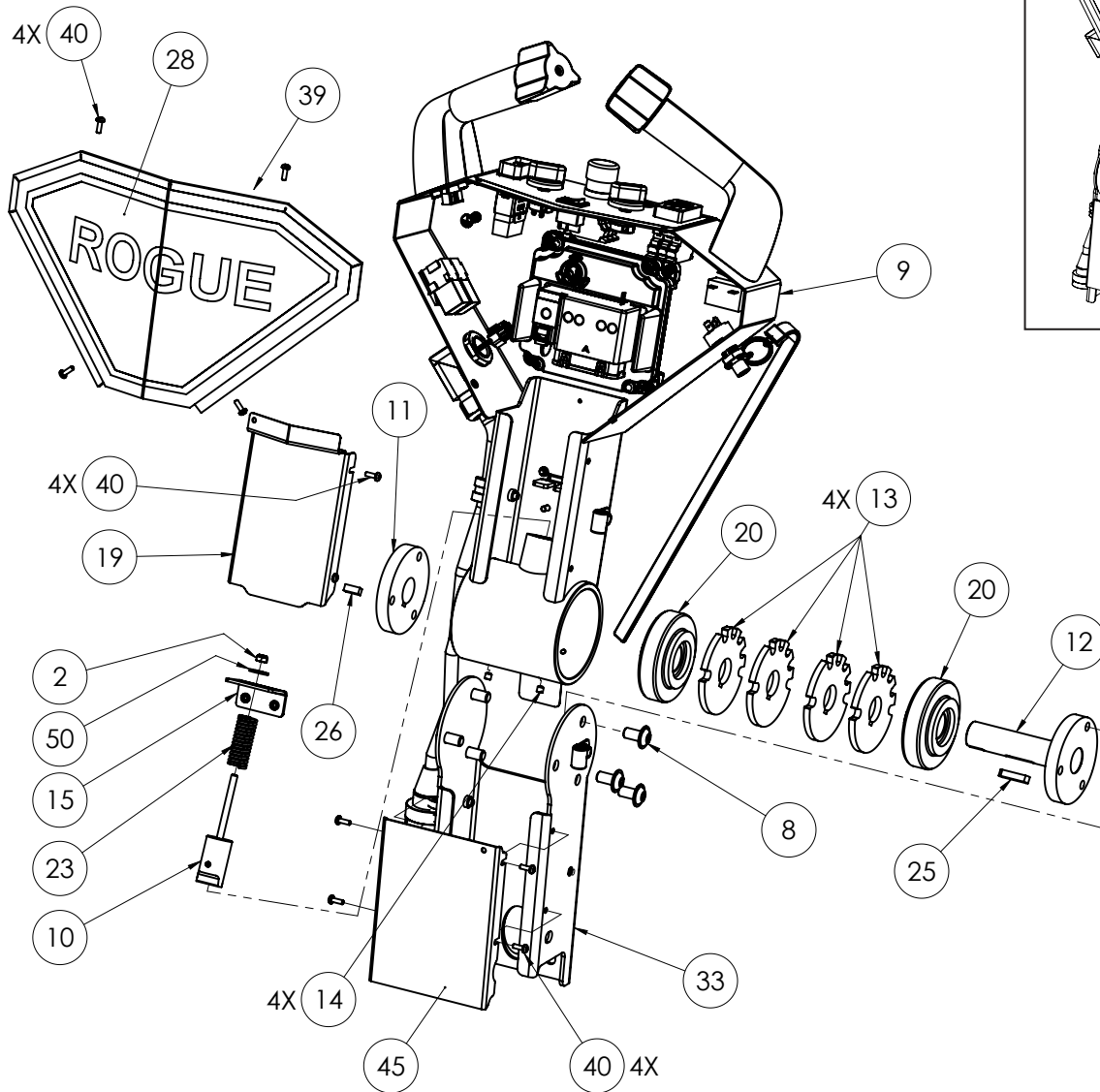
LIFTING BAR 406684



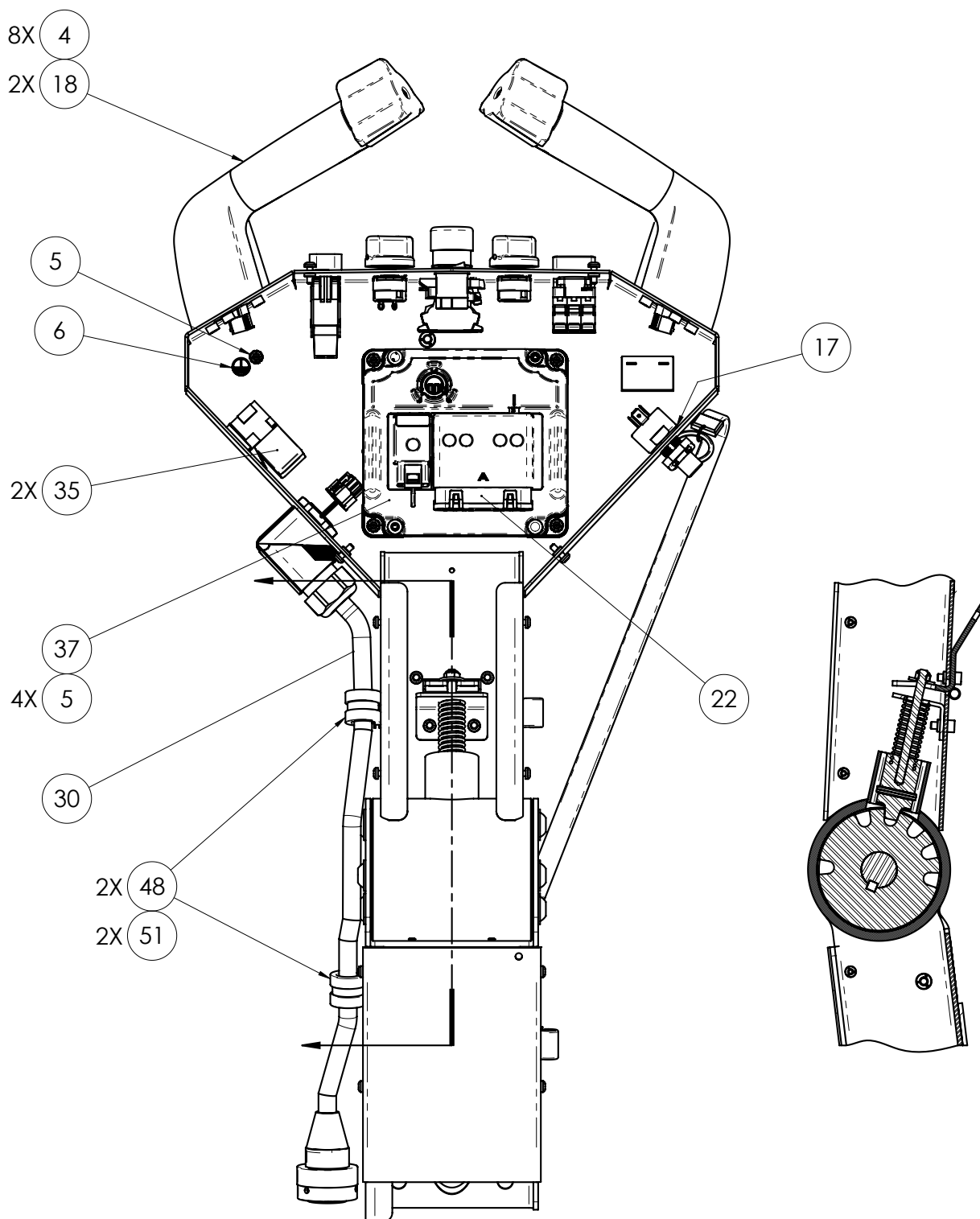
Item No.	Part No.	Description	Qty.
1	406011	Bolt, Wizlock, M8-1.25 x 20, Clear Zinc, Class 8.8	8
2	406846	Leg, Eyelet, Lift	2
3	406847	Brace, Cross, Eyelet, Lift	1
4	406879	Strip, Foam, 1/16 x 1/2, PVC/Neoprene, Adh	9" 2X

PARTS LISTS

HANDLE ASSEMBLY 404863-XXX

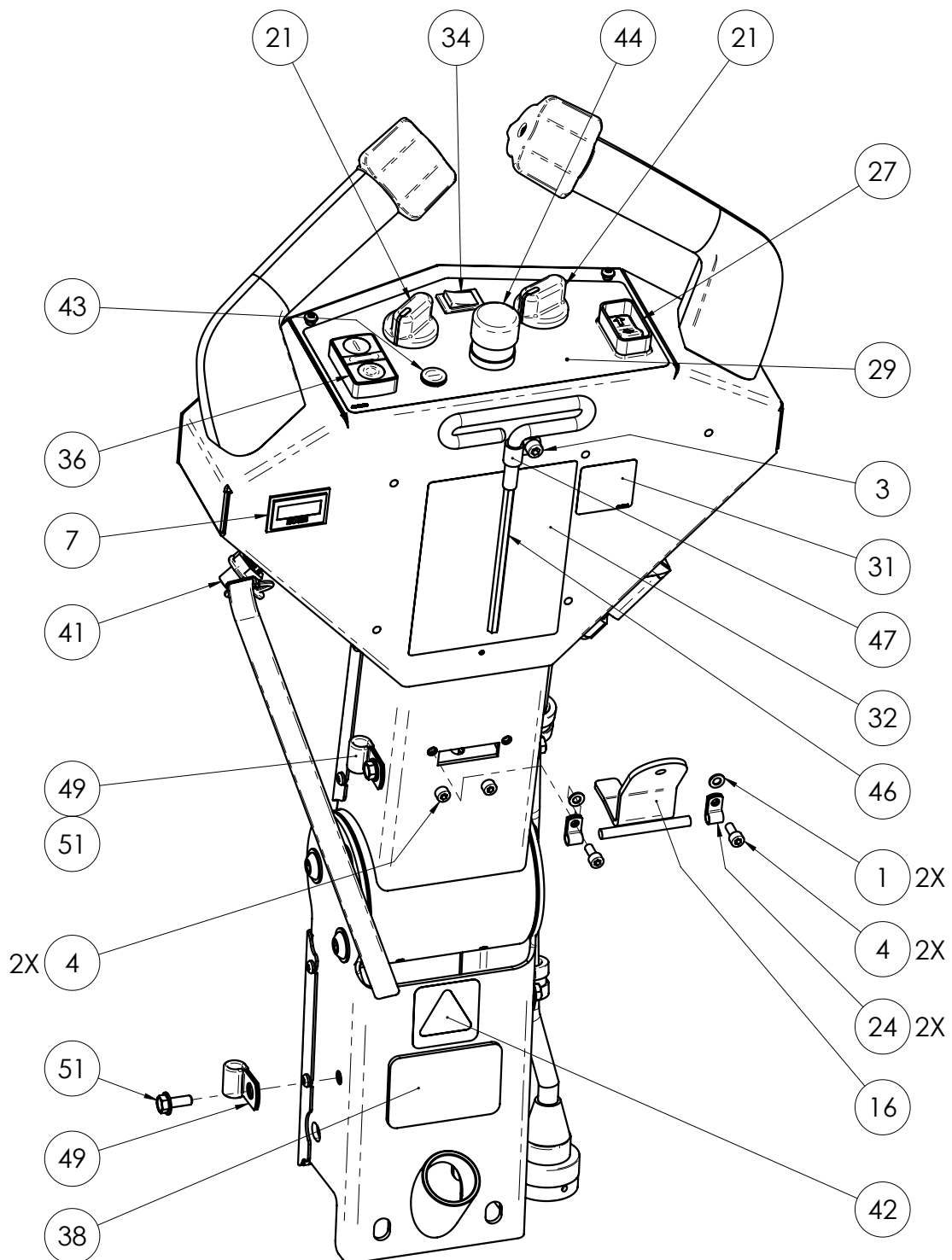


HANDLE ASSEMBLY 404863-XXX (CONT'D)

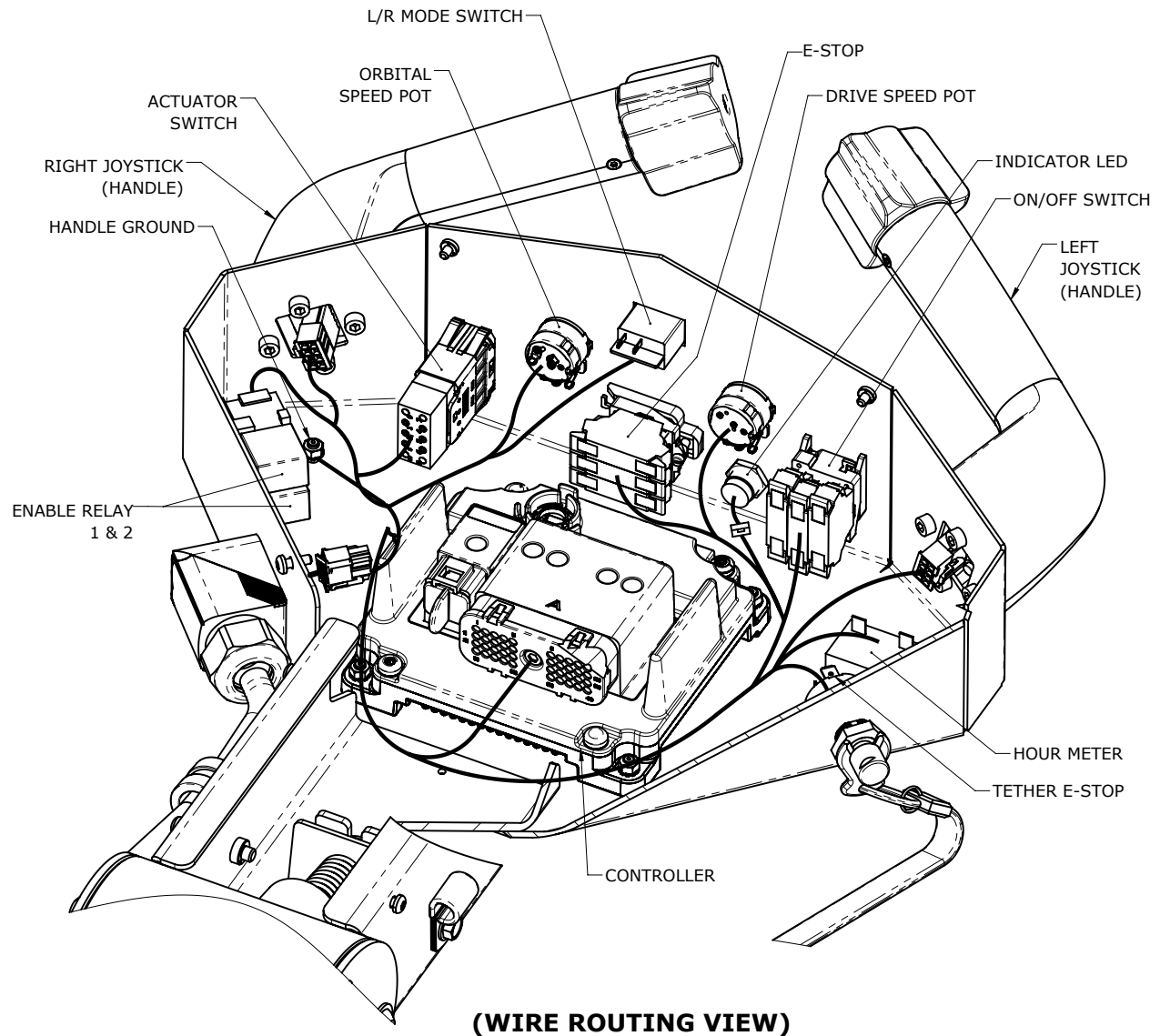


PARTS LISTS

HANDLE ASSEMBLY 404863-XXX (CONT'D)



HANDLE ASSEMBLY 404863-XXX (CONT'D)



PARTS LISTS

HANDLE ASSEMBLY 404863-XXX (CONT'D)

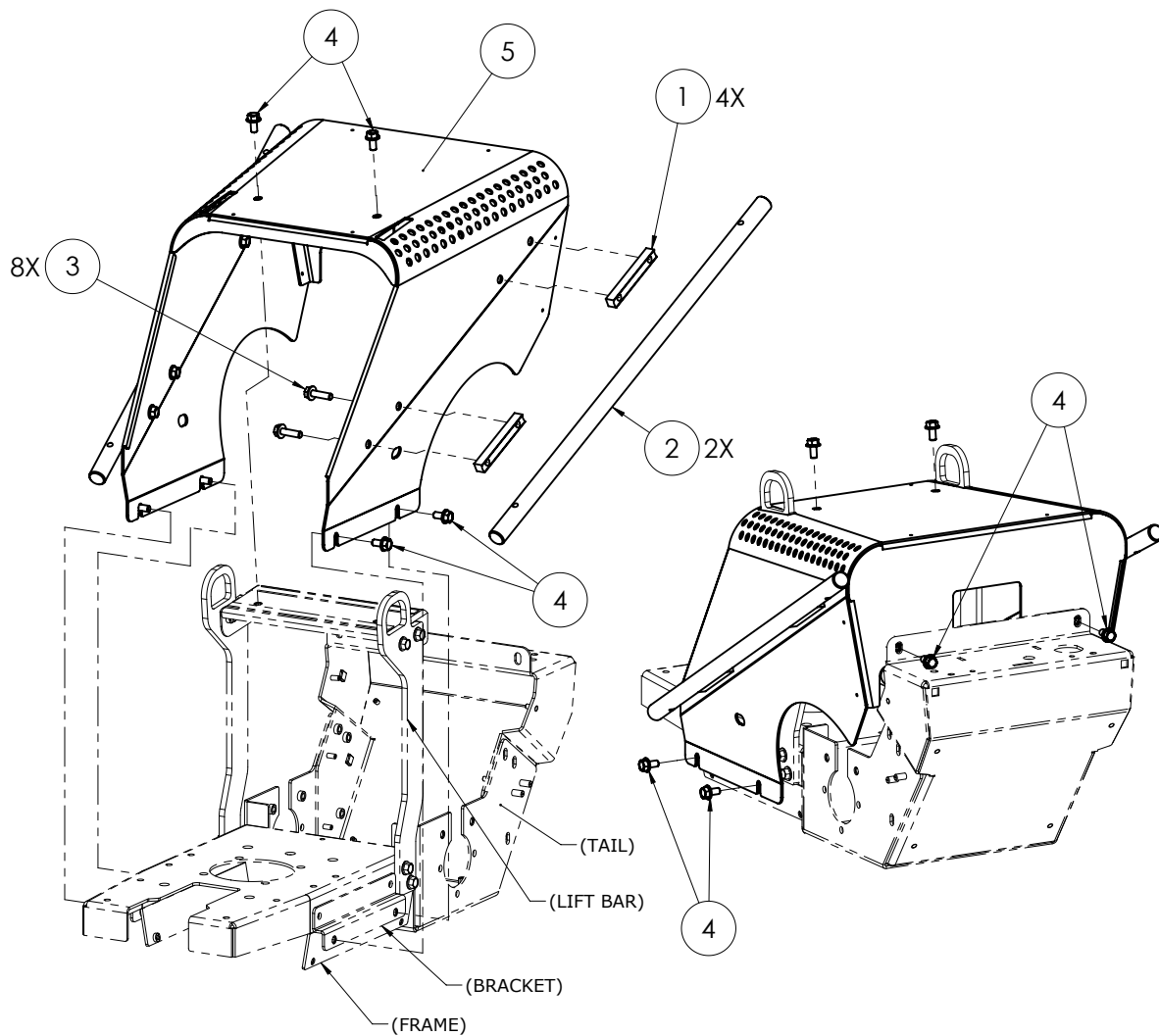
Item No.	Part No.	Description	Qty.
1	401327	Washer, Flat, M5, Clear Zinc	2
2	401516	Nut, Hex, Nylon Insert, M6-1.0, Clear Zinc	1
3	401652	Screw, Socket Head Cap, M6-1.0 x 12, Black Oxide	1
4	401658	Screw, Socket Head Cap, M5-0.8 x 12, Black Oxide	12
5	402258	Nut, Keps, M5-0.8, Clear Zinc	5
6	403086	Label, Ground	1
7	403253	Meter, Hour, Digital, 20-300VAC, 10-300VDC, Snap-on	1
8	404281	Screw, Button Head Cap, M10-1.5x20, Flanged, Clear Zinc	6
9	404807	Weldment, Control Box	1
10	404810	Assembly, Wedge Pin, Stop	1
11	404813	Disk, Take-Up, Hub, Keyed	1
12	404814	Weldment, Shaft/Disk, Pivot	1
13	404815	Disk, Index, Fixed	4
14	404850	Screw, Set, Flat, M6x1.0 x 6mm Long	4
15	404984	Guide, Rod, Upper, Handle	1
16	404990	Weldment, Lever, Release, Handle	1
17	405125	Washer, Shim, .625 x 1.00 x .125, Steel	1
18	405759	Handle, Control, Ministro, Black/Gray	2
19	406051	Panel, Access, Handle, Upper	1
20	406055	Block, Bearing, Pivot, Handle	2
21	406066	Knob, Potentiometer, 1/4" with Set Screw	2
22	406067	Wire Harness, Controls, Rogue	1
23	406068	Spring, Compression, .75 x 2.00 x .080, MW	1
24	406070	Clamp, Loop, 1/4 Dia, 3/8 Wide, Stainless Steel	2
25	406071	Key, Rounded, 1/4 x 1/4 x 1-1/4	1
26	406072	Key, Square, 1/4 x 1/4 x 5/8	1
27	406074	Switch, Rocker	1
28	406108	Label, Logo, Front	1
29	406109	Label, Control Panel	1
30	406203	Harness, Handle, Rogue	1
31	406581	Label, Pictogram, Inhalation Hazard	1
32	406603	Label, ISO Pictograms, 4 x 5.5"	1
33	406620	Weldment, Base, Handle, Lower	1
34	406773	Switch, SPST, Panel Mount, 30V, 10A	1
35	406774	Relay, Micro, SPDT, 24VDC, 20A	2
36	406775	Kit, Start/Stop Switch, 22mm, Illuminated	1
37	407475-XXX	Controller, HFX20M, Programmed	1
38	406878	Pad, Rubber, Handle/Transport, Adh	1
39	406884	Cover with Gasket, Control Panel, Upper	1
40	407084	Screw, Torx Pan Head, M4-0.7x12, Trilobular, Clear Zinc	12

HANDLE ASSEMBLY 404863-XXX (CONT'D)

Item No.	Part No.	Description	Qty.
41	407085	Assembly, Kill Switch, Tether	1
42	407125	Label, Pictogram, Pinch Point	1
43	407142	Assy, Indicator, LED, 24VDC, 14mm	1
44	407152	Phantom, E-Stop Switch, Triple	1
45	407237	Cover, Lower, Handle	1
46	5280-137W	Wrench, Blade, 6mm	1
47	63-P30	Clamp, Wire 3/8	1
48	63-P31	Clamp, Wire, 3/4	2
49	72873	Clamp, Cable, Vinyl Coated, 3/8	2
50	73092	Washer, Flat USS Zinc 1/4	1
51	74636	Bolt, Wizlock, M6-1.0x16, Clear Zinc	4

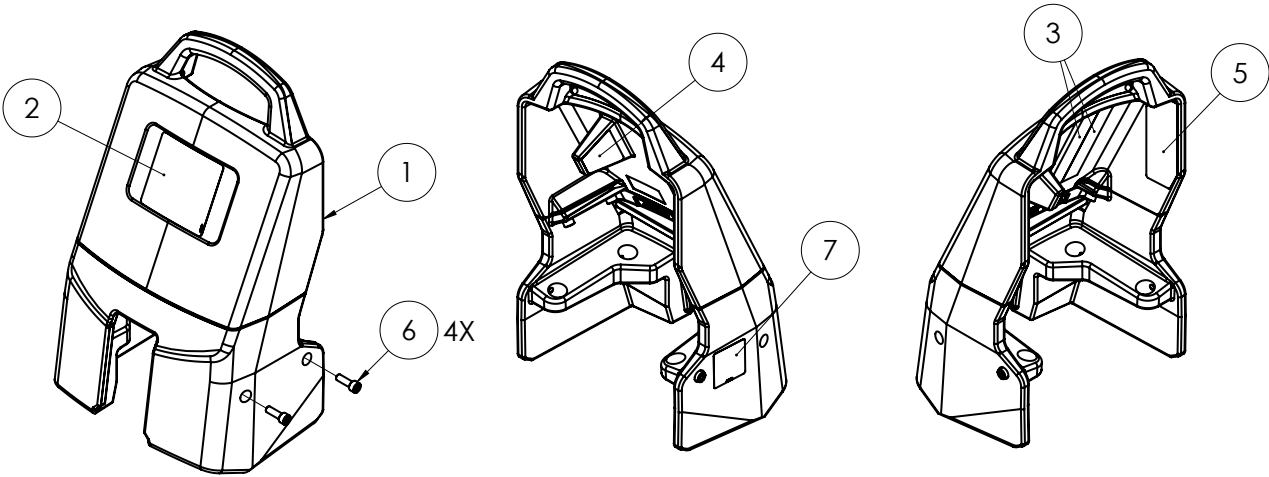
PARTS LISTS

HOOD 406685-X



Item No.	Part No.	Description	Qty.
1	405139	Spacer, Block, Side Panel	4
2	405140	Rod, Side Body	2
3	405755	Bolt, Wizlock, M8-1.25x30, Clear Zinc, Class 8.8	8
4	406778	Bolt, Wizlock, M8-1.25x16, Clear Zinc, Class 8.8	8
5	406844-X	Weldment, Panel, Body, Silver Vein	1

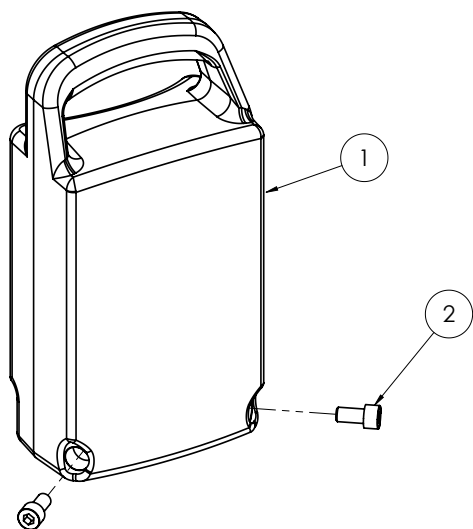
FRONT WEIGHT 405944-X



Item No.	Part No.	Description	Qty.
1	404730-X	Subassembly, Front Weight	1
2	406107	Label, National Logo, 4.12 x 3.75	1
3	406890	Pad, Foam, 1/4 x 1 x 6, PVC/Neoprene, Adh	2
4	407098	Liner, Wear, Tab, Front Weight, Adh	1
5	407099	Liner, Wear, Side, Front Weight, Adh	1
6	407149	Screw, Socket Head Cap, M8x1.25x25, Trilobe, Clear Zinc	4
7	407151	Label, Team Lift, 31kg/68.3lb	1

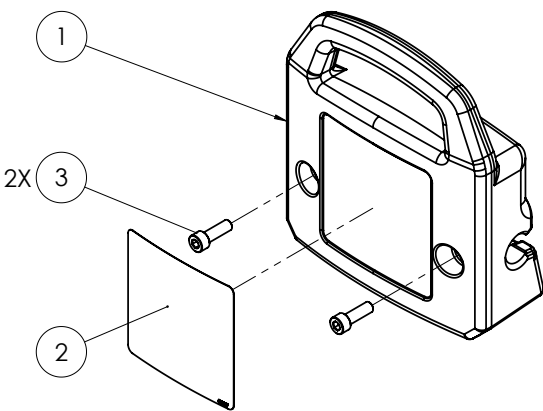
PARTS LISTS

MIDDLE WEIGHT 406090



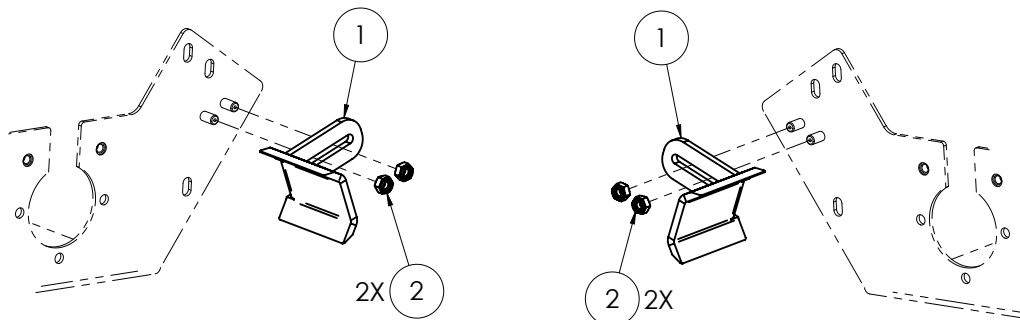
Item No.	Part No.	Description	Qty.
1	405517	Weight, Middle, Rogue	1
2	407150	Screw, Socket Head Cap, M8x1.25x16, Trilobe, Clear Zinc	2

SLIDE WEIGHT 406062



Item No.	Part No.	Description	Qty.
1	405141	Weight, Side, Slide	1
2	406107	Label, Slide Weight	1
3	407149	Screw, Socket Head Cap, M8x1.25x25, Trilobe, Clear Zinc	2

WHEEL SCRAPERS 406686

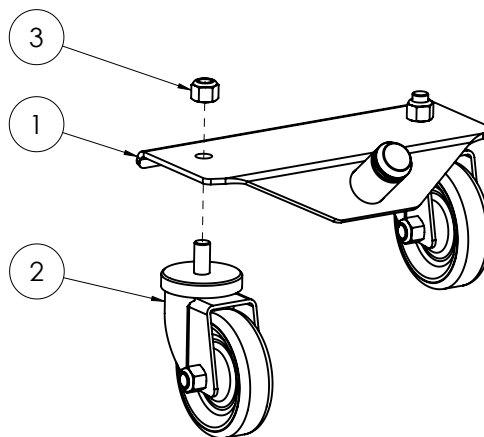


LEFT-HAND CONFIGURATION

RIGHT-HAND CONFIGURATION

Item No.	Part No.	Description	Qty.
1	406629	Cleaner, Wheel, Bidirectional	1
2	401509	Nut, Hex, Nylon Insert, M8-1.25, Clear Zinc	2

TRANSPORT WHEELS 406633

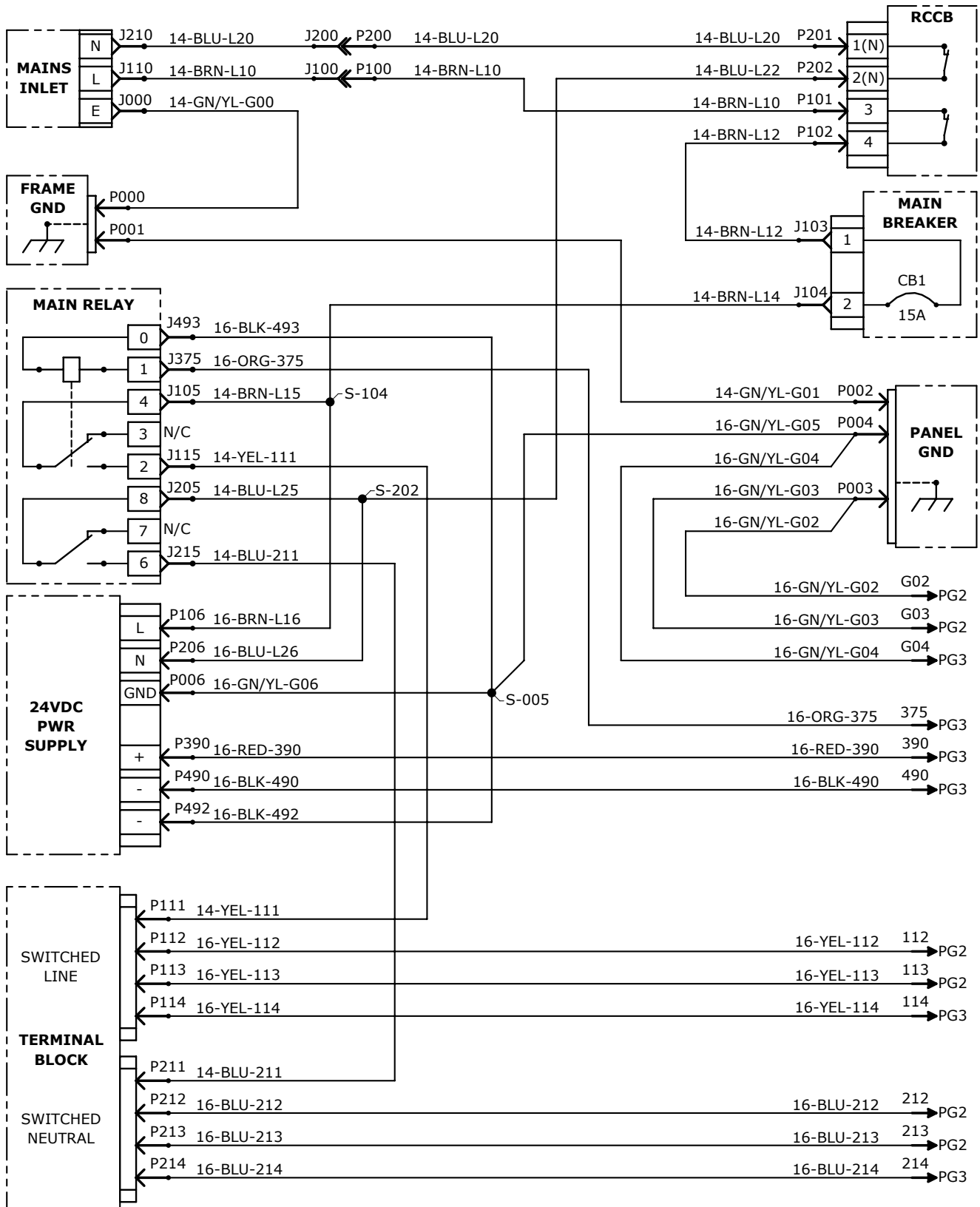


Item No.	Part No.	Description	Qty.
1	406637	Weldment, Transport Wheels	1
2	6280-301	Caster Assy, Swivel, 4", Stem	2
3	73402	Nut, Nylock, 1/2-13	2

WIRING DIAGRAMS

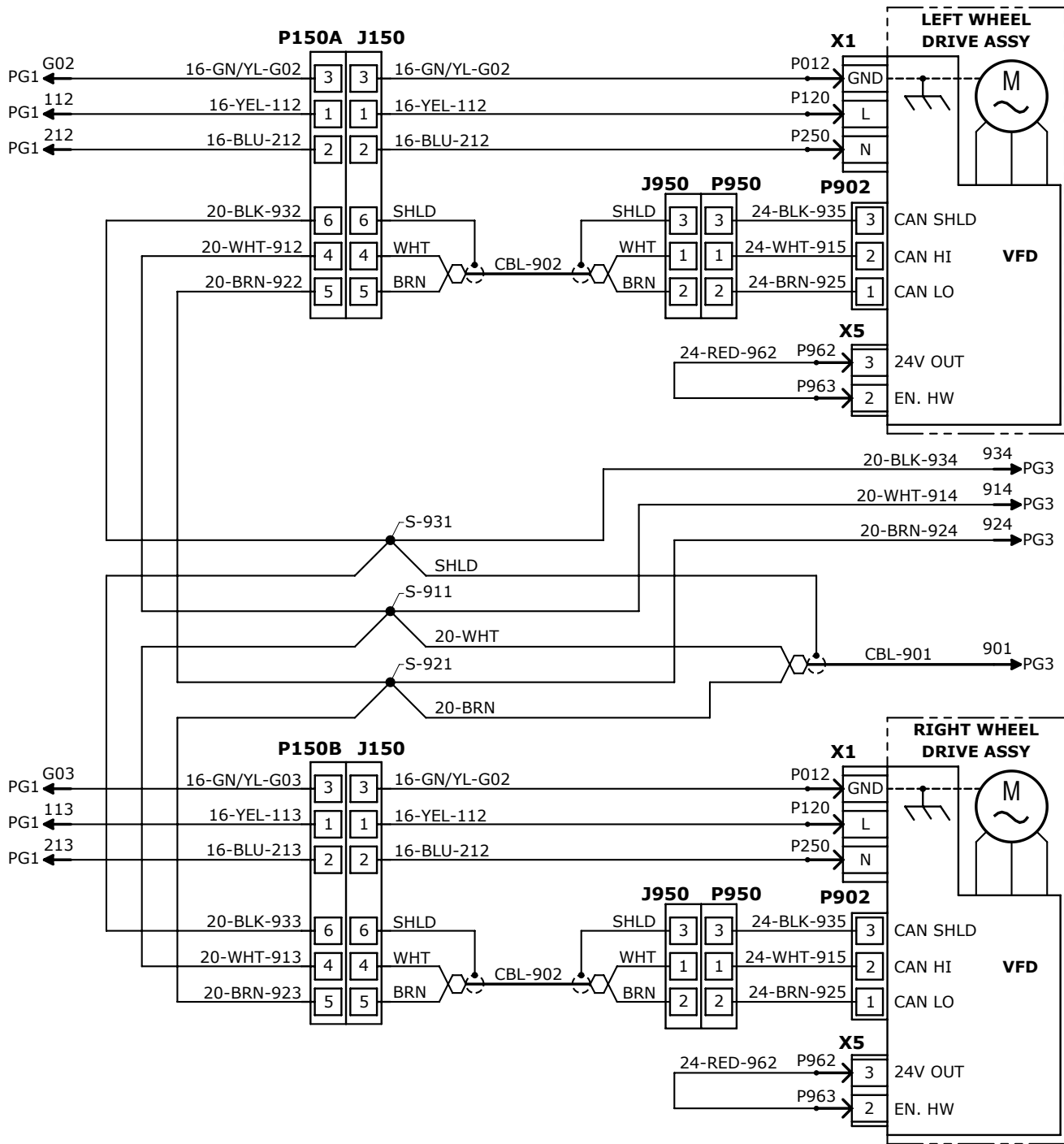
**WD
PG 1**

PRIMARY SYSTEMS WIRING DIAGRAM



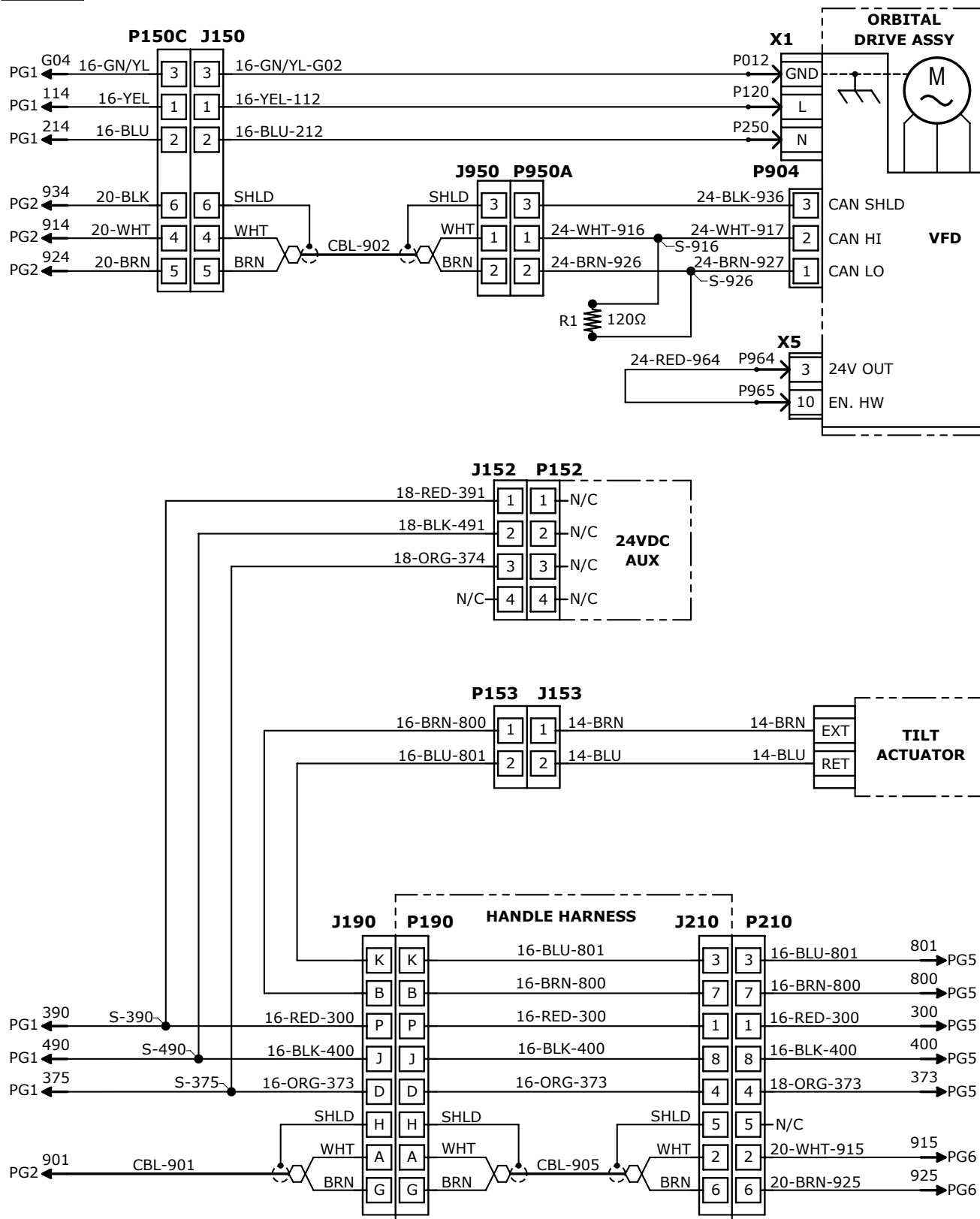
PRIMARY SYSTEMS WIRING DIAGRAM 2

**WD
PG 2**



WD
PG 3

PRIMARY SYSTEMS WIRING DIAGRAM 3



RESERVED

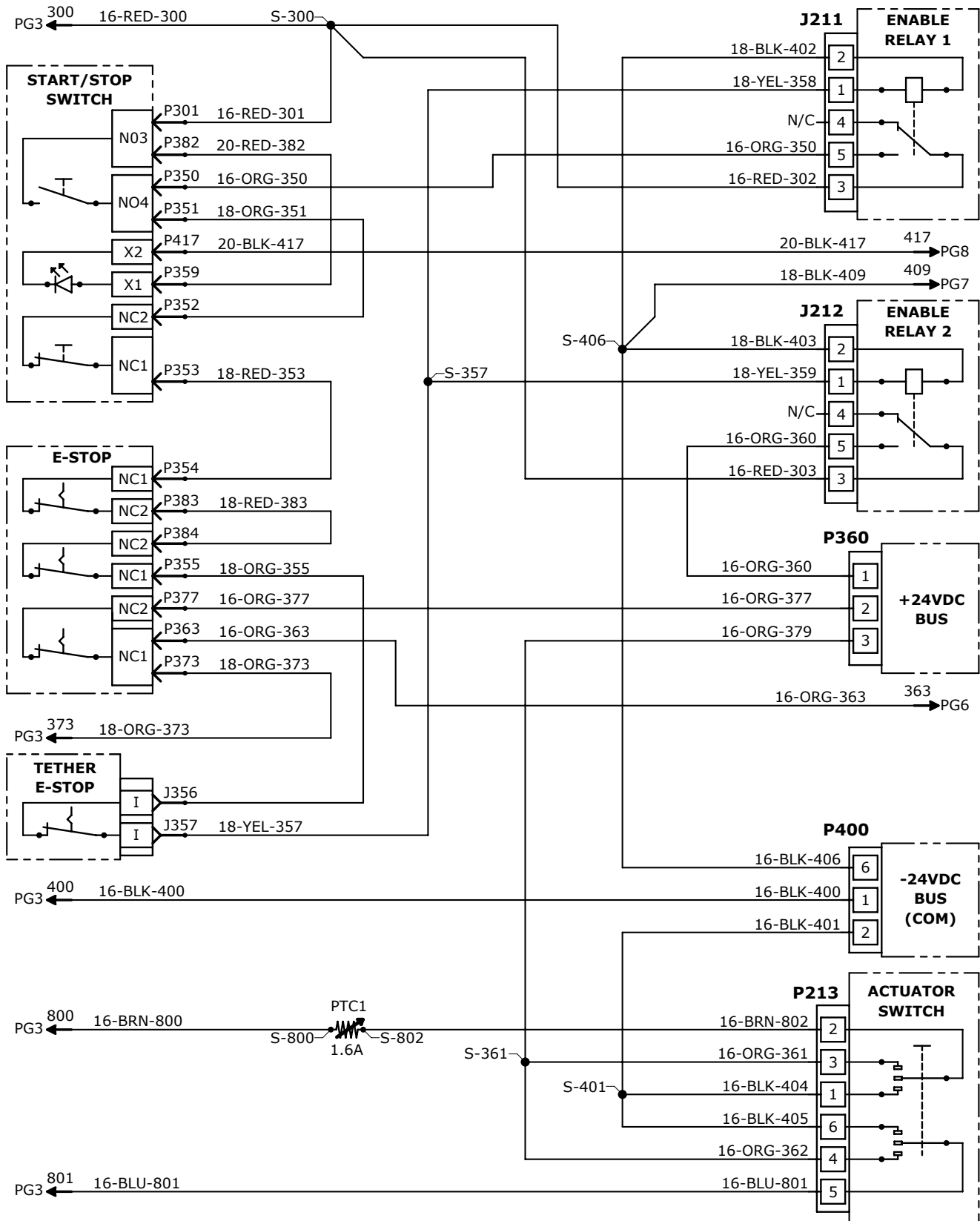
WD
PG 4

PAGE RESERVED

WIRING DIAGRAMS

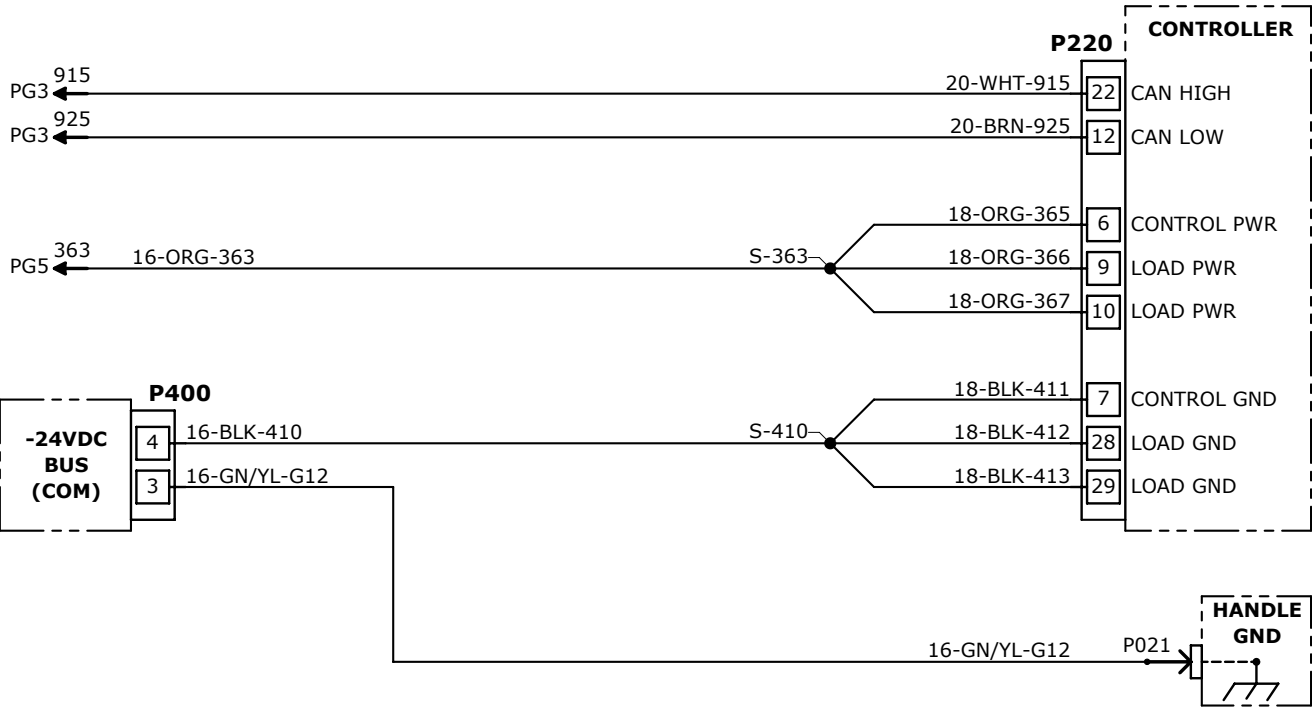
**WD
PG 5**

CONTROL SYSTEMS WIRING DIAGRAM 1



CONTROL SYSTEMS
WIRING DIAGRAM 2

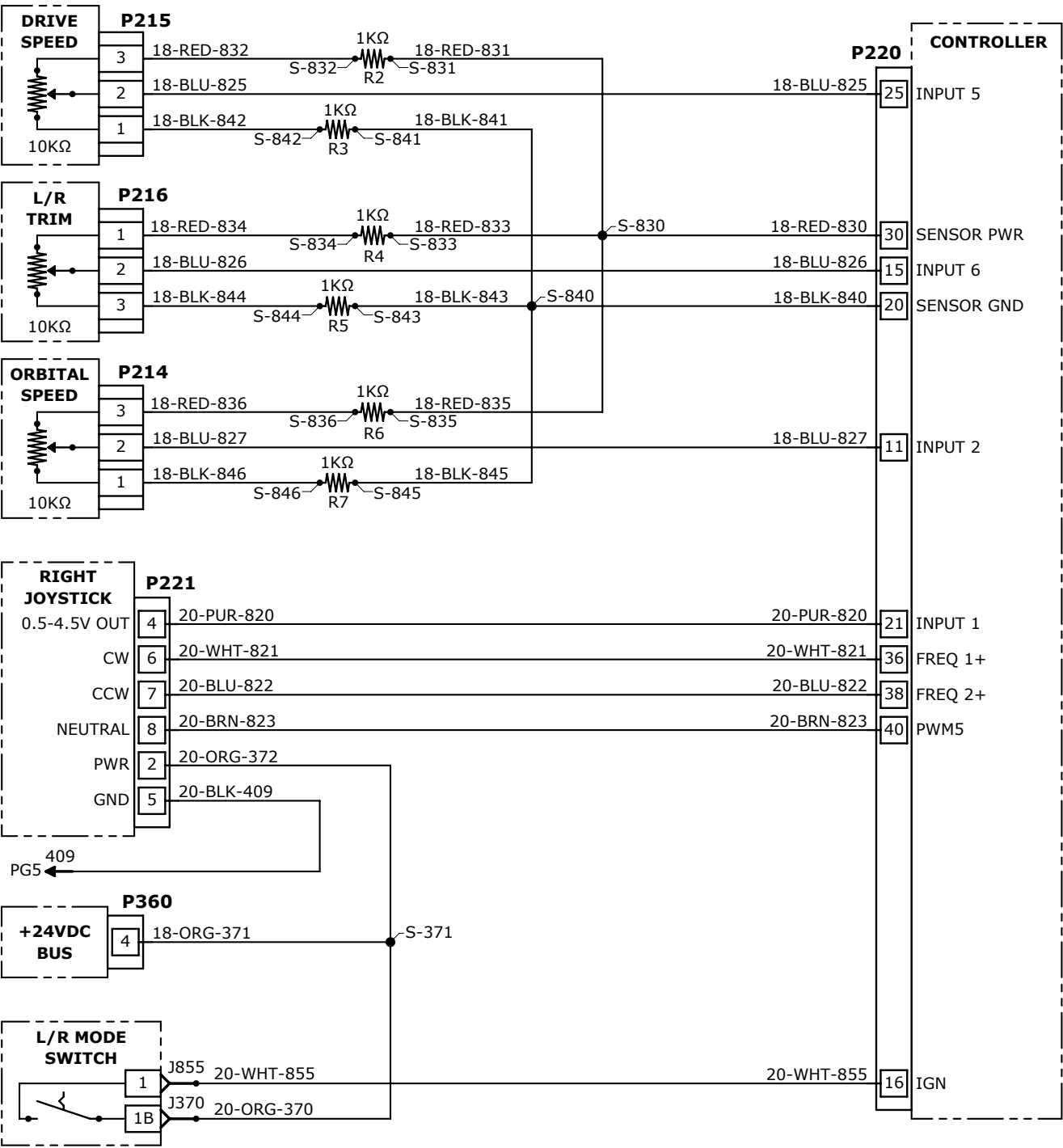
WD
PG 6



WIRING DIAGRAMS

WD
PG 7

CONTROL SYSTEMS WIRING DIAGRAM 3



CONTROL SYSTEMS WIRING DIAGRAM 4

The diagram illustrates the wiring for the P824 J824 P220 P222 P360 P400 components. The connections are as follows:

- IND. LED:**
 - RED (22-RED) connects to P824 J824 Pin 1 (20-RED-824) and P220 Pin 3 (PWM2 2A).
 - GRN (22-GRN) connects to P824 J824 Pin 2 (20-BLU-854) and P220 Pin 2 (PWM1 2A).
 - BLK (22-BLK) connects to P824 J824 Pin 4 (20-BLK-415) and P220 Pin 33 (INPUT 3).
- LEFT JOYSTICK:**
 - 0.5-4.5V OUT (4) connects to P222 Pin 4 (20-PUR-850) and P220 Pin 33 (INPUT 3).
 - CW (6) connects to P222 Pin 6 (20-WHT-851) and P220 Pin 17 (FREQ 3).
 - CCW (7) connects to P222 Pin 7 (20-BLU-852) and P220 Pin 27 (FREQ 4).
 - NEUTRAL (8) connects to P222 Pin 8 (20-BRN-853) and P220 Pin 32 (PWM6).
 - GND (5) connects to P222 Pin 5 (20-BLK-416) and P220 Pin 32 (PWM6).
 - PWR (2) connects to P222 Pin 2 (20-ORG-369) and P220 Pin 32 (PWM6).
- +24VDC BUS:**
 - 5 connects to P360 Pin 5 (18-ORG-364) and P400 Pin 5 (18-BLK-407).
- 24VDC BUS (COM):**
 - 5 connects to P400 Pin 5 (18-BLK-407) and P220 Pin 32 (PWM6).
- HOUR METER:**
 - 1 connects to P220 Pin 32 (PWM6) and P220 Pin 33 (INPUT 3).
 - 2 connects to P220 Pin 32 (PWM6) and P220 Pin 33 (INPUT 3).



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