

# GrindLazer™

3A7600C  
EN

**For removal of materials from flat horizontal concrete and asphalt surfaces. Not approved for use in explosive atmospheres or hazardous (classified) locations. Gas/propane units not for use indoors or in enclosed spaces. For professional use only.**

**Models 25P474 / 25R100** - Graco DC1538 G DCS (High speed / Standard speed)

**Models 25P475 / 25R101** - Graco DC1525 P DCS (High speed / Standard speed)

**Models 25P476 / 25R102** - Graco DC1520 E DCS 480V (High speed / Standard speed)

**Models 25P783 / 25R103** - Graco DC1520 E DCS 380V (High speed / Standard speed)

Maximum Working Pressure: 1750 psi (121 bar, 12.1 MPa)



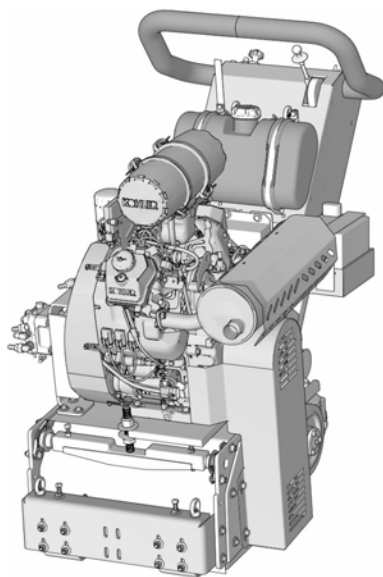
## Important Safety Instructions

Read all warnings and instructions in this manual and in the Kohler engine manual before using the equipment. Be familiar with the controls and the proper usage of the equipment. Save these instructions.

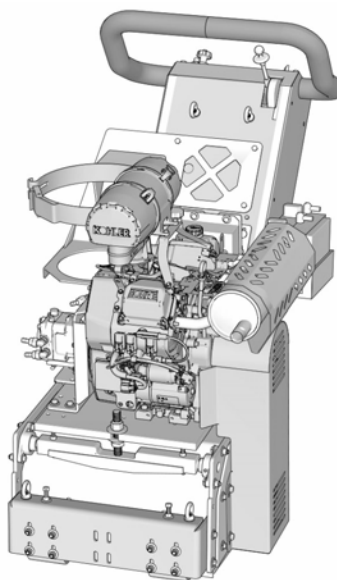
### Related Manuals:

62 590 13 - Kohler Owner's Manual (Gas)

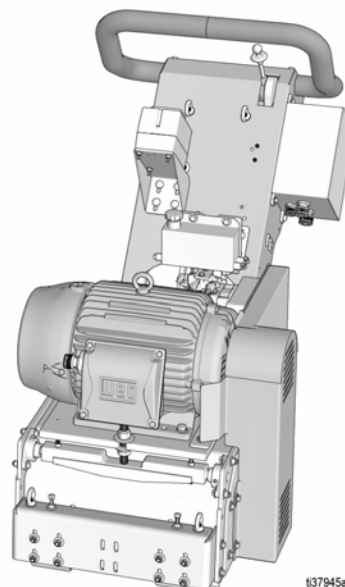
24 590 52- Kohler Owner's Manual (Propane)



DC1538 G DCS



DC1525 P DCS



DC1520 E DCS

t37945a










*(Drums and cutters sold separately)*

# Contents

<b>Warnings</b> .....	<b>3</b>	<b>Parts - Hydraulic Motor / Rear Assembly (All Models)</b> .....	<b>40</b>
Gasoline/Propane Engine Warnings .....	5	Parts List - Hydraulic Motor / Rear Assembly (All Models) .....	41
Electric Motor Warnings .....	6	<b>Parts - Support System / Hydraulic Tank (All Models)</b> .....	<b>42</b>
<b>Component Identification</b> .....	<b>7</b>	Parts List - Support System / Hydraulic Tank (All Models) .....	43
DC1538 G DCS (Gas) .....	7	<b>Parts - Motor / Hydraulic Assemblies (Gas)</b> ...	<b>44</b>
DC1525 P DCS (Propane) .....	8	Parts List - Motor / Hydraulic Assemblies (Gas)	45
DC1520 E DCS (Electric) .....	9	<b>Parts - Hydraulic Fittings / Fuel Tank Assemblies (Gas)</b> .....	<b>46</b>
<b>Setup</b> .....	<b>10</b>	Parts List - Hydraulic Fittings / Fuel Tank Assemblies (Gas) .....	47
Propane Tank .....	10	<b>Parts - Pulley Assemblies (Gas)</b> .....	<b>48</b>
Lifting Instructions .....	10	Parts List - Pulley Assemblies (Gas) .....	49
Handlebar Adjustment .....	11	<b>Parts - Dashboard / Battery Assemblies (Gas)</b> .	<b>50</b>
Engine Kill Button (Gas/Propane) .....	11	Parts List - Dashboard / Battery Assemblies (Gas)	51
Drum Installation/Replacement .....	12	<b>Parts - Motor / Hydraulic Assemblies (Propane)</b>	<b>52</b>
DCS Control .....	13	Parts List - Motor / Hydraulic Assemblies (Propane) .....	53
<b>Operation</b> .....	<b>17</b>	<b>Parts - Propane Tank / Dashboard Assemblies (Propane)</b> .....	<b>54</b>
Machine Start Up (Gas & Propane) .....	17	Parts List - Propane Tank / Dashboard Assemblies (Propane) .....	55
Machine Start Up (Electric) .....	17	<b>Parts - Pulley Assemblies (Propane)</b> .....	<b>56</b>
When operating... ..	18	Parts List - Pulley Assemblies (Propane) ....	57
Hydrostatic Drive Operation .....	18	<b>Parts - Battery Assembly (Propane)</b> .....	<b>58</b>
DCS Instructions .....	19	Parts List - Battery Assembly (Propane) ....	59
<b>Repair</b> .....	<b>21</b>	<b>Parts - Electrical Components (Electric)</b> .....	<b>60</b>
Drive Belt Replacement .....	21	Parts List - Electrical Components (Electric) .	61
Hydraulic Belt Replacement (Electric Models only)	22	<b>Parts - Hydraulic Motor Assemblies (Electric)</b> .	<b>62</b>
Bearing Housing Replacement .....	23	Parts List - Hydraulic Motor Assemblies (Electric)	63
Drive Pulley Replacement .....	24	<b>Parts - Hydraulic Assembly (Electric)</b> .....	<b>64</b>
<b>Maintenance Checklist</b> .....	<b>25</b>	Parts List - Hydraulic Tank Assembly (Electric)	65
Gas/Propane Models only .....	25	<b>Parts - Pulley Assemblies (Electric - 480V &amp; 380V)</b>	<b>66</b>
All Models .....	25	Parts List - Pulley Assemblies (Electric 480V & 380V) .....	67
Purge Procedures .....	26	<b>Wiring Diagram</b> .....	<b>68</b>
Front Wheel Adjustment .....	26	Gas Models .....	68
<b>Recycling and Disposal</b> .....	<b>27</b>	Propane Models .....	69
Rechargeable Battery Disposal .....	27	Electric Models (480V) .....	70
End of Product Life .....	27	Electric Models (380V) .....	71
<b>DCS Control Translations</b> .....	<b>28</b>	<b>Technical Data</b> .....	<b>72</b>
<b>Troubleshooting</b> .....	<b>30</b>	<b>Graco Standard Warranty</b> .....	<b>74</b>
DCS Error Codes .....	32	<b>Graco Information</b> .....	<b>74</b>
DCS Actuator Rod Does Not Move .....	33		
<b>Parts - Main Housing Assembly (All Models)</b> ..	<b>34</b>		
Parts List - Main Housing Assembly (All Models)	35		
<b>Parts - Front Wheel / Wheel Carrier Assemblies (All Models)</b> .....	<b>36</b>		
Parts List - Front Wheel / Wheel Carrier Assemblies (All Models) .....	37		
<b>Parts - Guidebar / Vacuum Assemblies (All Models)</b> .....	<b>38</b>		
Parts List - Guidebar / Vacuum Hose Assemblies (All Models) .....	39		

# Warnings

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbols refer to procedure-specific risks. When these symbols appear in the body of this manual or on warning labels, refer back to these Warnings. Product-specific hazard symbols and warnings not covered in this section may appear throughout the body of this manual where applicable.

 <b>WARNING</b>	
 	<b>DUST AND DEBRIS HAZARD</b> Grinding concrete and other surfaces with this equipment can create dust that contains hazardous substances. Grinding can also create flying debris. To reduce the risk of serious injury: <ul style="list-style-type: none"> <li>• Control the dust to meet all applicable workplace regulations.</li> <li>• Wear protective eye wear and a properly fit-tested and government approved respirator suitable for the dust conditions.</li> <li>• Use equipment only in a well-ventilated area.</li> <li>• Grinding equipment must be used only by trained personnel who understand the applicable workplace regulations.</li> </ul>
  	<b>ENTANGLEMENT AND MOVING PARTS HAZARD</b> Moving parts can pinch, cut or amputate fingers and other body parts. <ul style="list-style-type: none"> <li>• Keep clear of moving parts.</li> <li>• Do not operate equipment with protective guards or covers removed.</li> <li>• Do not wear loose clothing, jewelry or long hair while operating equipment.</li> <li>• Before checking, moving, or servicing equipment, disable power. For gas/propane units, disconnect negative (-) battery cable. For electric units, unplug power cord.</li> </ul>
	<b>BURN HAZARD</b> Cutters and engine can become very hot during operation. To avoid severe burns, do not touch hot equipment. Wait until equipment has cooled completely.
 	<b>PERSONAL PROTECTIVE EQUIPMENT</b> You must wear appropriate protective equipment when operating, servicing, or when in the operating area of the equipment to help protect you from serious injury, including eye injury, inhalation of dust or chemicals, burns, and hearing loss. This equipment includes but is not limited to: <ul style="list-style-type: none"> <li>• Protective eye wear.</li> <li>• Protective shoes.</li> <li>• Gloves.</li> <li>• Hearing protection.</li> <li>• Properly fit-tested and government approved respirator suitable for the dust conditions.</li> </ul>



# WARNING



## SKIN INJECTION HAZARD

High-pressure fluid from hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. **Get immediate surgical treatment.**



- Inspect hose before each use for cuts, bulges, kinks or any other damage.
- Replace damaged hose immediately.
- Replace hoses proactively at regular intervals based on your operating conditions.
- Tighten all fluid connections before operating the equipment.
- Keep clear of leaks.
- Do not stop or deflect leaks with your hand, body, glove, or rag.
- Never exceed hose Maximum Pressure or Temperature ratings.
- Only use chemicals that are compatible with hose materials. See **Technical Specifications** in this manual. Read Safety Data Sheets (SDSs) and fluid and solvent manufacturer's recommendations.











## EQUIPMENT MISUSE HAZARD

Misuse can cause death or serious injury.




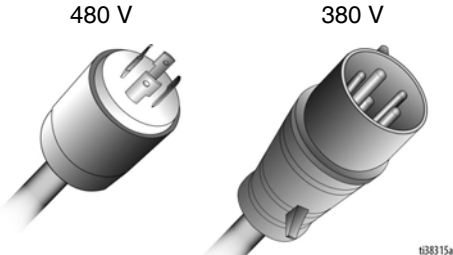
- Do not operate the unit when fatigued or under the influence of drugs or alcohol.
- Do not leave the work area while equipment is energized. Turn off all equipment when equipment is not in use.
- Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.
- Do not alter or modify equipment.
- Use equipment only for its intended purpose. Call your distributor for information.
- Keep children and animals away from work area.
- Comply with all applicable safety regulations.
- Maintain a safe operating distance from other people in the work area.
- Avoid any pipes, columns, openings, or any other objects protruding from work surface.



## Gasoline/Propane Engine Warnings

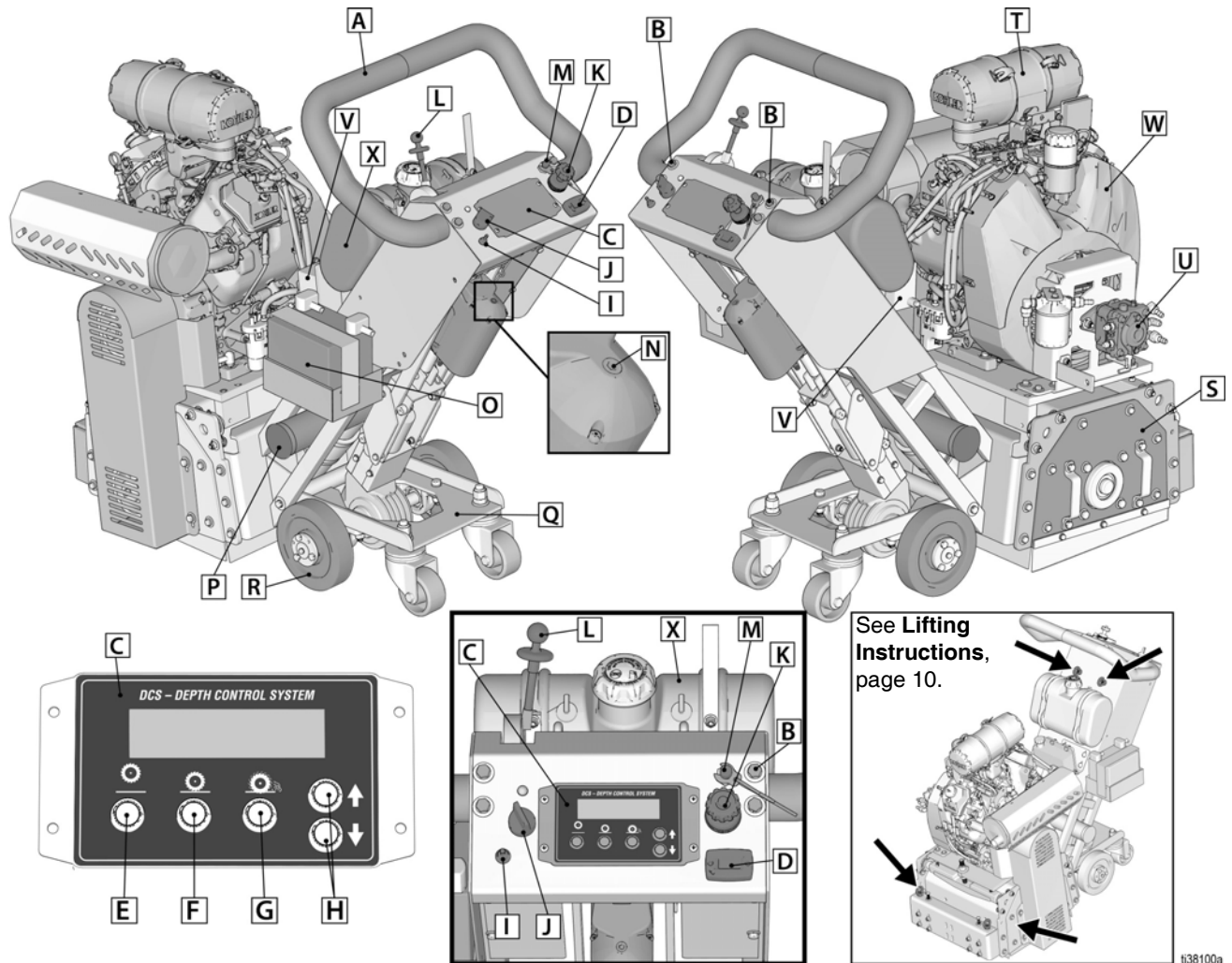
 <b>WARNING</b>	
 	<p><b>FIRE AND EXPLOSION HAZARD -- GASOLINE</b></p> <p>Flammable fumes, such as solvent and paint fumes, in <b>work area</b> can ignite or explode. To help prevent fire and explosion:</p> <ul style="list-style-type: none"> <li>• Use equipment only outdoors. Never use indoors or in enclosed spaces.</li> <li>• Do not fill fuel tank while engine is running or hot; shut off engine and let it cool. Fuel is flammable and can ignite or explode if spilled on hot surface.</li> <li>• Eliminate all ignition sources, such as pilot lights, cigarettes, and portable electric lamps.</li> <li>• Keep work area free of debris, including solvent, rags and gasoline.</li> <li>• Keep a fire extinguisher in work area.</li> </ul>
 	<p><b>FIRE AND EXPLOSION HAZARD -- PROPANE (LP GAS)</b></p> <p>Propane is highly flammable and explosive. To help prevent fire and explosion:</p> <ul style="list-style-type: none"> <li>• Use equipment only outdoors. Never use indoors or in enclosed spaces.</li> <li>• Eliminate all ignition sources, such as pilot lights, cigarettes, and portable electric lamps.</li> <li>• If you smell propane, shut off the machine immediately and close the propane tank fuel valve. Do not use machine until you identify and correct the problem.</li> <li>• Always turn off propane tank fuel valve when equipment is not in use.</li> <li>• Do not store propane tanks, or equipment with a propane tank, inside a building or enclosed area.</li> <li>• Keep a fire extinguisher in work area.</li> </ul>
	<p><b>CARBON MONOXIDE HAZARD</b></p> <p>Exhaust contains poisonous carbon monoxide, which is colorless and odorless. Breathing carbon monoxide can cause death.</p> <ul style="list-style-type: none"> <li>• Operate engine only outdoors. Never use indoors or in enclosed spaces.</li> </ul>
 	<p><b>BATTERY HAZARD</b></p> <p>Lead-acid batteries produce explosive gases and contain sulfuric acid that can cause severe burns. To avoid sparks and injury when handling or working with a lead-acid battery:</p> <ul style="list-style-type: none"> <li>• Read and follow the battery manufacturer's warnings.</li> <li>• Exercise caution when working with metallic tools or conductors to prevent short circuits and sparks.</li> <li>• Keep all sparks, flames, and cigarettes away from batteries.</li> <li>• Always wear protective eyewear and protective equipment for face, hands, and body.</li> <li>• If you have direct contact with battery fluid, flush with water and consult a physician immediately.</li> <li>• Installation and maintenance must be performed by knowledgeable personnel only.</li> </ul>

## Electric Motor Warnings

 <b>DANGER</b>	
 	<p><b>SEVERE ELECTRIC SHOCK HAZARD</b></p> <p>This equipment is powered by more than 240 V. Contact with this voltage will cause death or serious injury.</p> <ul style="list-style-type: none"> <li>• Turn off and disconnect power cord before servicing equipment.</li> <li>• Connect only to grounded electrical outlets.</li> <li>• Use only 4-wire extension cords.</li> <li>• Ensure ground prongs are intact on power and extension cords.</li> <li>• Do not expose to rain. Store indoors.</li> <li>• All electrical wiring must be done by a qualified electrician and comply with all local codes and regulations.</li> </ul>
	<p><b>GROUNDING</b></p> <p>This product must be grounded. In the event of an electrical short circuit, grounding reduces the risk of electric shock by providing an escape wire for the electric current. This product is equipped with a cord having a grounding wire with an appropriate grounding plug. The plug must be plugged into an outlet that is properly installed and grounded in accordance with all local codes and regulations.</p> <ul style="list-style-type: none"> <li>• Improper installation of the grounding plug is able to result in a risk of electric shock.</li> <li>• This product is for use on a nominal 480 V or 380 V circuit and has a grounding plug similar to the plugs illustrated in the figure below.</li> </ul> <div style="text-align: center;">  </div> <ul style="list-style-type: none"> <li>• Only connect the product to an outlet having the same configuration as the plug.</li> <li>• Do not modify the plug provided; if it does not fit the outlet, have the proper outlet installed by a qualified electrician.</li> <li>• Do not use an adapter with this product.</li> <li>• When repair or replacement of the cord or plug is required, only connect the grounding wire to the extended ground blade or pin.</li> <li>• The wire with insulation having an outer surface that is green with or without yellow stripes is the grounding wire.</li> <li>• Check with a qualified electrician or serviceman when the grounding instructions are not completely understood, or when in doubt as to whether the product is properly grounded.</li> </ul> <p><b>Extension Cords:</b></p> <ul style="list-style-type: none"> <li>• Use only a 4-wire extension cord that has a grounding plug and a grounding receptacle that accepts the plug on the product.</li> <li>• Make sure your extension cord is not damaged. If an extension cord is necessary, use 10 AWG (6.0 mm<sup>2</sup>) minimum to carry the current that the product draws.</li> <li>• An undersized cord results in a drop in line voltage and loss of power and overheating.</li> </ul>

# Component Identification

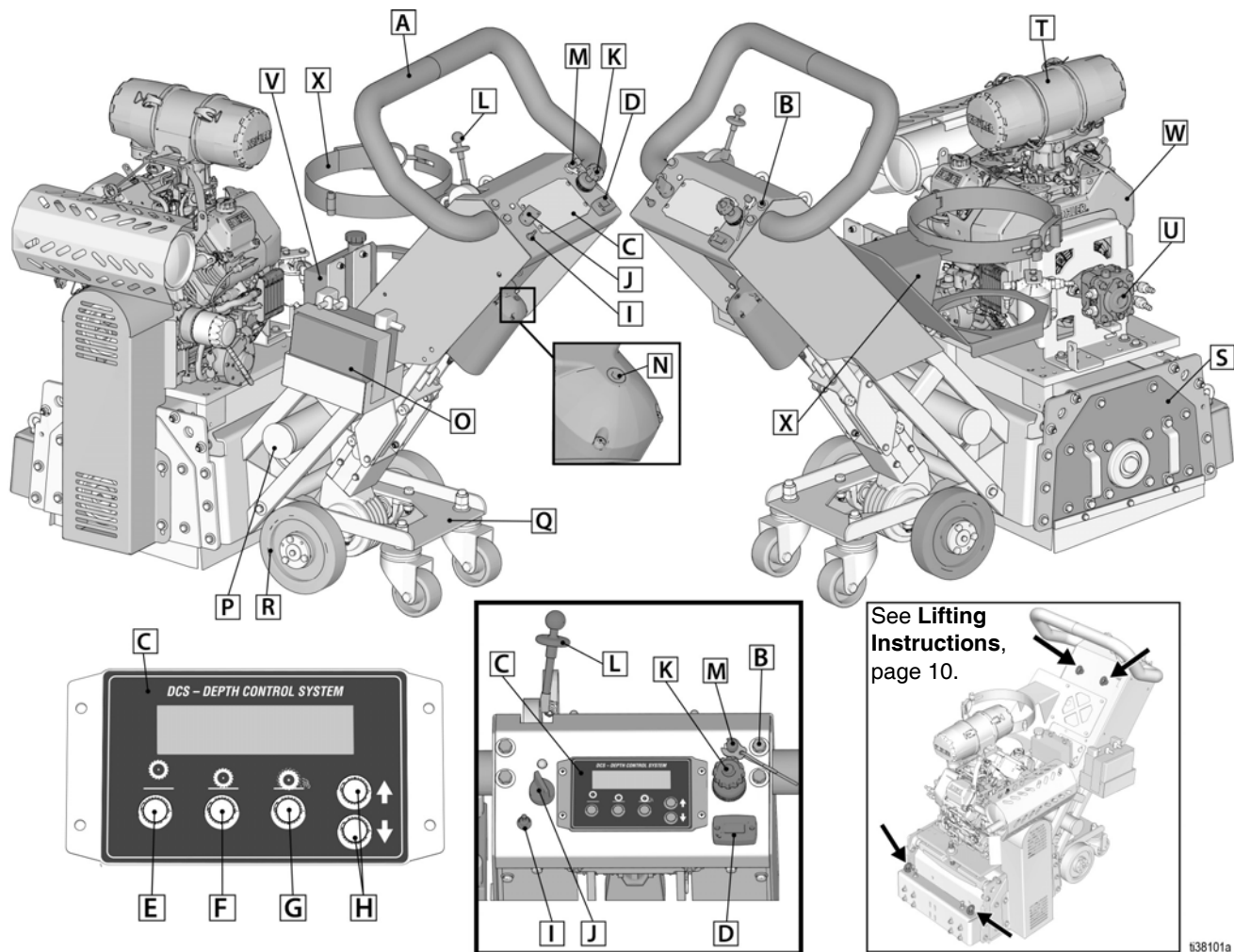
## DC1538 G DCS (Gas)



Component	
A	Adjustable Handlebar
B	Handlebar Adjustable Bolts
C	DCS Control
D	Hour Meter / Tachometer
E	Home Button
F	Zero Button
G	Cut Depth Button
H	Up / Down Button
I	DCS Power Switch
J	Key Switch
K	Throttle Control
L	Forward / Reverse Control Lever

Component	
M	Engine Kill Button
N	Manual Height Adjustment
O	Battery
P	Vacuum Port
Q	Lift Carriage with Swivel Casters
R	Self-Propelled Drive Wheels
S	Removable Side Plate
T	Air Intake / Filtration System
U	Hydraulic Drive Pump
V	Hydraulic Reservoir
W	Engine (Kohler)
X	Gas Tank

## DC1525 P DCS (Propane)

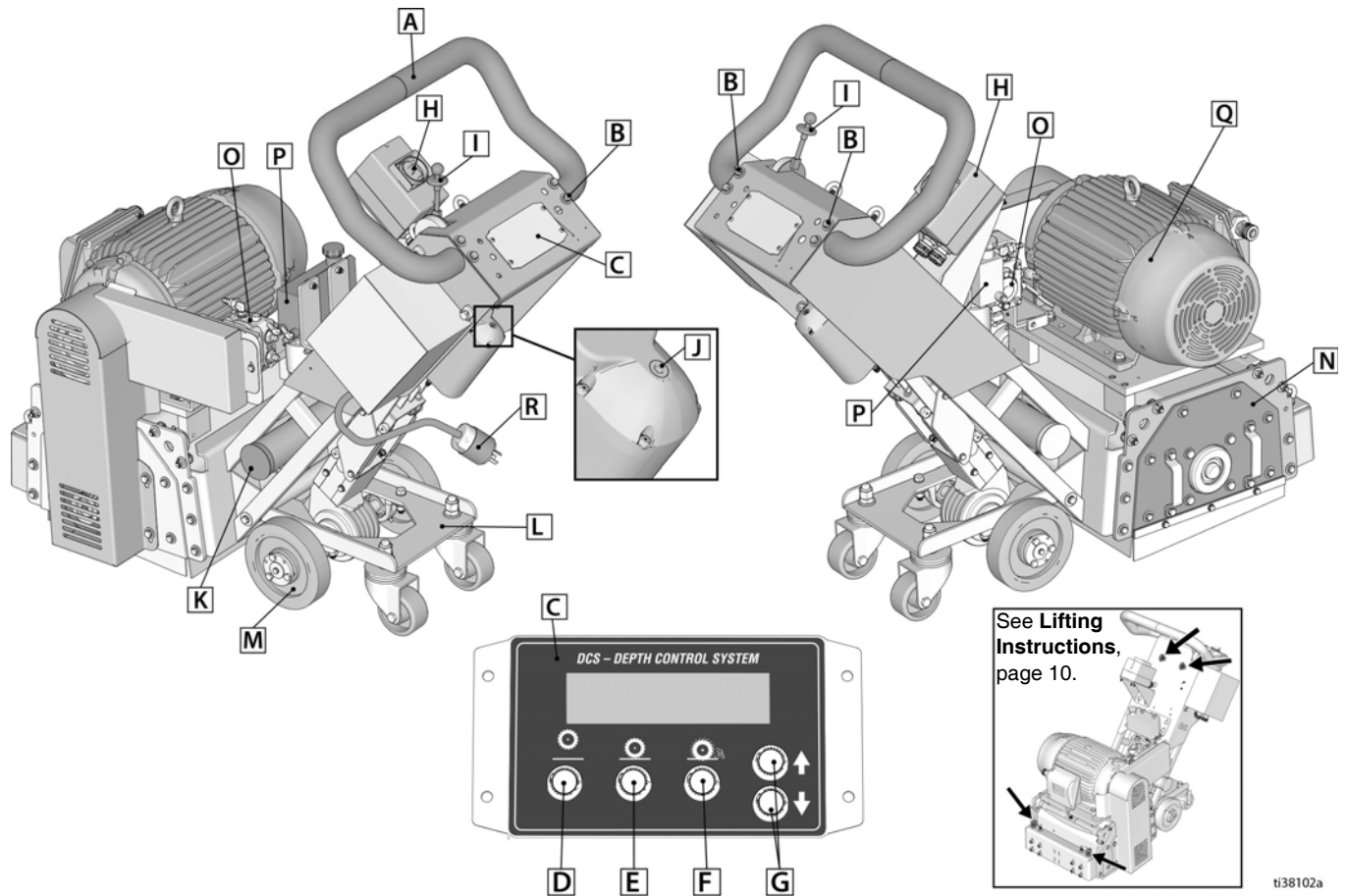


138101a

Component	
A	Adjustable Handlebar
B	Handlebar Adjustment Bolts
C	DCS Control
D	Hour Meter / Tachometer
E	Home Button
F	Zero Button
G	Cut Depth Button
H	Up / Down Button
I	DCS Power Switch
J	Key Switch
K	Throttle Control
L	Forward / Reverse Control Lever

Component	
M	Engine Kill Button
N	Manual Height Adjustment
O	Battery
P	Vacuum Port
Q	Lift Carriage with Swivel Casters
R	Self-Propelled Drive Wheels
S	Removable Side Plate
T	Air Intake / Filtration System
U	Hydraulic Drive Pump
V	Hydraulic Reservoir
W	Engine (Kohler)
X	Propane Tank Bracket

## DC1520 E DCS (Electric)



ti38102a

Component	
A	Adjustable Handlebar
B	Handlebar Adjustment Bolts
C	DCS Control
D	Home Button
E	Zero Button
F	Cut Depth Button
G	Up / Down Button
H	Motor Start Switch
I	Forward / Reverse Control Lever

Component	
J	Manual Height Adjustment
K	Vacuum Port
L	Lift Carriage with Swivel Casters
M	Self-Propelled Drive Wheels
N	Removable Side Plate
O	Hydraulic Drive Pump
P	Hydraulic Reservoir
Q	Electric Motor
R	Power Plug

# Setup

## Propane Tank

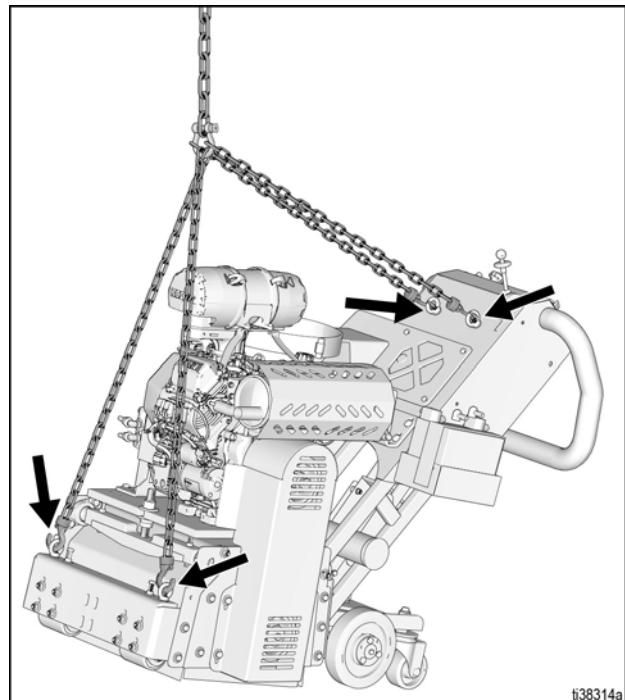
Propane (LP gas) supply tank not provided by Graco. Supply tank must be vertically mounted and vapor withdrawal type. Supply tank must be designed, fabricated, and marked in accordance with specifications and regulations for LP-Gas cylinders at: The U.S. Department of Transportation (DOT); the National Standard of Canada, CAN/CSA-B339, Cylinders, Spheres, and Tubes for Transportation of Dangerous Goods; the Transportable Pressure Vessels Regulations 2001 (S1 2001/1426); or the Gas Cylinders (Pattern Approval) Regulations 1987 (SI 1987/116)(Pattern Approval Regulations) for EEC-type cylinders under European Directive 84/525/EEC, 84/526/EEC, and 84/527/EEC.

Check gas supply hose connection to propane cylinder. Make sure fitting is free of debris before connecting to tank. Make sure gas connection is screwed completely on and is free of leaks.

**NOTE:** The propane tank connection hose is equipped with a POL gas fitting. If a different sized fitting is needed, see your local LP gas equipment supplier.

## Lifting Instructions

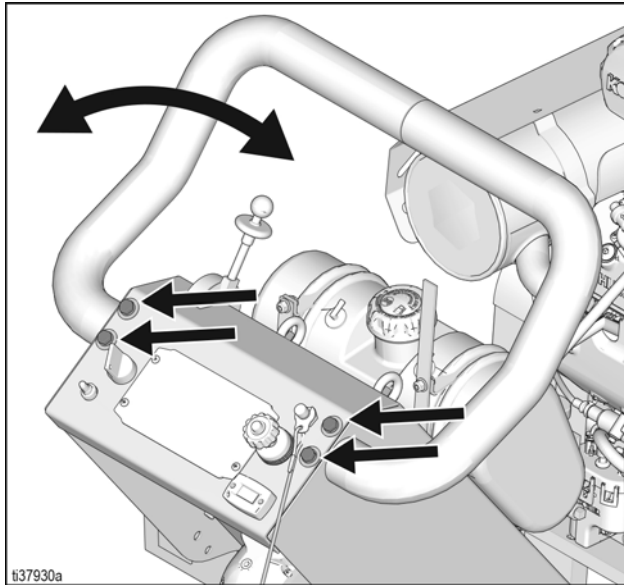
- Only lift the equipment using all available lift points. The lift chains must be angled at least 45° from the horizontal.
- Lift the system with a lift apparatus rated appropriately for the weight of the system. See **Technical Data**, page 72.
- Lift the system using the lift eyes shown on the appropriate illustration.



## Handlebar Adjustment

The handlebars are equipped with a high-density vibration suppression material to reduce operator fatigue. To adjust the handlebars to a new position for different height operators, please follow these steps:

1. Using a 9/16" wrench or socket, loosen the bolts on both sides of the handlebars until the handlebar moves freely.

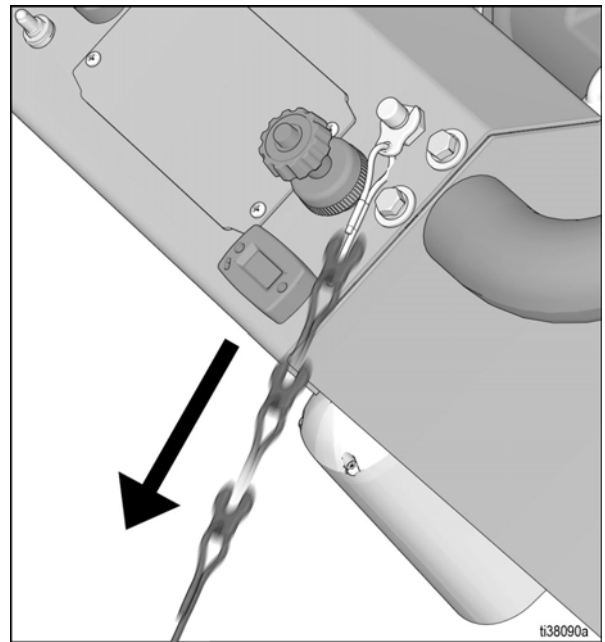


2. Stand behind the machine and lightly tap the handlebar to the desired position.
3. Re-tighten the bolts to 260-300 in-lb (29-34 N•m) to lock the handlebars into position.

**NOTE:** Never operate equipment with loose handlebars. The bolts must be fastened tightly to ensure the handle is locked into position.

## Engine Kill Button (Gas/Propane)

In the event of a malfunction or an accident (such as the machine operator falling or losing footing), the GrindLazer is equipped with a corded Engine Kill Button. Attach the end of the cord to the operator's belt or wrist, and snap the clip into place on the button by raising the top of the Engine Kill Button and inserting the clip into the gap. If the operator becomes distanced too far from the machine, the cord will detach from the button and the machine will stop running. The engine can also be stopped by pressing down on the Engine Kill Button.



## Drum Installation/Replacement



**Gas/Propane:** To avoid injury from unexpected start up, turn ignition OFF, remove key, and disconnect spark plug wires before you service your unit.

**Electric:** To avoid injury from unexpected start up, disconnect power plug before you service your machine.

Normal use will require periodic drum inspection and may necessitate drum replacement. Time of replacement will vary according to usage and load factors.

Tools needed:

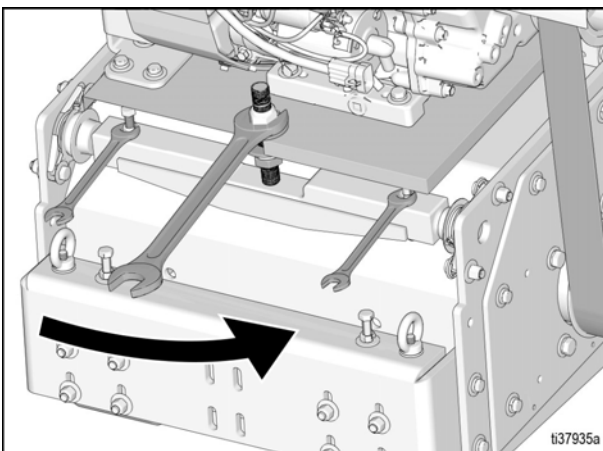
- 9/16" socket or wrench
- Rubber mallet
- 1-1/8" wrench

1. Turn DCS Power Switch ON. Wait until the GrindLazer cools off if it has been running.
2. Press Home Button on DCS Control to raise the cutter drum off the work surface.

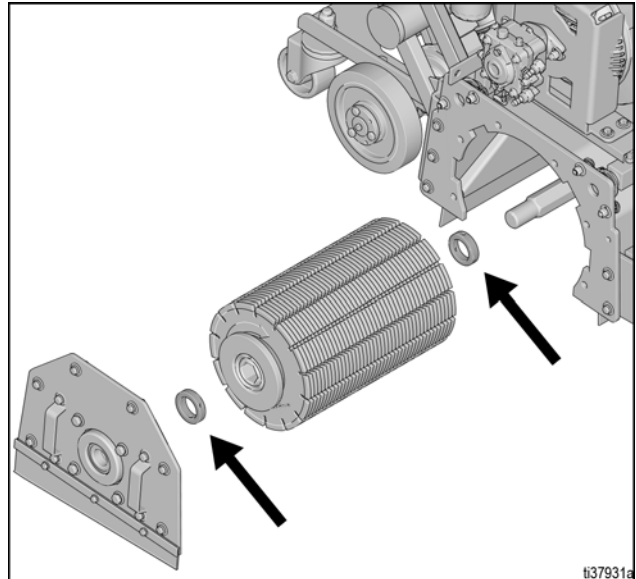


Once at home position, disconnect negative (-) battery cable for gas/propane units. For electric units, disconnect power plug. If more adjustment is needed at this point, use the **Manual Height Adjustment**, page 20.

3. Using 1-1/8" and 9/16" wrench, lower jam nuts and support bolts on engine/motor plate so that tension is released off belt.



4. Remove six hex head cap screws from the Side Plate using the 9/16" socket or wrench.
5. Remove the Side Plate (this may require the rubber mallet to break it loose).
6. Slide out the drum assembly. Use caution as the assembly is heavy.



7. Before replacing the drum onto hex shaft:
  - a. Check that all bearings are in good working order.
  - b. Remove dirt and material build-up from inside main housing and drum.
  - c. Apply grease to all metal contacts.
  - d. Check drum spacers for wear, replace if necessary (if applicable).
8. Align and slide drum back onto the hex shaft.
9. Replace Side Plate (slide onto) hex shaft and reinstall the six cap screws and torque to 40 ft/lbs (54.2 N•m). Check that drum moves side to side and drum spacers are free to move (if applicable).
10. To tension the belt, turn the base plate pivot nut with the 1-1/8" wrench. This will raise the engine/motor base plate. Use the 9/16" wrench to raise bolts into place, locking jam nut when complete.

**NOTE:** An extra drum loaded with cutters for rapid job site replacement is recommended.

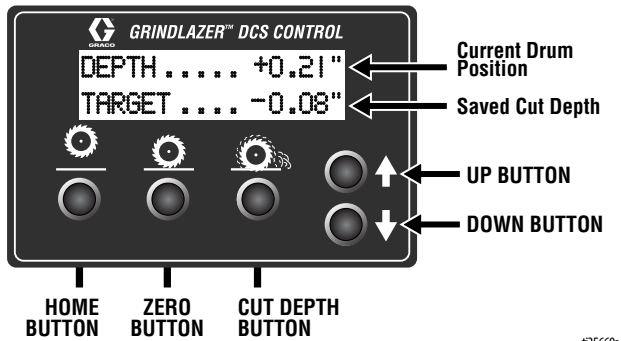


## DCS Control

Buttons on the DCS Control have two functions, quick press and long press. Quick press refers to pressing the button and releasing the button quickly, while long press is pressing the button and holding the button for two or more seconds.

**NOTE:** "+" (plus) refers to above work surface. "-" (minus) refers to below work surface.

### Run Screen



ti35660a

### Home Button

**Quick Press:** Takes the drum to its highest position.



ti35661a

**Long Press:** Brings up Menu Screen.



ti35661b

### Zero Button

**Quick Press:** Takes the drum to the work surface.



ti35662a

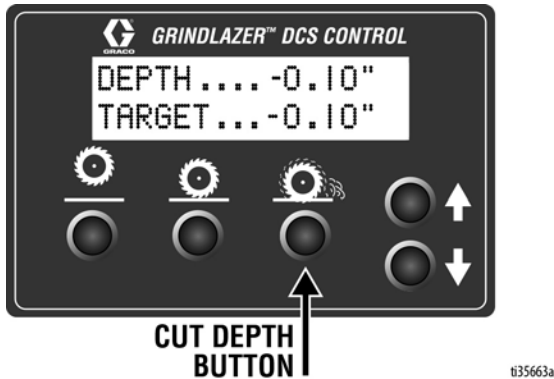
**Long Press:** Reprograms the zero point to the current drum position.



ti35662b

## Cut Depth Button

**Quick Press:** Takes the drum to the Cut Depth Target.



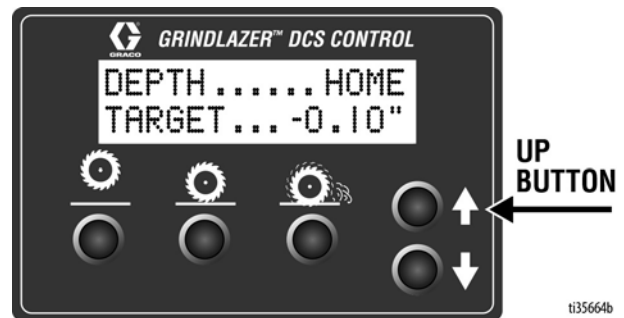
**Long Press:**

- If at or above zero point: Opens new screen to select desired cut depth using up/down buttons.
- To exit without saving, quick press the Cut Depth Button.
- To exit with saving, long press the Cut Depth Button.
- If below zero point: Reprograms the Cut Depth Target to the current drum position.



## Up Arrow Button\*

**Quick Press:** Raises the drum by 0.01" (0.25mm, 10 mil).

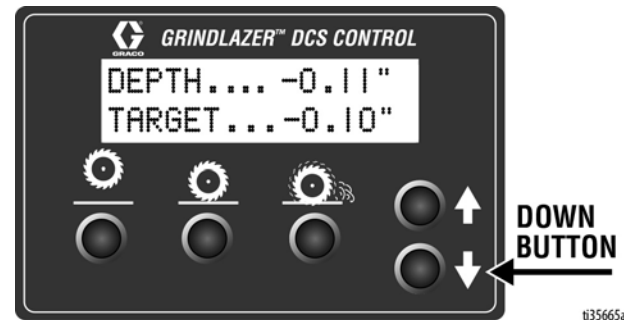


**Long Press:** Raises the drum to Home position.

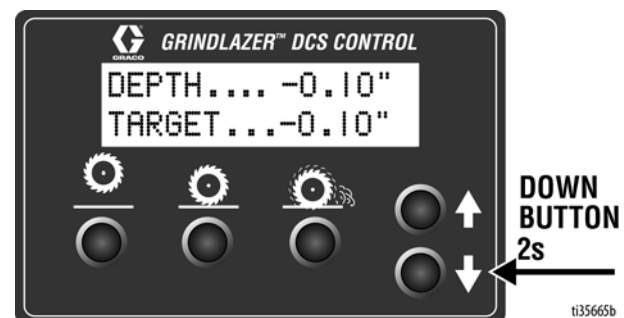


## Down Arrow Button\*

**Quick Press:** Lowers the drum by 0.01" (25mm, 10 mil).



**Long Press:** Lowers the drum to Cut Depth Target.



\* Handlebar Rocker Switch has the same functions as Up and Down Arrow Buttons.

## Menu Screens

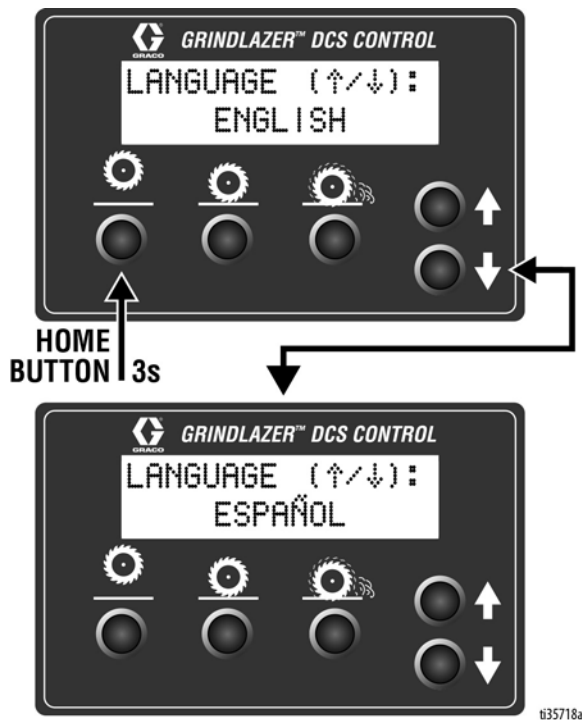
To display the Menu Screens, hold down Home Button from the Run Screen. To save menu settings and return to Run Screen, hold down Home Button from any Menu Screen.

To cycle through selections in each Menu Screen, use Up and Down Arrow Buttons.

To advance to next Menu Screen, quick press the Home Button.

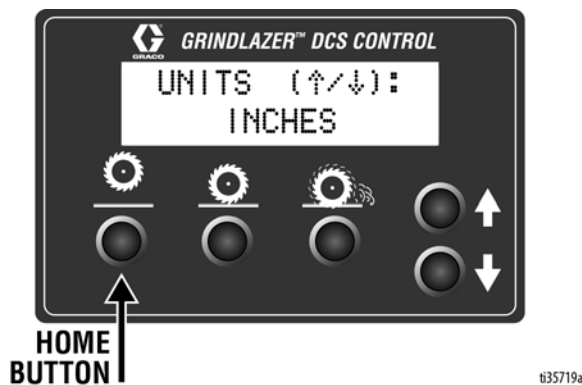
### Menu Screen #1 - Language

Select your desired language (English, Spanish, French, German, or International Symbols).



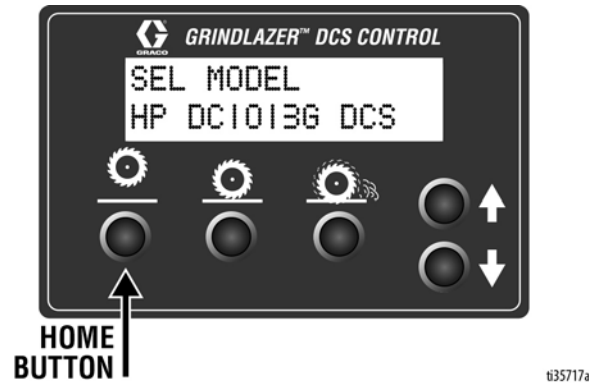
### Menu Screen #2 - Units

Select your desired depth units (inches, millimeters, or mils).



### Menu Screen #3 - Model Select

Your GrindLazer model name can be found on the handlebar dashboard label. Select the model on the DCS Control which matches the model you have. This ensures accurate depth readings. Hold down Up or Down Arrow Buttons to cycle through models.



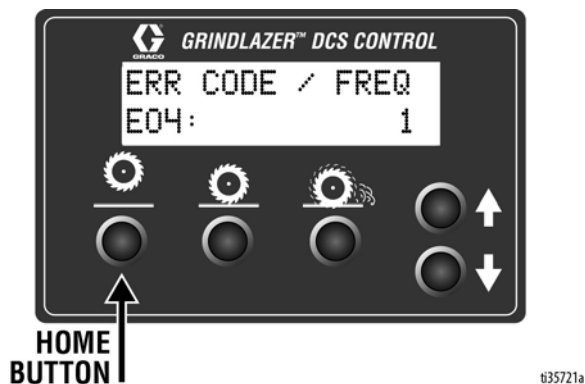
### Menu Screen #4 - Software revision

Displays the revision of the software on the DCS Control.



### **Menu Screen #5 - Error Codes**

Displays the most recent error code and the total number of times that error has occurred. Cycle through previous error codes using Up/Down Buttons.



### **Error Codes**

E04: High Voltage  
 E05: High Motor Current  
 E08: Low Voltage  
 E09: Hall Sensor Error  
 E12: High Current (short circuit)  
 E31: Home Button Error  
 E32: Zero Button Error  
 E33: Cut Depth Button Error  
 E34: Up Button Error  
 E35: Down Button Error

To clear an error code that appears while on the Run Screen:

1. Turn DCS Power Switch OFF.
2. Address/Fix the issue.
3. Turn DCS Power Switch ON.

**NOTE:** See Repair Manual for more information on Error Codes and Troubleshooting.

# Operation


Do not start machine while cutter head is in contact with the work surface. Doing so can cause the operator to lose control of the machine, resulting in property damage and/or personal injury.

**Electric:** To avoid injury from unexpected movement, ensure Power Switch is in the OFF position before connecting or disconnecting the power cord. In the event of a power failure or interruption, ensure Power Switch is in the OFF position before restoring power.

**1**

**2**

## Machine Start Up (Gas & Propane)

1. Turn DCS Power Switch ON.
  2. Verify the Forward/Reverse Control Lever is in the neutral (N) position.
  3. Place the throttle control at the idle position.
  4. Start the engine.
  5. Move throttle control to open or run position when engine is warmed up.
  6. Increase throttle to optimal machine operating position.
- NOTE:** Engine speed for all drum assemblies is 3450 RPM.
7. Before removal, run the drum with the cutters not touching the work surface. If there is excessive vibration, re-balance the cutter setup, check bearing condition, and/or make sure the drive shaft is secured.

## If the Engine Does Not Start

- Turn the ON/OFF Switch on the Control Panel to ON.
- Check engine for proper gas and oil levels.
- Check the spark plug. Make sure socket areas are clean and clear of debris, and the proper gap is set. Replace if needed.
- Check the corded Engine Kill Button's connections. Make sure the corded safety stop "C" connector is properly inserted into the Engine Kill Button.

## Machine Start Up (Electric)

### NOTICE



Make sure motor is rotating in the correct direction. Look for clockwise rotation on the right side of the machine at drum end shaft by turning on and off quickly. Incorrect rotation will damage hydraulic pump and could damage cutters if contact is made with the work surface. If rotation is incorrect, exchange positions of two power wires at the plug. Do not loosen or move the ground wire at the plug.

1. Turn motor ON/OFF switch to **OFF**.
2. Verify the Forward/Reverse Control Lever is in the neutral (N) position.
3. Plug the machine in to the electrical source.
4. Turn motor ON/OFF switch to **ON**.
5. Before operating, run the drum with the cutters not touching the work surface. If there is excessive vibration, re-balance the cutter setup, check bearing condition, and/or make sure the drive shaft is secured.

## If the Motor Does Not Start

- Make sure the motor is plugged into the electrical source.
- Turn motor ON/OFF switch to ON.

## When operating...

				
<b>SEVERE ELECTRIC SHOCK HAZARD</b> <b>Electric:</b> Keep the extension cord clear of machine travel path.				

Adjust the height of the cutter drum. Set the depth of cut to allow the cutters to go through only the materials to be removed. Make certain that the drum is positioned to where only the cutters strike the work surface, and that the drum assembly never comes in to contact with the work surface. **The cutter tips alone should strike the work surface** (1/8" to 1/4" maximum depth per removal pass on new cutters). The drum will not survive work surface contact.

### NOTICE

Cutting too deep will cause premature wear to cutters, shafts, drum and other components.

Remove materials in several passes rather than one deep pass. Several tests will show the best, most appropriate cutter depth. Use a forward/backward pattern to achieve your desired finish.

When the job is complete, or the operator wants to cease work, raise the drum above the work surface by pressing home button on DCS control.

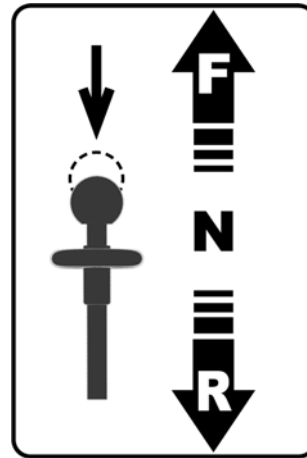
- **For gas units**, stop the machine with the key switch or power switch.
- **For propane units**, stop machine with the key switch or power switch, then close the propane supply valve.
- **For electric units**, stop machine by turning motor power switch OFF, and unplug the machine from the electrical source.

The drum assembly must be removed daily and inspected for drum wear, hole elongation and possible weld separation. Replace the cutter shafts every 40 hours, or prior to any drum wear. If the drum's center holes are elongated, order another Graco cutter drum.

## Hydrostatic Drive Operation

Engine/motor must be warmed up and at desired speed.

Verify the Forward/Reverse Control Lever is in the neutral (N) position. Lower the unit to raise the carriage wheels off the work surface and set the unit onto the drive wheels. The Forward/Reverse Control Lever should be in the neutral (N) position and the wheels should not be turning. At this point the unit can be propelled forward or reverse by pressing down on the Control Lever and moving the Control Lever either forward or backward.



The "live" axle will help move the unit in a straight line. However, keep both hands on the handle for safe operation and minor directional corrections.

## DCS Instructions

Each time the DCS Control is turned on, the DCS actuator will travel to the Home position.



Once the DCS Control finds Home, ensure the correct model is selected as well as your desired language and units. See **Menu Screens**, page 15, for instructions on changing these settings.

### Set Zero Point:

With the engine/motor on, lower the drum by pressing the Down Arrow Button until you hear the cutters make contact with the work surface. Hold down the Zero Button for 2 seconds. Your Zero Point has now been saved.

**NOTE:** The Cut Depth Target is based off of the Zero Point. Re-program the Zero Point if the drum is changed or worn.



### Set Cut Depth Target:

Quick press the Zero Button to take the drum to the work surface. Set the Cut Depth Target by:

1. Quick pressing the Down Arrow Button as many times as needed to achieve your target. Then long press the Cut Depth Button to save your target.

**NOTE:** This method will lower the cutting drum into the work surface as you set your cut depth.

**OR**

2. From the Zero Point, long press the Cut Depth Button until a new screen pops up. Use the Down Arrow Button to enter your Cut Depth Target. Then long press the Cut Depth Button to save your target and return to the Run Screen.

**NOTE:** This method will keep the cutting drum stationary as you set your Cut Depth Target.



The DCS Control is now ready to grind/scarify.

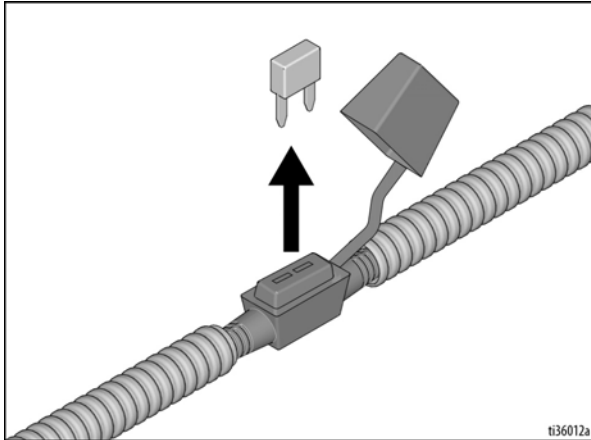
**NOTE:** The Zero Point and Cut Depth are referenced from the Home position. Recalibrate your DCS Control periodically by pressing the Home button.

**NOTE:** Pressing any button while the drum is moving to Zero or Cut Depth will stop the command and halt the drum from moving any further up or down until another button is pressed.

### **Manual Height Adjustment**

If the DCS Control is not usable (dead battery, etc.), the drum height can be adjusted using the Manual Height Adjustment feature.

1. Remove fuse from fuse holder near positive battery terminal. This will protect the battery from damage.

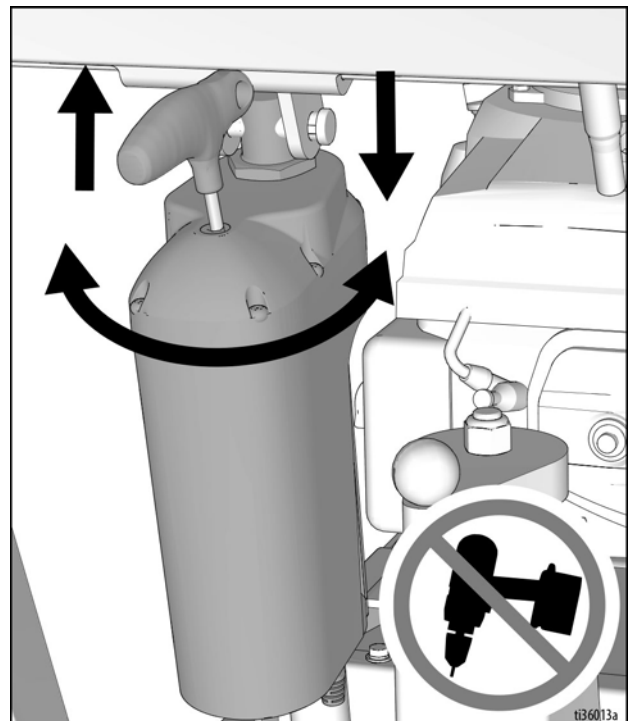


2. Use a 6mm hex key to remove the screw plug on the top of the linear actuator.

3. Insert 6mm hex key into the port the screw plug was removed from.
- One revolution of the hex key results in 1/16" (1.6 mm, 62.5 mil) of adjustment at the cutter drum.
  - Rotate counterclockwise to raise the drum; rotate clockwise to lower the drum.

#### **NOTICE**




Max rotation speed is one revolution per second. Do not use power tools in the Manual Height Adjustment port. Doing so will cause damage to the actuator.



4. Once the desired depth is achieved, replace the screw plug in order to keep water and dust out.



# Repair


				
---	---	---	--	--

**Gas/Propane:** To avoid injury from unexpected start up, disable engine as follows: 1) Turn DCS Power Switch OFF. 2) Turn ignition OFF. 3) Disconnect spark plug wires. 4) Disconnect negative (-) battery cable from battery.

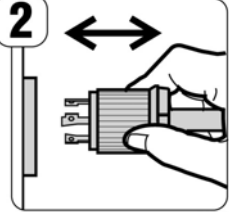
**Electric:** To avoid injury from unexpected start up, disconnect power plug before you service your machine.

**Electric:** To avoid injury from unexpected movement, ensure Power Switch is in the OFF position before connecting or disconnecting the power cord.

**1**



**2**



ti38311a

## Drive Belt Replacement

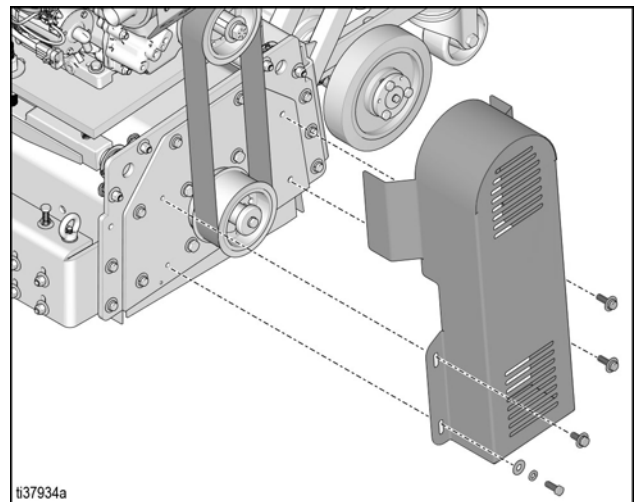
Normal wear will require periodic belt tensioning and replacement. Time of replacement will vary according to usage and belt load factors.

Tools needed:

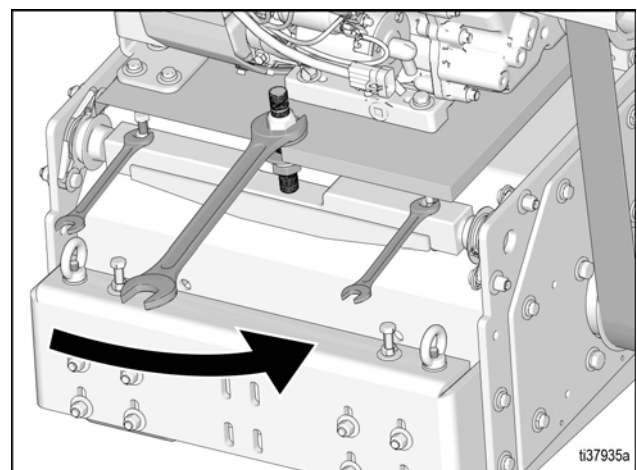
- 9/16" socket or wrench
- 1-1/8" open box wrench
- Straight edge or ruler

1. Wait until the GrindLazer cools off if it has been running.
2. Make sure the Removable Side Plate is installed. This ensures the drive ends are in proper position for servicing.

3. Clean the exterior of the machine so you can locate all of the appropriate parts.
4. Using a 9/16" socket or wrench, remove the four hex bolts attaching the belt cover to the side of the machine. Remove the cover and set aside.



5. Turn the lower base plate pivot nuts clockwise with the 1-1/8" wrench to lower the engine/motor base plate. Use 9/16" wrench to lower the two bolts on either side and loosen the drive belt. Remove or replace the belt as needed.



6. To tension the belt, turn the base plate pivot nut with the 1-1/8" wrench. This will raise the engine/motor base plate. Use the 9/16" wrench to raise bolts into place, locking jam nut when complete.

### NOTICE

Ensure belts are aligned using straight edge or ruler prior to operation. Do not over-tighten the belt as this will cause premature wear to the belt.

- Put the belt cover back in place and secure the four hex nuts with the 9/16" socket or wrench.

Unit	Deflection Force	Deflection Distance
Electric	11 lbs	1/4"
Gas	16 lbs	1/4"
Propane	16 lbs	1/4"

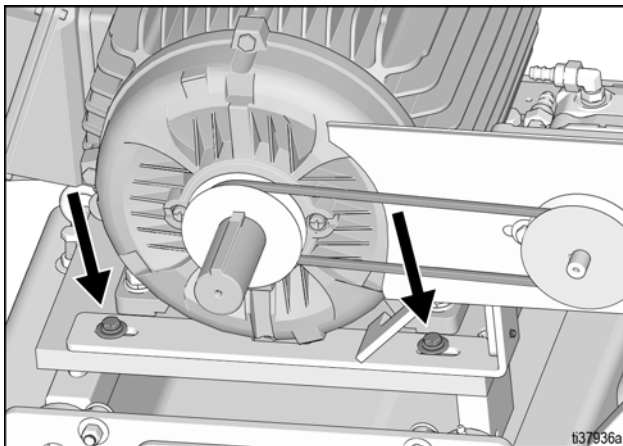
## Hydraulic Belt Replacement (Electric Models only)

Normal wear will require periodic belt tensioning and replacement. Time of replacement will vary according to usage and load factors.

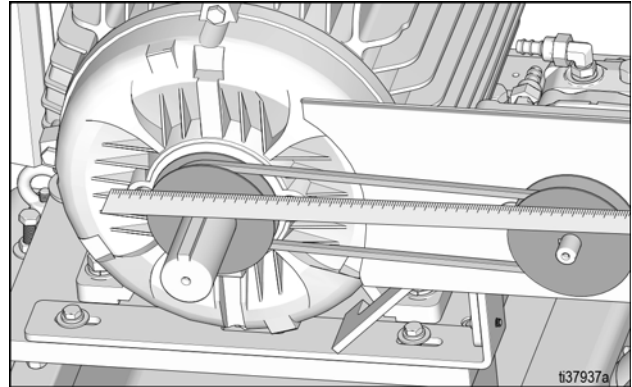
Tools needed:

- 9/16" socket or wrench
- Straight edge or ruler

- Wait until the GrindLazer cools off if it has been running.
- Follow instructions on previous page to remove belt cover, drive belt, and drive pulley,
- With the guard cover off, use the 9/16" socket or wrench to release tension to the belt by loosening (do not remove) the two hex bolts holding the hydraulic pump support bracket. Replace the belt as needed.



- To tighten the belt, slide the bracket up and lightly tighten the hex bolts. To ensure alignment of the pulleys, use a ruler or a straight edge and place it on the faces of both pulleys and adjust the bracket accordingly. Verify alignment from the front of the machine. Once properly aligned, tighten the bolts.



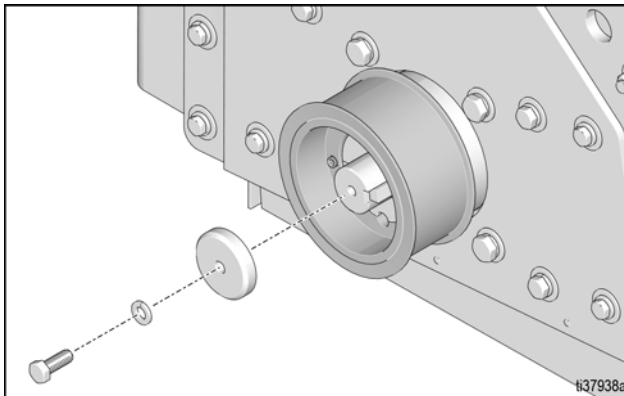
- Follow instructions on previous page to attach belt cover, drive belt, and drive pulley.

# Bearing Housing Replacement

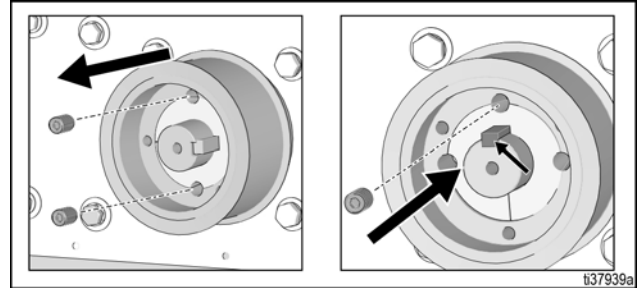
Tools needed:

- 17mm socket or wrench
- 9/16" socket or wrench
- Adjustable wrench up to 1.5"
- 7/32" hex key
- Retaining ring pliers

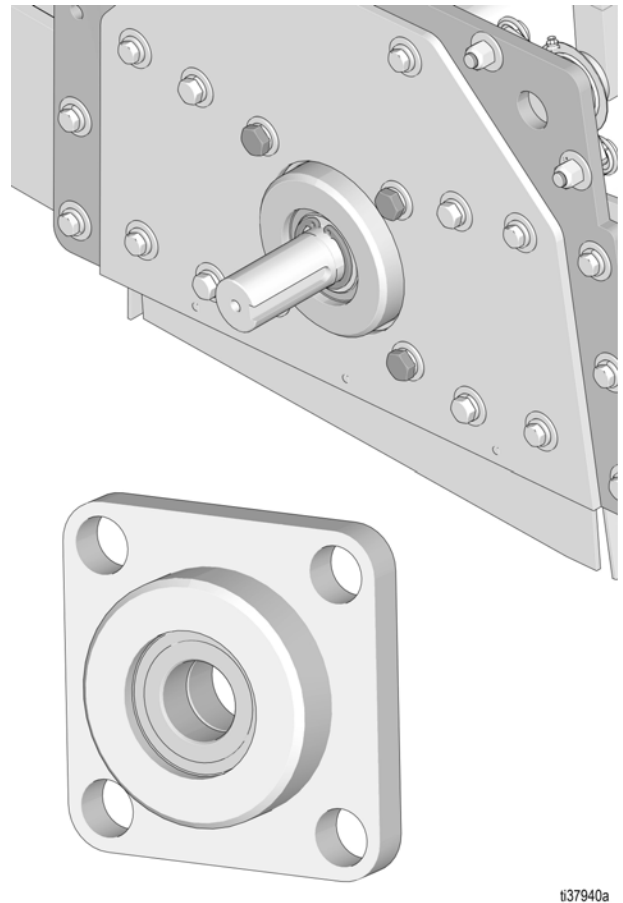
1. Follow **Drum Installation/Replacement**, page 12, to remove the drum.
2. Follow **Drive Belt Replacement**, page 21, to remove the drive belt from the machine.
3. Wait until the GrindLazer cools off if it has been running.
4. With the Side Plate off the machine, use a wrench to lock the rotation of the shaft. Using the 9/16" socket or wrench, remove the screw that holds the bushing to the shaft.



5. With the shaft rotation locked, use the 7/32" hex key to remove the two set screws on the drive pulley. Once removed, insert one of the set screws into the hole directly above the keyway to back out the bushing. Remove the bushing and pulley.



6. With the pulley removed, use retaining ring pliers to remove retaining ring on shaft. Use the 17mm socket or wrench to remove the bearing housing assemblies from the frame and from the Side Plate.





7. Reverse steps to reassemble bearing housing.

**NOTE:** Replace the rubber spring elements at this time.

## Drive Pulley Replacement

The drive pulleys must be replaced to change between high speed and standard speed.

Before changing the drive pulleys, follow **Drive Belt Replacement** or **Hydraulic Belt Replacement (Electric Models only)**, page 22, to remove and replace the belt cover, drive belt, and drive pulleys from the machine.



--	--	--	--




Flail drums must be used only on standard speed machines. Using flail drums on high speed machines will damage the drum and may cause serious injury.

## Gas/Propane Models

**Standard Speed:** Use the 28-tooth pulley on the engine shaft and the 56-tooth pulley on the drum shaft. Use the 1120 mm belt.

**High Speed:** Use the 48-tooth pulley on the engine shaft and the 48-tooth pulley on the drum shaft. Use the 1160 mm belt.

For parts diagrams, see **Parts - Pulley Assemblies (Gas)**, page 48, and **Parts - Pulley Assemblies (Propane)**, page 56.





 <div>28T</div>	<div>CARBIDE/STEEL FLAIL</div> <div>✓</div>	<div>PCD/STEEL FLAIL</div> <div>✗</div>
 <div>56T</div>	<div>CARBIDE/STEEL FLAIL</div> <div>✗</div>	<div>PCD/STEEL FLAIL</div> <div>✓</div>
 <div>CLUTCH</div>	<div>CARBIDE/STEEL FLAIL</div> <div>✗</div>	<div>PCD/STEEL FLAIL</div> <div>✓</div>

## Electric Models


**Standard Speed:** Use the 48-tooth pulley on the motor shaft and the 56-tooth pulley on the drum shaft with the 1200 mm belt.

**High Speed:** Use the 64-tooth pulley on the motor shaft and the 34-tooth pulley on the drum shaft with the 1160 mm belt.

For parts diagrams, see **Parts - Pulley Assemblies (Electric - 480V & 380V)**, page 66.

 <div>56T</div>	<div>CARBIDE/STEEL FLAIL</div> <div>✓</div>	<div>PCD/STEEL FLAIL</div> <div>✗</div>
 <div>48T</div>	<div>CARBIDE/STEEL FLAIL</div> <div>✗</div>	<div>PCD/STEEL FLAIL</div> <div>✓</div>
 <div>64T</div>	<div>CARBIDE/STEEL FLAIL</div> <div>✗</div>	<div>PCD/STEEL FLAIL</div> <div>✓</div>
 <div>34T</div>	<div>CARBIDE/STEEL FLAIL</div> <div>✗</div>	<div>PCD/STEEL FLAIL</div> <div>✓</div>

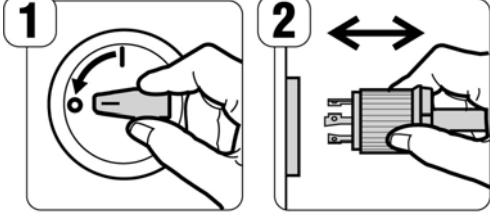
# Maintenance Checklist



**Gas/Propane:** To avoid injury from unexpected start up, disable engine as follows: 1) Turn DCS Power Switch OFF. 2) Turn ignition OFF. 3) Disconnect spark plug wires. 4) Disconnect negative (-) battery cable from battery.

**Electric:** To avoid injury from unexpected start up, disconnect power plug before you service your machine.

**Electric:** To avoid injury from unexpected movement, ensure Power Switch is in the OFF position before connecting or disconnecting the power cord.



## Gas/Propane Models only

- Check heavy-duty air cleaner element.

### Gas Models

- **Weekly:** Check filter minder.
- **\*Every 150 Hours:** Check heavy-duty air cleaner element.
- **Every 300 Hours:** Replace heavy-duty air cleaner element and check inner element.
- **Every 600 Hours:** Replace heavy-duty inner air cleaner element.

### Propane Models

- **\*Every 150 Hours:** Check heavy-duty filter minder. Inspect heavy-duty air filter paper element and inlet screen area.
- **\*Every 300 Hours:** Replace heavy-duty air cleaner element and check inner element.
- **\*Every 600 Hours or Yearly:** Replace heavy-duty inner air cleaner element.

\* Perform these procedures more frequently under severe, dusty, dirty conditions.

- Maintain proper engine oil and crankcase levels. Change every 25-50 hours (see Kohler manual).
- Clean spark plugs regularly, and set the proper gap (see Kohler manual).

## All Models

- Keep a coating of grease on the drive shaft and threads for easy installation or removal, and for longer hex bushing life.
- Every oil change or during routine maintenance, check all fasteners and re-tighten as needed. The machine will vibrate the fasteners loose. Use medium strength thread locking compound.
- Check the Drive and Hydraulic belts for wear, and adjust tension (page 22) or replace as needed. After replacing belts, check for proper tension.
- Check to ensure the pulleys are aligned properly to ensure the Drive and Hydraulic belts are running true.
- The inside housing must be clean. Remove any build-up from inside the cage so cutters and drum rotate freely.
- Inspect and change drum bushings and shafts every 40 hours, or when worn.
- Ensure hydraulic fluid level reservoir is filled to the proper level and inspect fittings for leaks. Tighten as necessary. For accurate level readings, take readings when fluid is cold.

The hydraulic fluid for the hydraulic drive pump should be chemically stable and incorporate rust and oxidation inhibitors.

Specific fluid type meeting these requirements: ISO 68 Synthetic Oil or 15W50 Synthetic Oil.

## Purge Procedures

Due to the effects air has on efficiency in hydrostatic drive applications, it is critical that air is removed or purged from the system.

**NOTE:** These procedures must be performed anytime a hydrostatic system has been opened for maintenance or repair, or if any additional hydraulic fluid has been added to the system.

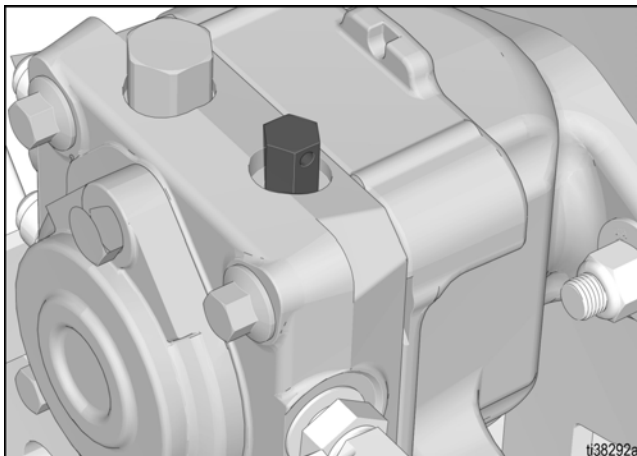
Air creates inefficiency because it has compression and expansion rates that are higher than that of hydraulic fluid. Air trapped in the hydraulic fluid may cause the following symptoms:

1. Noisy operation.
2. Lack of power or drive after short-term operation.
3. High operation temperature and excessive expansion of hydraulic fluid.

Before starting purge procedure, make sure the reservoir is at the proper oil level. If it is not, fill to top of tank baffle.

The following procedures should be performed with the drive wheels off the ground, then repeated under normal operating conditions.

1. With the bypass valve open and the engine/motor running, slowly move the directional control in both forward and reverse directions 5 to 6 times. As air is purged from the unit, the hydraulic fluid level in the reservoir will drop.

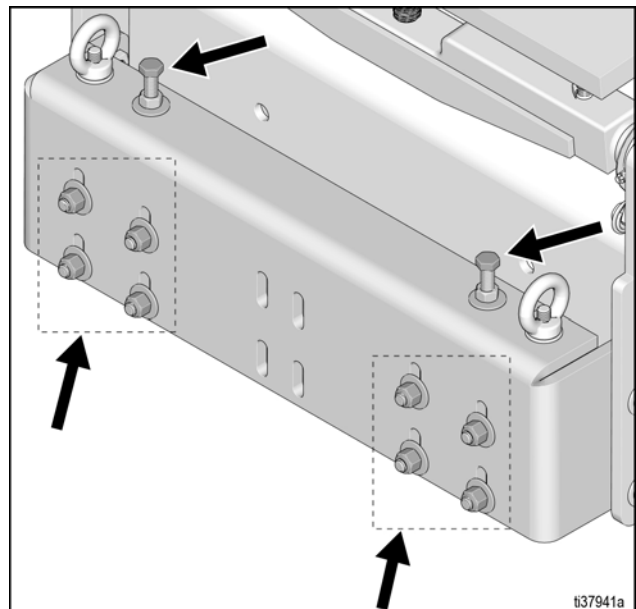


2. With the bypass valve closed and the engine/motor running, slowly move the directional control in both forward and reverse directions 5 to 6 times. Check the oil level, and add hydraulic fluid as required after stopping engine/motor.
3. It may be necessary to repeat steps 1 and 2 until all the air is completely purged from the system. When the drive wheels move forward and reverse at normal speed, and the reservoir hydraulic fluid remains at a constant level, purging is complete.

## Front Wheel Adjustment

The front wheels can be adjusted independently.

1. Loosen, but do not remove the four nuts holding the wheel to be adjusted.

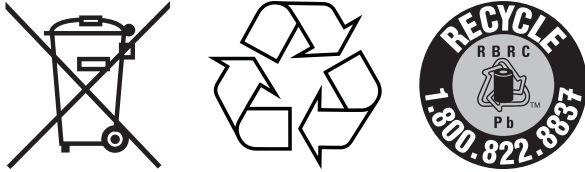


2. Adjust wheel height as needed using height adjustment bolt.
3. Tighten all nuts to secure wheel into position. Torque to 23-27 ft-lbs (31.2-36.6 N•m).

# Recycling and Disposal


## Rechargeable Battery Disposal

Do not place batteries in the trash. Recycle batteries according to local regulations. In the USA and Canada, call 1-800-822-8837 to find recycling location or go to [www.call2recycle.org](http://www.call2recycle.org).

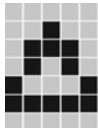
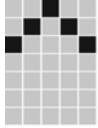
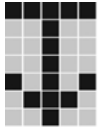
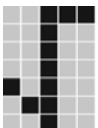
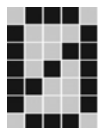

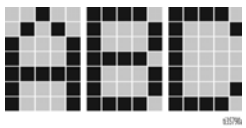
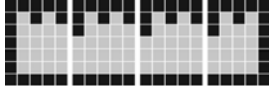
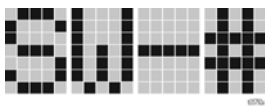



## End of Product Life

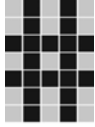
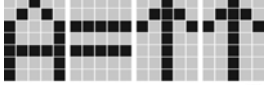
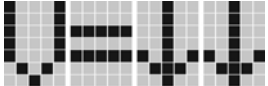
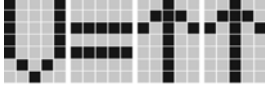
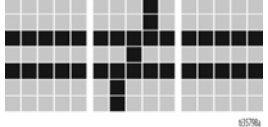
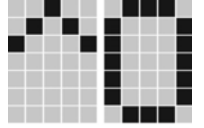
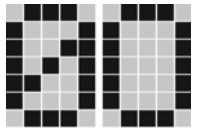
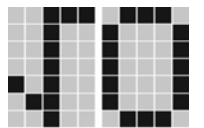

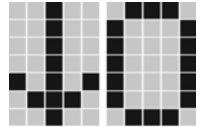
At the end of the product's useful life, dismantle and recycle it in a responsible manner.

- Drain and dispose of fluids according to applicable regulations. Refer to the material manufacturer's Safety Data Sheet.
- Remove motors, batteries, circuit boards, LCDs (liquid crystal displays), and other electronic components. Recycle according to applicable regulations.
- Do not dispose of electronic components with household or commercial waste. 
- Deliver remaining product to a recycling facility.




# DCS Control Translations

English	Español	Français	Deutsche	International
FINDING HOME	ENCONTRANDO INICIO	TROUVER LE DÉBUT	START FINDEN	
HOME	INICIO	DÉBUT	START	
DEPTH	ALTURA	HAUTEUR	TIEFE	
TARGET	OBJETIVO	OBJECTIF	ZIEL	
ZERO	CERO	ZÉRO	NULL	
SEL MODEL	MODELO	MODELE	MODELL	
LANGUAGE	IDIOMA	LA LANGUE	SPRACHE	
UNITS	UNIDAD DE MEDIDA	UNITÉ DE MESURE	MAßEINHEIT	
INCHES	PULGADAS	POUCES	ZOLL	INCH
MILLIMETERS	MILIMETROS	MILLIMETRES	MILLIMETER	MM
MILS	MILS	MILS	MILS	MIL
SOFTWARE REV	SOFTWARE REV	REVUE SOFTWARE	SOFTWARE REV	
ERROR	ERROR	ERREUR	FEHLER	



English	Español	Français	Deutsche	International
FREQUENCY	FRECUENCIA	FRÉQUENCE	ANZHAL	
HIGH CURRENT	ALTA CORRIENTE	COURANT ÉLEVÉ	HOHER STROM	
LOW VOLTAGE	BAJO VOLTAJE	BASSE TENSION	NIEDERSPANNUNG	
HIGH VOLTAGE	ALTO VOLTAJE	HAUTE TENSION	HOCHSPANNUNG	
HALL SENSORS	SENSORES DE HALL	CAPTEURS DE HALL	HALL-SENSOREN	
HOME BUTTON	BOTÓN DE INICIO	BOUTON DE DÉBUT	START KNOFF	
ZERO BUTTON	BOTÓN CERO	BOUTON ZÉRO	NULLTASTE	
CUT BUTTON	BOTÓN DE CORTAR	BOUTON DE COUPE	SCHNITT TASTE	
UP BUTTON	BOTÓN ARRIBA	BOUTON HAUT	NACH OBEN TASTE	
DOWN BUTTON	BOTÓN DE ABAJO	BOUTON BAS	NACH UNTEN TASTE	

# Troubleshooting






**Gas/Propane:** To avoid injury from unexpected start up, disable engine as follows: 1) Turn ignition OFF. 2) Disconnect spark plug wires. 3) Disconnect negative (-) battery cable from battery.

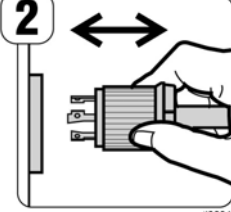
**Electric:** To avoid injury from unexpected start up, disconnect power plug before you service your machine.

**Electric:** To avoid injury from unexpected movement, ensure Power Switch is in the OFF position before connecting or disconnecting the power cord. In the event of a power failure or interruption, ensure Power Switch is in the OFF position before restoring power.

**1**



**2**



1138311a

Problem	Cause	Solution
Cutters wearing unevenly/prematurely	Cutter head is too low	Raise the cutter head
	Material build up	Clean the cutters
	Bearings may be worn	Replace bearings
	Wrong cutters for application	Contact Tech Services
Cutters Shaft Breakage unevenly/prematurely	Cutter head is too low	Raise the cutter head
	Over 40 hours service life	Replace shafts
Drum wearing prematurely or cracking	Drum hitting work surface	Raise the drum
	Shafts and bushings not replaced within 40 hours	Replace shafts and bushings
Excess Vibration	Bearings may be worn	Replace bearings
	Drive shaft worn	Replace drive shaft
	Improper cutter set-up	Contact Tech Services
	Spindle contacting the work surface	Raise the cutter head
	Wheels worn out	Replace the wheels
Machine jumps erratically	RPM is too low	Turn engine throttle or speed control to highest setting
	Work surface is severely uneven	Move to smoother work surface

Problem	Cause	Solution
Drive belt wearing prematurely	Pulley is misaligned	Re-align pulley
	Wrong belt	Order new belt
Machine will not move in forward or reverse	Hydraulic fluid level may be low	Ensure hydraulic fluid level reservoir is filled to the proper level
	V-belt to hydraulic pump is slipping or damaged	Check V-belt, replace if damaged
	Lifting carriage too low / drive wheels not on work surface	Check lifting carriage is in upright position and drive wheels are in contact with work surface
DCS Control not turning on	Blown fuse on DCS Power wire.	Replace fuse on DCS Power wire.
	Power Switch is OFF or damaged.	Turn Power Switch ON. Replace Power Switch if danged.
	Battery is dead.	Charge Battery.
	DCS Control Board is damaged.	Replace DCS Control Board.
DCS Control runs for short time, then turns off	Engine is not charging the battery. Battery voltage is 14.0-15.0 VDC when engine is full throttle and charging correctly.	Check engine charging coil, voltage rectifier/regulator and fuse inside engine ignition box. Replace or repair if needed.
DCS Control is on, but actuator and/or drum housing does not move	Actuator is disconnected from DCS Control.	Check all connections.
	A DCS Control Switch is pressed or defective.	Ensure all switches are not stuck. Replace switches if defective.
	Actuator rod is stuck.	Manually move the actuator rod using the Manual Height Adjustment feature. Remove screw plug on top of the actuator, then use 6mm hex key to move the rod.
	Actuator or DCS Control Board is damaged.	See flow chart, page 33.
	Battery is low.	Charge battery.
DCS display does not match Cut Depth.	DCS Control needs to recalibrate its position.	Restart the DCS Control.
	Zero Position is not set to the work surface.	Reprogram the Zero Position. See <b>DCS Instructions</b> , page 19.
	The wrong GrindLazer model is selected on the DCS Control.	Select the correct model on DCS Control. See <b>Menu Screens</b> , page 15.
DCS Control Buttons work, but display is blank	The display is unplugged or damaged.	Check that the display ribbon cable and red/white wire are connected inside Control Box. Replace if damaged.

# DCS Error Codes

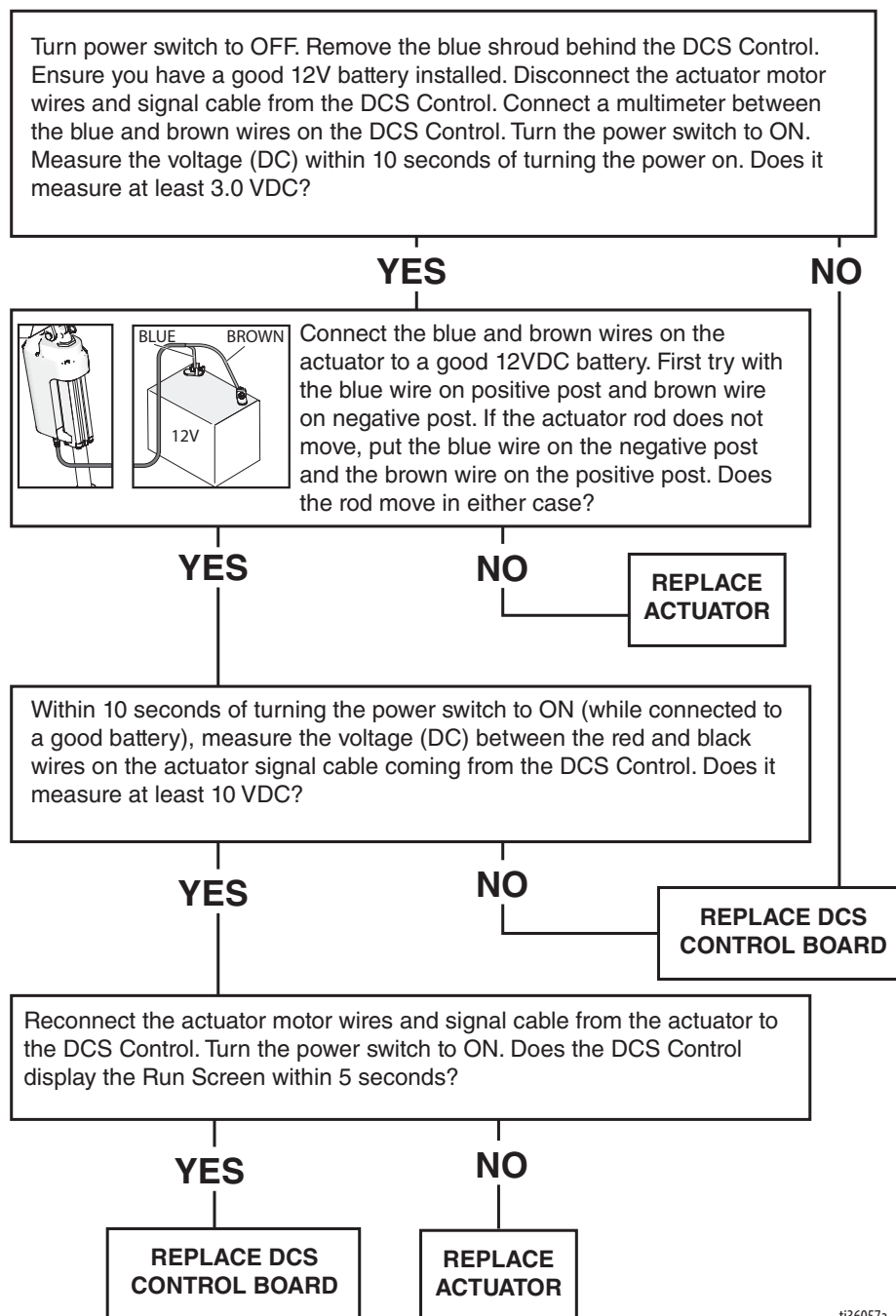
To clear an error code on the DCS Control:

1. Turn DCS Power Switch to OFF.
2. Address/Fix the issue.
3. Turn DCS Power Switch to ON.

Error	Cause	Solution
E04: High Voltage (20VDC or greater, measured across battery posts)	Battery is damaged.	Replace battery.
	Engine voltage rectifier/regulator is damaged.	Replace engine voltage rectifier/regulator.
E05: High Motor Current (15 Amps or greater, measured on blue or brown actuator wire)	Actuator rod is stuck.	Manually move the actuator rod using the Manual Height Adjustment feature.
	Too high of load.	Ensure there is no binding anywhere on the unit when the actuator is moving.
E08: Low Voltage (7VDC or lower, measured across battery posts)	Battery is low/dead.	Charge battery.
	Engine is not charging the battery.	Check the engine charging coil and voltage rectifier/regulator. Replace or repair if needed.
E09: Hall Sensor Error	Actuator Signal Cable is disconnected from DCS Control or is damaged.	Check all connections. Repair or replace if needed.
	Actuator or DCS Control Board is damaged.	See flow chart, page 33.
E12: High Current (short circuit, 60 amps or greater, measured on red or black wire between battery and DCS Control)	A wire or board component has shorted.	Check all wires for shorts. If all wires are okay, the DCS Control board may be damaged and need to be replaced.
E31: Home Button Error	The Home Button is stuck or shorted.	Check to see if Home Button is stuck. If not stuck, replace the Home Button switch.
E32: Zero Button Error	The Zero Button is stuck or shorted.	Check to see if Zero Button is stuck. If not stuck, replace the Zero Button switch.
E33: Cut Depth Button Error	The Cut Depth Button Error is stuck or shorted.	Check to see if Cut Depth Button is stuck. If not stuck, replace the Cut Depth Button switch.
E34: Up Button Error	The Up Button is stuck or shorted.	Clear the error code.  If the error code reappears 30 seconds after turning the Power Switch back ON, the problem is the Up Button on the DCS Control. Check to see if the Up Button is stuck. If not stuck, replace the Up Button Switch.
E35: Down Button Error	The Down Button is stuck or shorted.	Clear the error code.  If the error code reappears 30 seconds after turning the Power Switch back ON, the problem is the Down Button on the DCS Control. Check to see if the Down Button is stuck. If not stuck, replace the Down Button Switch.

## DCS Actuator Rod Does Not Move

Use this flow chart if the DCS Actuator Rod does not move or if the DCS displays error code E09 (Hall Sensor Error). Reference **Wiring Diagram**, page 68.



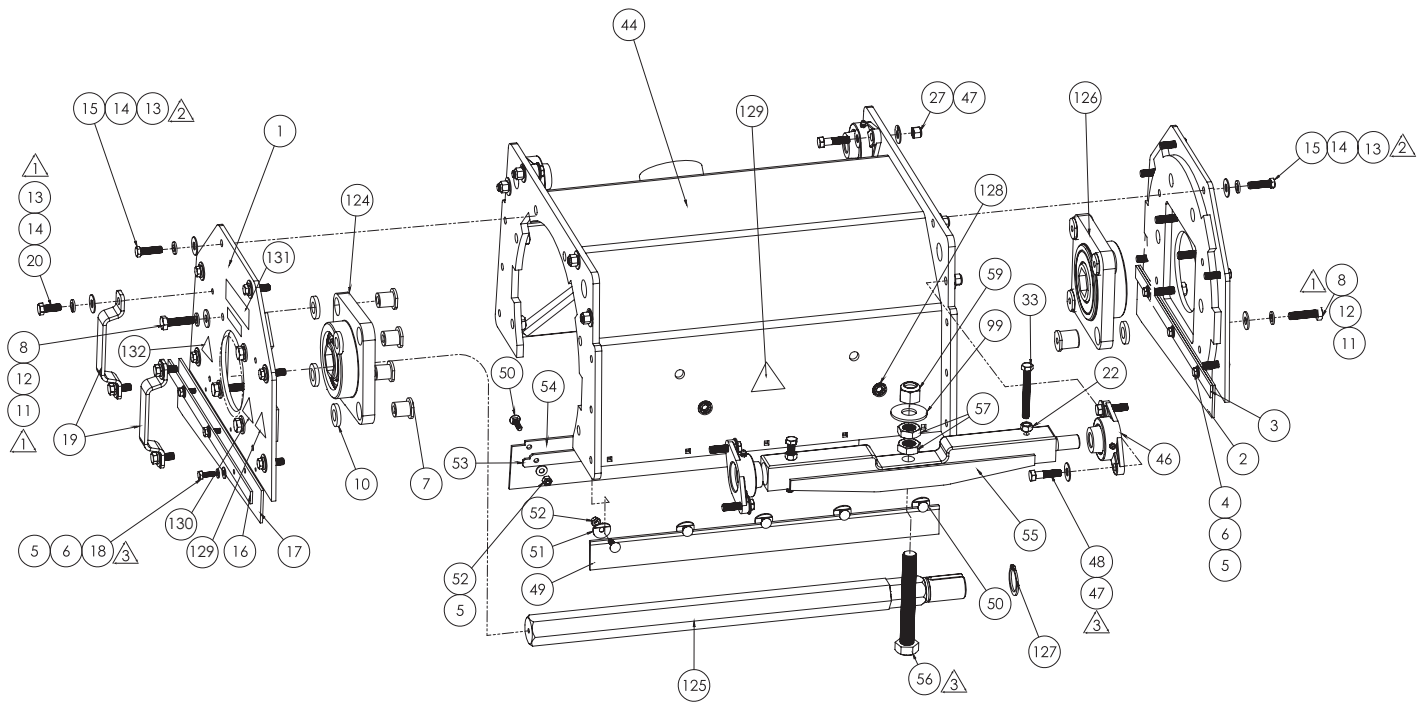
ti36057a

# Parts - Main Housing Assembly (All Models)

1 Torque to 23-27 ft-lbs  
(31.2-36.6 N·m)

2 Torque to 40 ft-lbs  
(54.2 N·m)

3 Torque to 90-110 in-lbs  
(10.2-12.4 N·m)

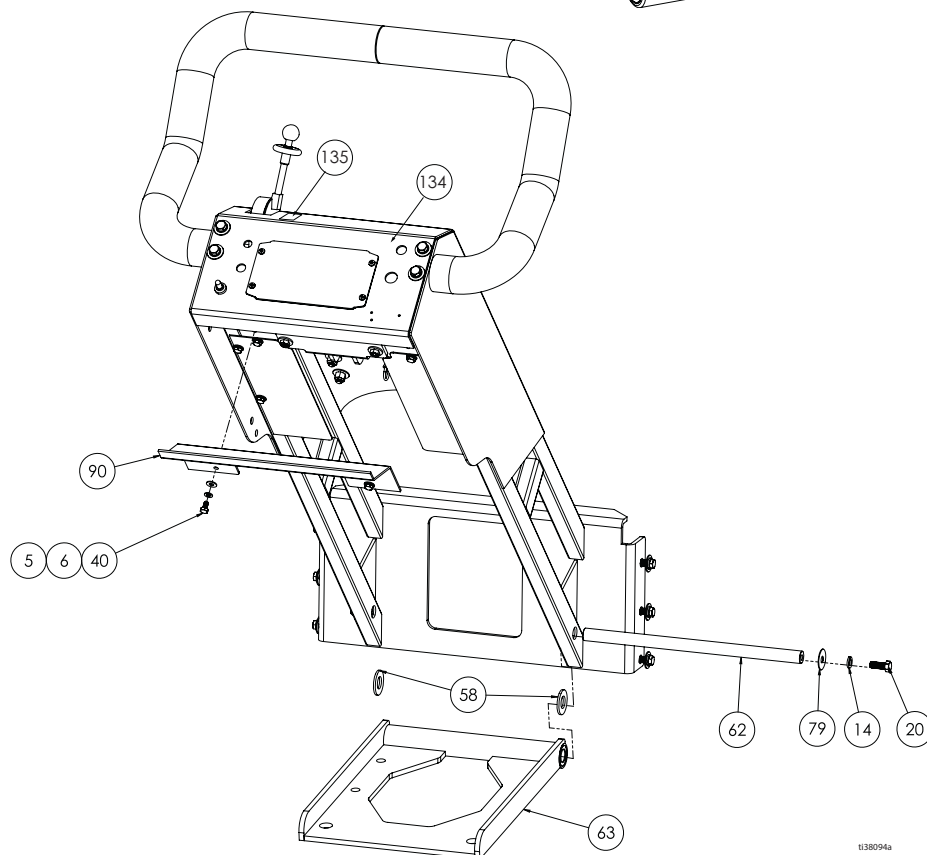


ti38091a

## Parts List - Main Housing Assembly (All Models)

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
1	18B284	PLATE, side	2	49	18B352	STRIPS, front, brush	1
2	18B345	SKIRT, fixed, left side	1	50	107139	BOLT, carriage, 1/4"-20x1"	10
3	18B370	PLATE, retaining, left skirt	1	51	17W021	WASHER, fender, bend, 1/4 x 1"	5
4	100021	SCREW, hex, cap, 1/4"-20 x 1"	3	52	102040	NUT, nylock, 1/4"-20	14
5	17W020	WASHER, flat, 1/4"	11	53	18B369	PLATE, retaining, rear skirt	1
6	100016	WASHER, lock, 1/4"	6	54	18B364	SKIRT, rear	1
7	25U398	SLEEVE, clamp, M10-1.5	8	55	18B367	PLATE, base, motor	1
8	17X017	BOLT, hex, M10-1.5 x 40mm	8	56	18B515	SCREW, hex, cap, 3/4"-16 x 5.5"	1
10	25U399	SPACER	8	57	100071	NUT, jam, 3/4"-16	2
11	17W425	WASHER, flat, M10	8	59	112405	NUT, nylock, 3/4"-16	1
12	100020	WASHER, lock, M10	8	99	18B493	WASHER, fender, 3/4"	1
13	100023	WASHER, flat, 3/8"	16	124	19B365	BEARING, side, housing assy.	1
14	100133	WASHER, lock, 3/8"	16	125	19B374	SHAFT, hex	1
15	18B501	BOLT, hex, head, 3/8"-16 x 1.25"	12	126	19B416	BEARING, side, housing, assy.	1
16	18B371	PLATE, retaining, right skirt	1	127	19B419	RING, retaining	1
17	18B347	SKIRT, removable, right side	1	128	19B498	PLUG, inlet	1
18	100022	SCREW, hex, cap, 1/4"-20 x .75"	4	129▲	16C393	LABEL, warning, foot cut	2
19	18B346	HANDLES, side, plate	2	130▲	16D646	LABEL, warning, hot surface	1
20	100101	SCREW, hex cap, 3/8"-16 x 1"	4	131	19B331	LABEL, instructions (Gas and Propane Models)	1
22	100131	NUT, hex, 3/8"-16	4		19B225	LABEL, instructions (Electric Models)	1
27	101566	NUT, nylock, 3/8"-16	4	132▲	19B325	LABEL, warning, entanglement	1
33	17W196	SCREW, hex, cap, 3/8-16 x 3"	2				
44	18B288	HOUSING, main	1				
46	18B465	BEARING, flange	4				
47	18B490	WASHER, flat, 3/8"	16				
48	102637	SCREW, hex, cap, 3/8"-16 x 1.5"	8				

▲Replacement safety labels, tags, and cards are available at no cost.



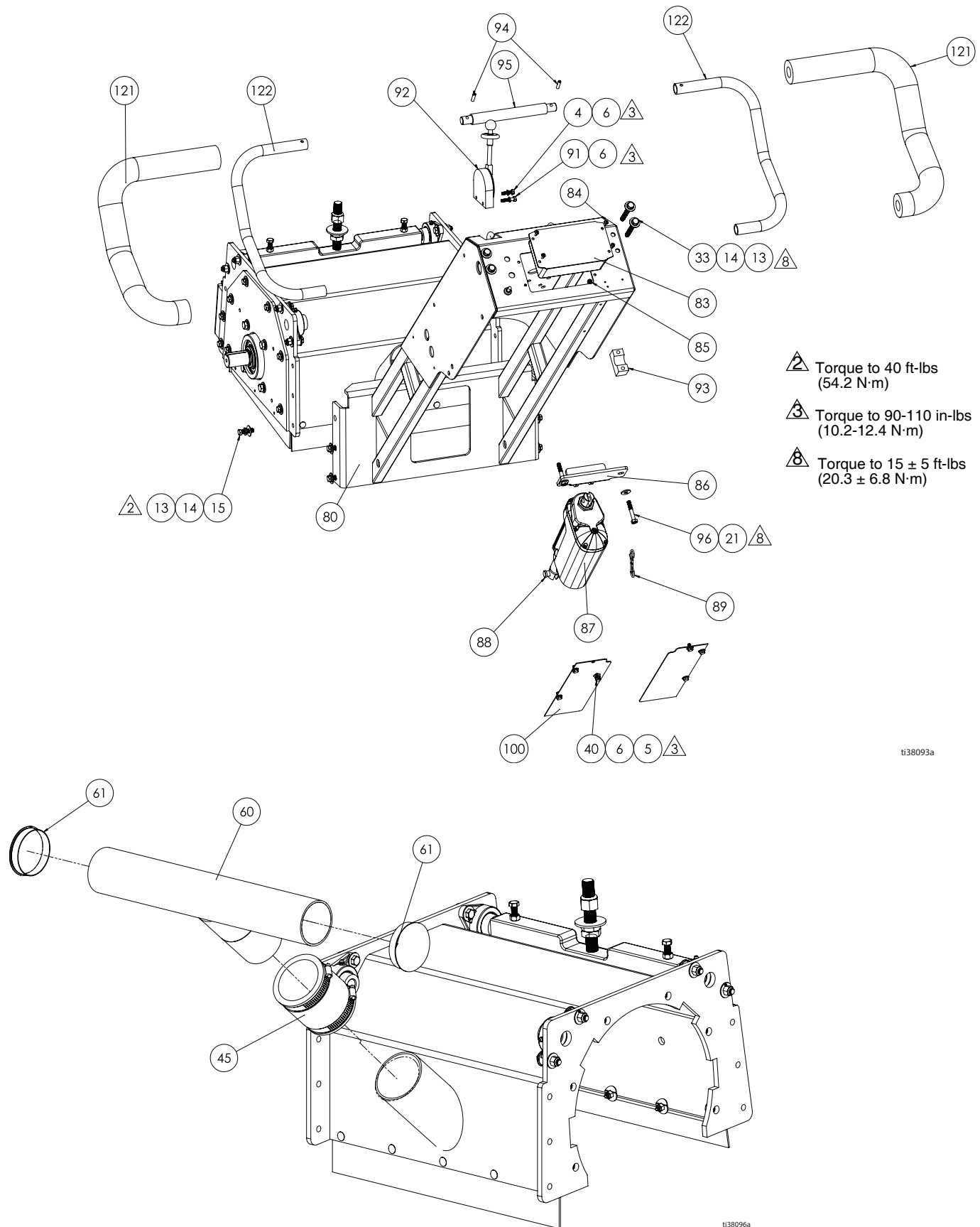


## Parts List - Front Wheel / Wheel Carrier Assemblies (All Models)

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
5	17W020	WASHER, flat, 1/4"	1	58	169468	WASHER, flat, 3/4"	2
6	100016	WASHER, lock, 1/4"	1	62	18B380	AXLE, wheel	1
13	100023	WASHER, flat, 3/8"	11	63	18B466	WHEEL, balance, assy.	1
14	100133	WASHER, lock, 3/8"	3	79	115625	WASHER, fender, 3/8 x 1.25"	2
15	18B501	BOLT, hex, 3/8"-16 x 1.25"	2	90	18B233	GUARD, rear	1
20	100101	SCREW, hex cap, 3/8"-16 x 1"	2	133	18B551	LABEL, brand, DC1538 gas	1
23	18B286	MOUNT, wheel	1		18B552	LABEL, brand, DC1525 propane	1
24	18B385	BRACKET, wheel	2		18B556	LABEL, brand, DC1520 electric	1
25	18B382	ROLLER, front	2	134▲	18B550	LABEL, warning, multiple (gas and propane)	1
26	404533	BOLT, carriage, 3/8"-16 x 1.25"	8		▲ 18B555	LABEL, warning, multiple (electric)	1
27	101566	NUT, nylock, 3/8"-16	8	135	19B215	LABEL, instruction, forward/reverse	1
28	18B117	NUT, eye, 3/8-16	2				
29	18B381	BUSHING, roller	2				
30	18B509	SCREW, hex, cap, 1/2-13 x 5.25"	2				
31	17W955	NUT, jam, nylock, 1/2-20	2				
32	17W098	WASHER, flat, 1/2"	2				
40	100333	SCREW, hex, cap, 1/4"-20 x .5"	1				

▲Replacement safety labels, tags, and cards are available at no cost.

# Parts - Guidebar / Vacuum Assemblies (All Models)

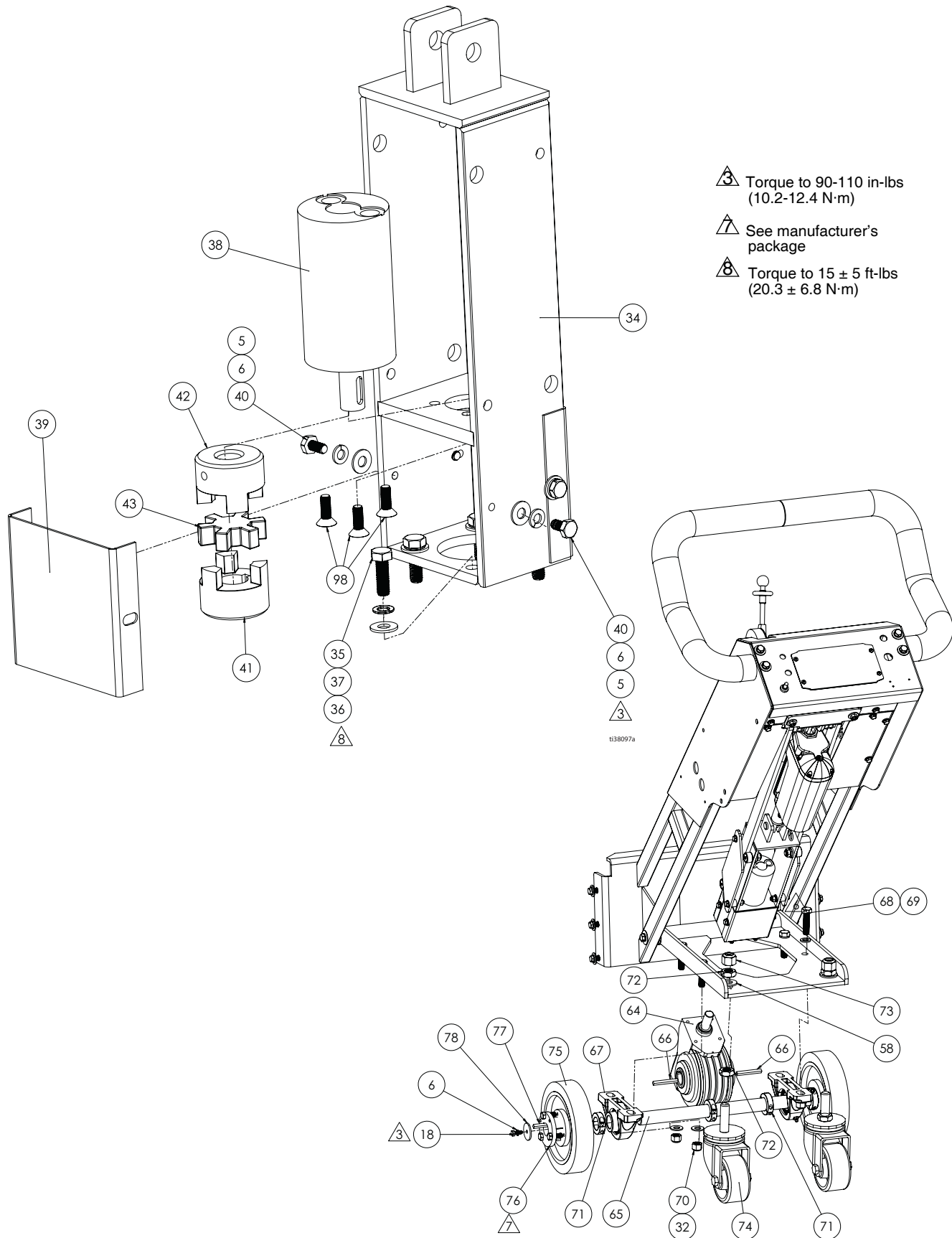


## Parts List - Guidebar / Vacuum Hose Assemblies (All Models)

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
4	100021	SCREW, hex, cap, 1/4"-20 x 1"	1	87	18B178	ACTUATOR, 80mm	1
5	17W020	WASHER, flat, 1/4"	6	88	18A114	PIN	1
6	100016	WASHER, lock, 1/4"	6	89	17Y962	PIN, cotter, bow tie	1
13	100023	WASHER, flat, 3/8"	5	91	17X233	SCREW, hex, 1/4"-20 x 1.25"	1
14	100133	WASHER, lock, 3/8"	5	92	18B353	LEVER, transmission	1
15	18B501	BOLT, hex, 3/8"-16 x 1.25"	3	93	18B372	MOUNT, handlebar, saddle	2
21	100527	WASHER, flat, 5/16"	1	94	18B462	PIN, roll, 1/4"	2
33	17W196	SCREW, hex, cap, 3/8-16 x 3"	2	95	18B455	HANDLE, extension	1
40	100333	SCREW, hex, cap, 1/4"-20 x .5"	6	96	129092	SCREW, hex, 5/16"-24 x 2'	2
45	18B362	COUPLER, vacuum, 3"	1	100	19B230	GUARD, wire, rear	2
60	18B361	TEE, vacuum	1	121	18B435	FOAM, handlebar	2
61	17W220	PLUG, tube, cap	2	122	18B454	HANDLEBAR	2
80	18B218	GUIDEBAR	1	136▲	15F744	LABEL, warning, ISO pinch hazard	4
83	19B224	BOARD, control	1				
84	116610	SCREW, Phillips, 10-32" x .5"	4				
85	115483	NUT, nylock, 10-32"	1				
86	17Y111	LINKAGE, upper	1				

▲ Replacement safety labels, tags, and cards are available at no cost.


# Parts - Hydraulic Motor / Rear Assembly (All Models)




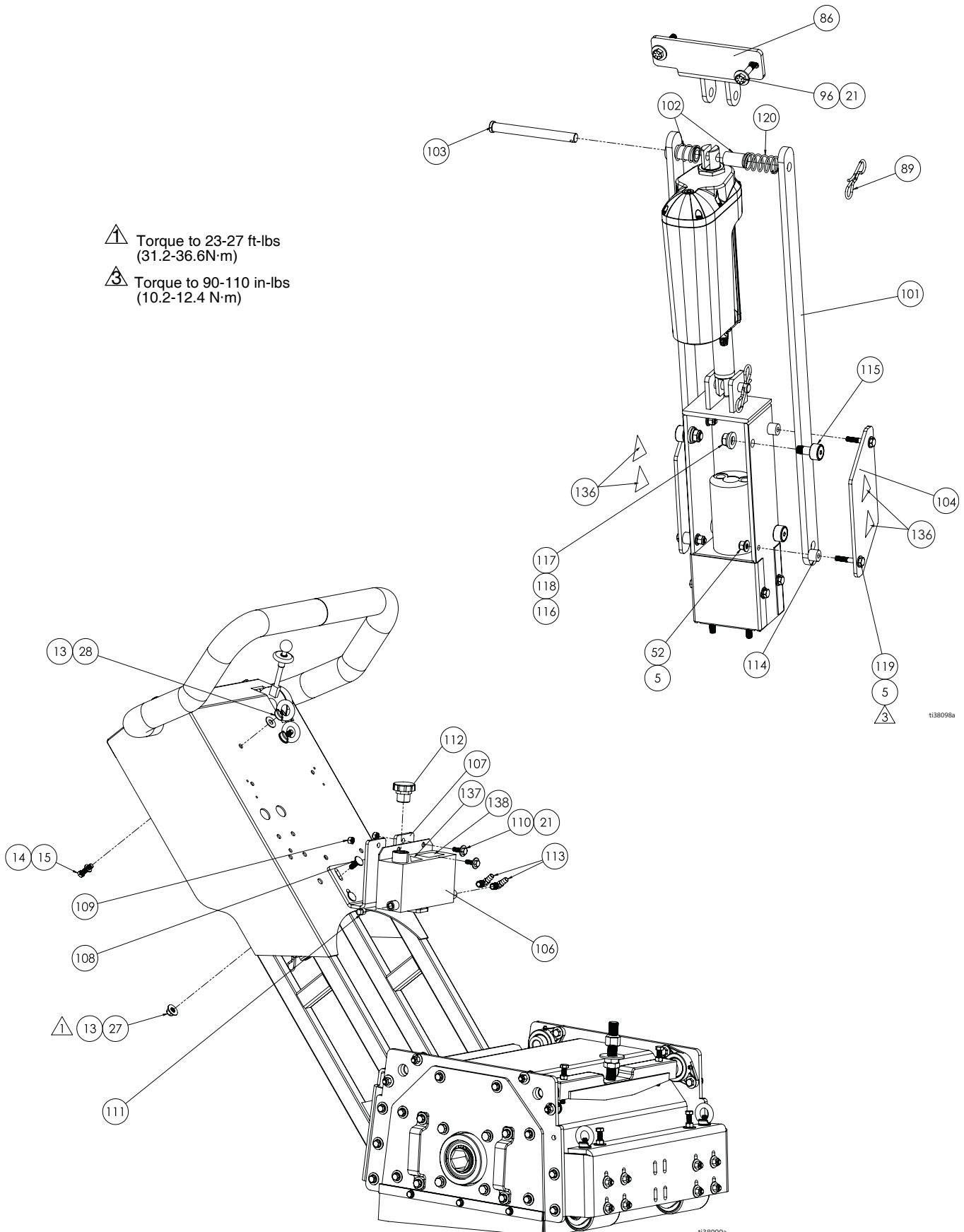
## Parts List - Hydraulic Motor / Rear Assembly (All Models)

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
5	17W020	WASHER, flat, 1/4"	2	67	18B373	BEARING, drive wheel, flanged	2
6	100016	WASHER, lock, 1/4"	3	68	18B507	SCREW, hex, cap, 1/2"-13 x 2"	4
18	100022	SCREW, hex, cap, 1/4"-20 x .75"	1	69	16Y269	WASHER, flat, M12	4
32	17W098	WASHER, flat, 1/2"	2	70	101580	NUT, nylock, 1/2"-13	2
34	18B220	MOUNT, motor	1	71	18B464	COLLAR, split, 1.125"	2
35	130276	BOLT, hex, M8 x 1.25 x 30mm	2	72	17W234	NUT, jam, hex, 3/4"-10	4
36	108788	WASHER, flat, M8	2	73	108540	NUT, nylock, 3/4"-10	2
37	104572	WASHER, lock, M8	2	74	18B476	CASTER, swivel	2
38	19B303	MOTOR, hydraulic	1	75	18B477	WHEEL	2
39	18B221	GUARD, Lovejoy	1	76	18B478	BUSHING, drive, wheel (includes screws)	2
40	100333	SCREW, hex, cap, 1/4"-20 x .5"	2	77	18B340	KEY, 1/4" x 1.875"	2
41	18B425	COUPLING, transmission	1	78	18B519	WASHER, jumbo, 1/4-1.5 x .112"	2
42	18B426	COUPLING, motor (top)	1	98	18B488	SCREW, flat, 1/4-28 x 3/4	3
43	18B427	CUSHION, coupling	1		18B446	HOSE, hydraulic, high pressure (Gas/Propane)	2
58	154526	WASHER, flat, 3/4"	2		19B303	HOSE, hydraulic, high pressure (Electric)	2
64	18B398	TRANSMISSION	1				
65	18B469	SHAFT, transmission	1				
66	17W088	KEY, 1/4" x 2 1/4"	2				

# Parts - Support System / Hydraulic Tank (All Models)

 Torque to 23-27 ft-lbs  
(31.2-36.6 N·m)

 Torque to 90-110 in-lbs  
(10.2-12.4 N·m)



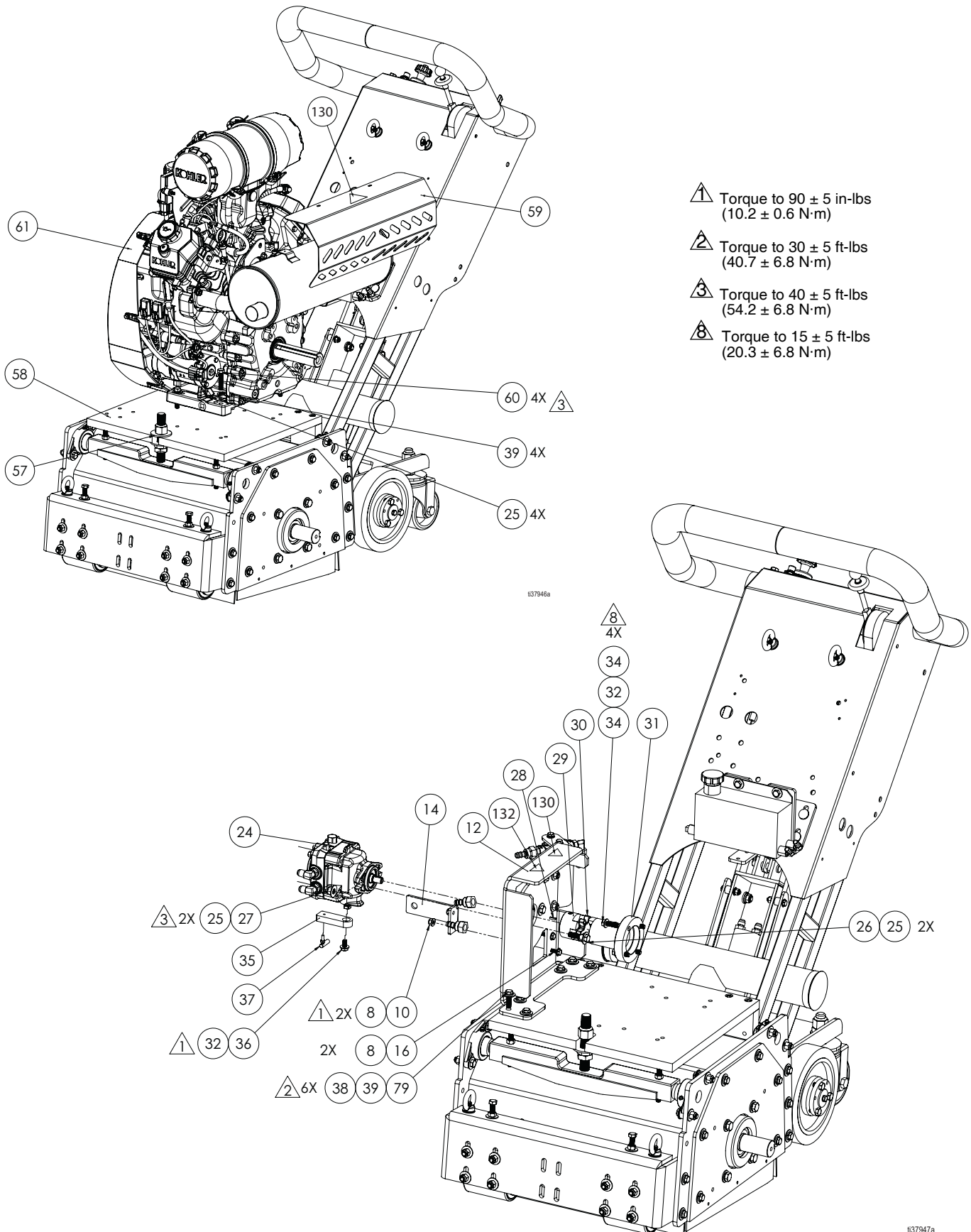
ti38098a

ti38099a

**Parts List - Support System / Hydraulic Tank (All Models)**

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
5	17W020	WASHER, flat, 1/4"	4	109	110838	NUT, nylock, 5/16"-18	2
13	100023	WASHER, flat, 3/8"	2	110	124227	SCREW, hex, 5/16"-18 x 1"	2
14	100133	WASHER, lock, 3/8"	1	111	100509	PLUG, hydraulic, tank	1
15	18B501	BOLT, hex, 3/8"-16 x 1.25"	1	112	15H525	CAP, screw, hydraulic, tank	1
21	100527	WASHER, flat, 5/16"	2	113	19B222	FITTING, 90°	2
27	101566	NUT, nylock, 3/8"-16	1	114	19B328	SPACER, support, plate	4
28	18B117	NUT, eye, 3/8-16	2	115	19B327	ROLLER, cam	4
52	102040	NUT, nylock, 1/4"-20	4	116	100132	WASHER, 7/16"	4
86	17Y111	LINKAGE, upper	1	117	19B329	NUT, nylock, 7/16"	4
89	17Y962	PIN, cotter, bow tie	1	118	100052	WASHER, lock, 7/16"	4
96	129092	SCREW, hex, 5/16"-24 x 2"	2	119	114988	SCREW, hex, 1/4-20 x 1.5	4
101	19B251	BAR, support	2	120	19B271	SPRING, support	2
102	19B255	SPACER, pin	2	136▲	15F744	LABEL, warning, ISO, pinch	4
103	19B263	PIN	1	137▲	15K616	LABEL, caution, hot surface	1
104	19B262	PLATE, support	2	138	198921	LABEL, instruction	1
106	121233	TANK, hydraulic, fluid	1	▲Replacement safety labels, tags, and cards are available at no cost.			
107	18B996	BRACKET, hydraulic, tank	1				
108	17W080	BOLT, 3/8"-16 x 1"	4				

# Parts - Motor / Hydraulic Assemblies (Gas)







## Parts List - Motor / Hydraulic Assemblies (Gas)


Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
8	17W020	WASHER, flat, 1/4"	4	35	18B368	ARM, pump control	1
10	102040	NUT, nylock, 1/4-20	2	36	18B516	SCREW, hex, cap, 1.25 x 16mm	1
12	19B308	MOUNT, hydro-gear pump	1	37	18B423	BALL, joint	1
14	19B309	MOUNT, shifter cable	1	38	100023	WASHER, flat, 3/8"	6
16	100021	SCREW, hex, cap, 1/4"-20 x 1"	2	39	100133	WASHER, lock, 3/8"	14
24	19B304	PUMP, hydraulic	1	57	18B493	WASHER, fender, 3/4"	1
25	18B490	WASHER, flat, 3/8"	8	58	18B290	PLATE, motor	1
26	102637	SCREW, hex, cap, 3/8-16 x 1.5	2	59	18B356	SHIELD, heat	1
27	101566	NUT, nylock, 3/8-16	2	60	18B502	SCREW, hex, cap, 3/8-16 x 1.75"	4
28	19B334	KEY, 1/8" SQ x 0.5"	1	61	18B438	MOTOR, Kohler, 38HP	1
29	19B333	COUPLER, Lovejoy, 1/2"	1	79	18B501	BOLT, hex, 3/8"-16 x 1.25"	1
30	18B451	SPIDER	1	130▲	16D646	LABEL, warning, hot surface	1
31	19B307	COUPLER, hydrostatic pump	1	132▲	16C394	LABEL, warning, entanglement	1
32	108788	WASHER, flat, M8	5				
34	18B517	SCREW, hex, cap, 1.25 x 30mm	4				

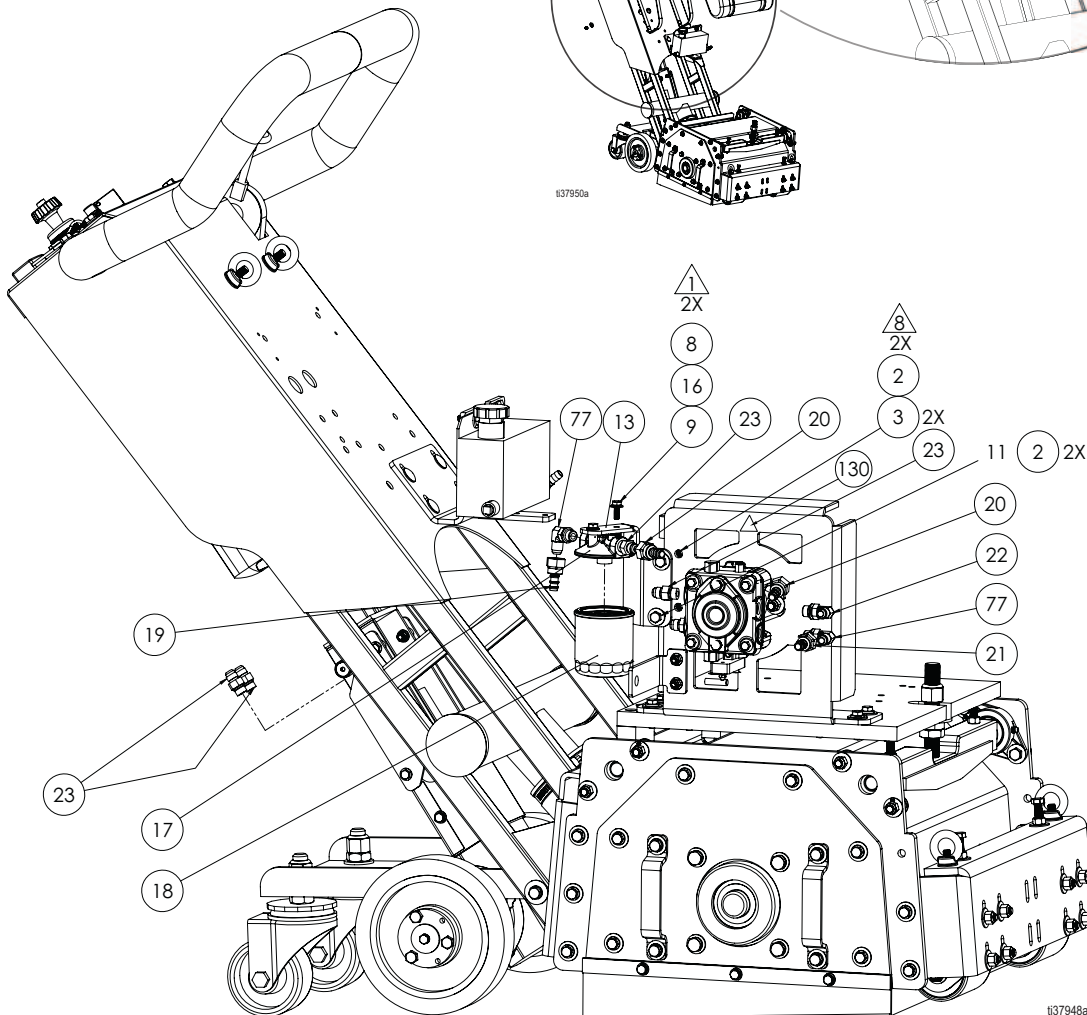
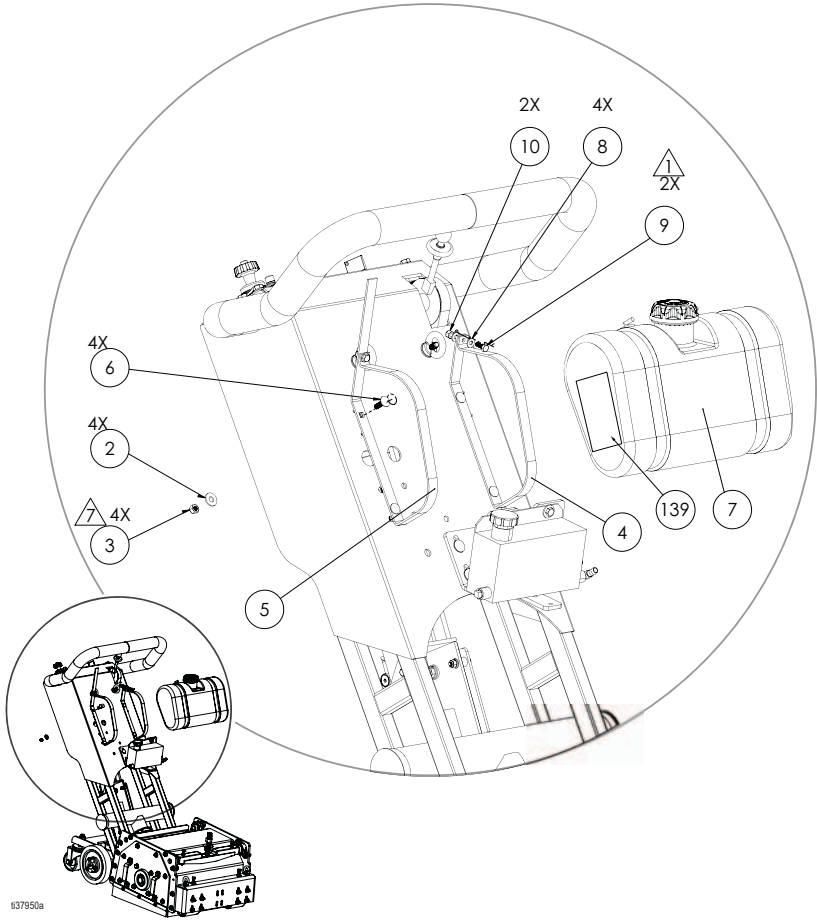
▲ Replacement safety labels, tags, and cards are available at no cost.

# Parts - Hydraulic Fittings / Fuel Tank Assemblies (Gas)

 Torque to 90 ± 5 in-lbs  
(10.2 ± 0.6 N·m)

 Torque to 23 - 27 ft-lbs  
(31.2 ± 36.6 N·m)

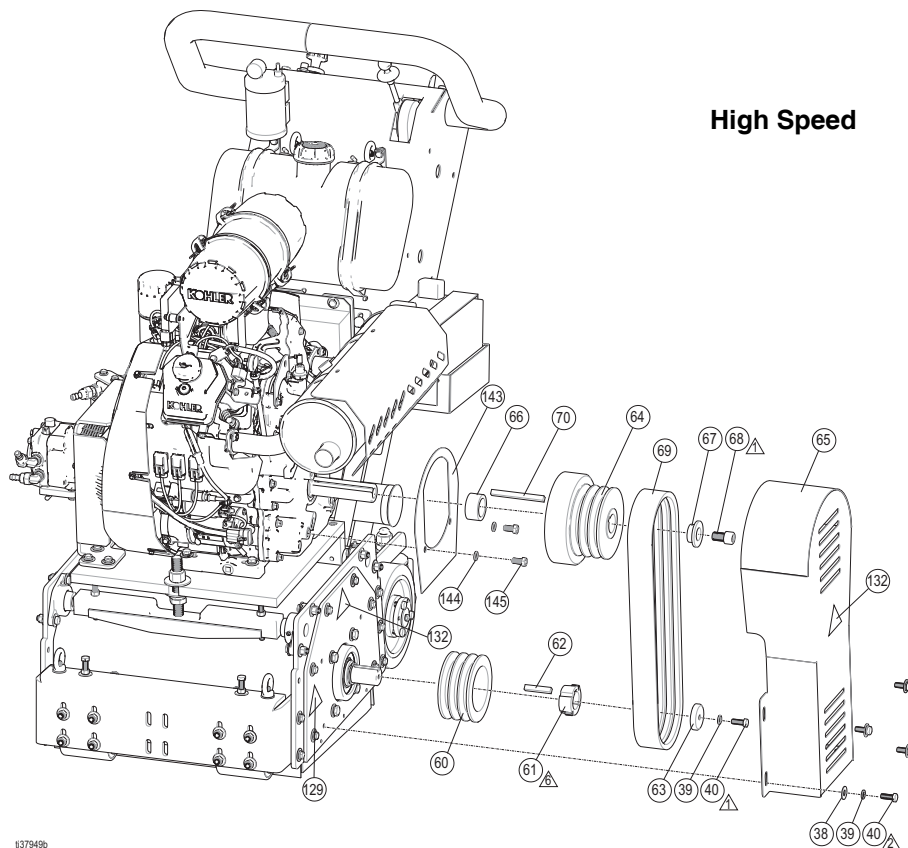
 Torque to 15 ± 5 ft-lbs  
(20.3 ± 6.8 N·m)



## Parts List - Hydraulic Fittings / Fuel Tank Assemblies (Gas)

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
2	100527	WASHER, flat, 5/16"	8	18	116830	FILTER, oil	1
3	110838	NUT, nylock, 5/16-18	6	19	18B300	HOSE, hydraulic, 20"	1
4	18B366	BRACKET, gas tank, short	1	20	18B301	HOSE, hydraulic, 20"	1
5	18B365	BRACKET, gas tank, long	1	21	18B299	HOSE, hydraulic, 25"	1
6	19B363	BOLT, carriage, 5/16-18 x 1	4	22	18B444	FITTING, adapter, 90°	2
7	19B340	TANK, gas	1	23	18B443	FITTING, adapter	4
8	17W020	WASHER, flat, 1/4"	6	74	19B332	FITTING, hydraulic, 90°	1
9	100022	SCREW, hex, cap, 1/4-20 x 0.75	4	130▲	16D646	LABEL, warning, hot surface	1
10	102040	NUT, nylock, 1/4-20	4	139▲	19Y703	LABEL, warning, multiple	1
11	124227	SCREW, hex, cap, 5/16-18 x 1	2	▲	19Y999	LABEL, warning, multiple icon	1
13	18B378	MOUNT, hydraulic filter	1	▲ Replacement safety labels, tags, and cards are available at no cost.			
16	100016	WASHER, lock, 1/4"	2				
17	116828	HEAD, filter, spin-on	1				

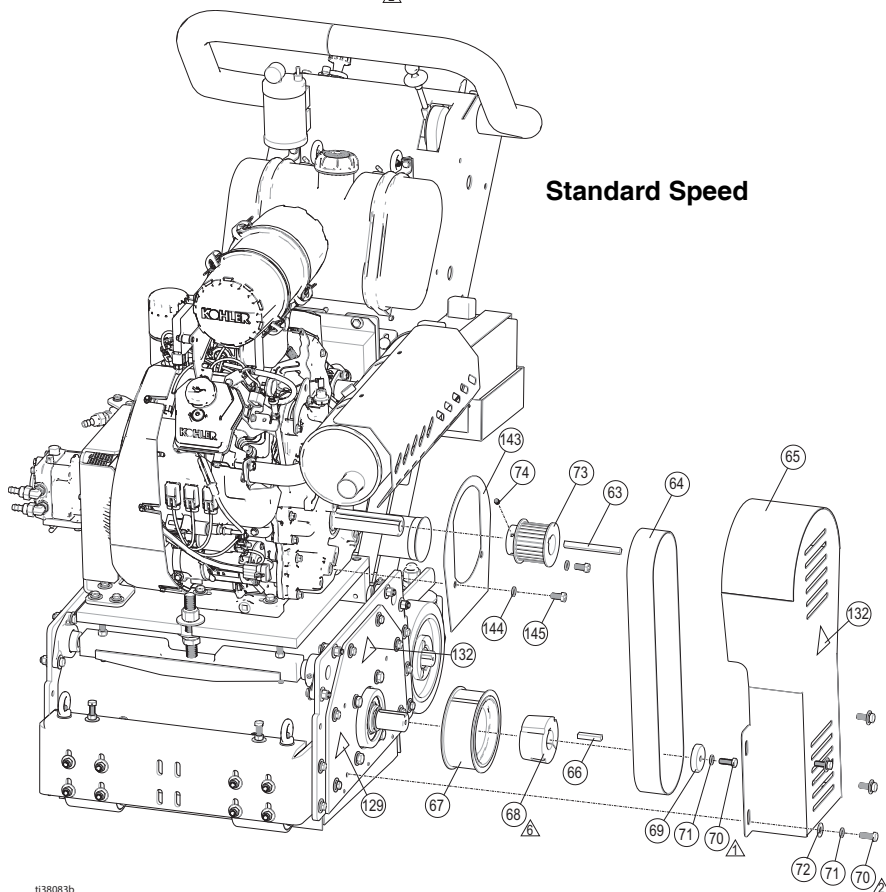
# Parts - Pulley Assemblies (Gas)



High Speed

- ⚠ Torque to  $90 \pm 5$  in-lbs ( $10.2 \pm 0.6$  N·m)
- ⚠ Torque to  $30 \pm 5$  ft-lbs ( $40.7 \pm 6.8$  N·m)
- ⚠ See manufacturer's package

t37949b



Standard Speed

t38083b

## Parts List - Pulley Assemblies (Gas)

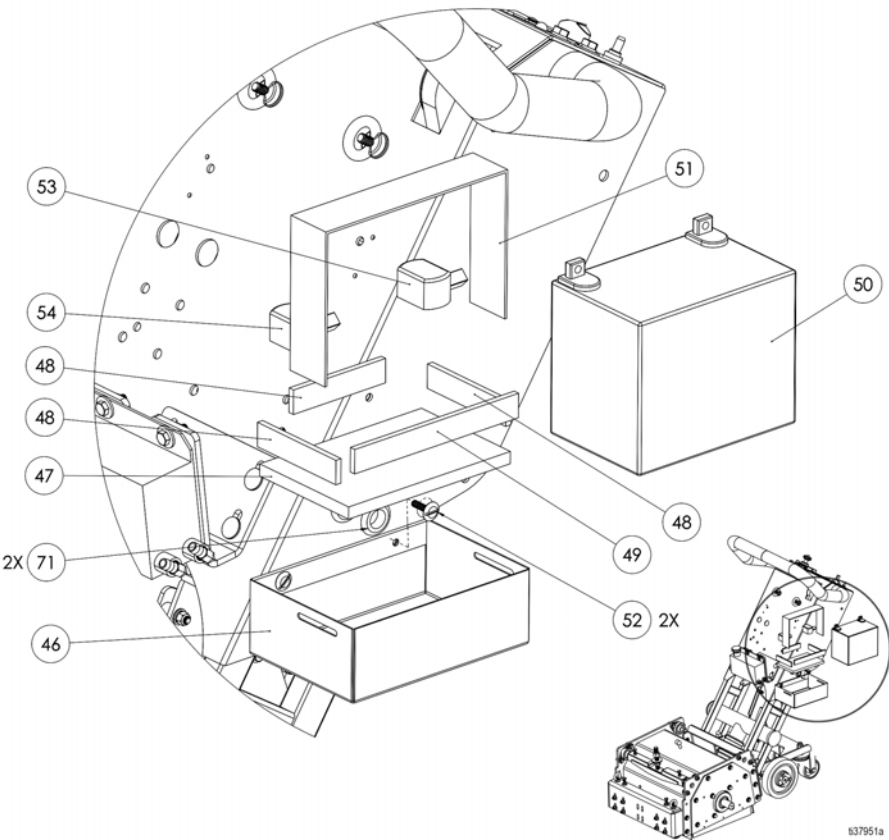
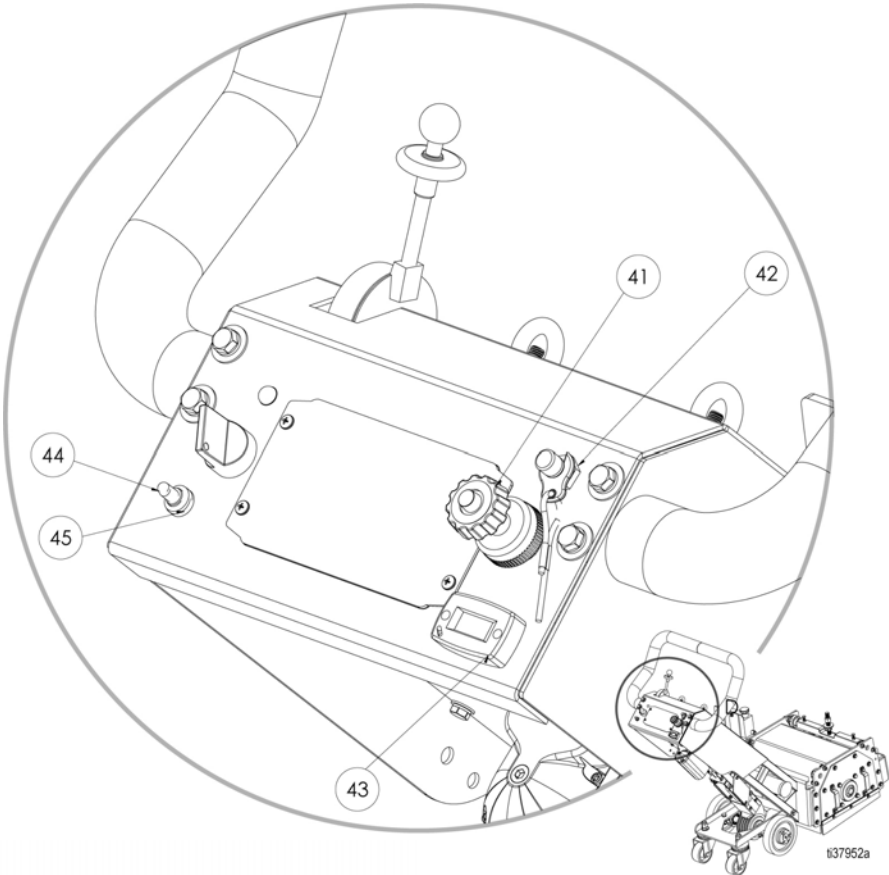
### High Speed (Model 25P474)

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
38	100023	WASHER, flat, 3/8"	4	68	18A501	SCREW, socket head cap, 5/8-18 x 1"	1
39	100133	WASHER, lock, 3/8"	5	69	19C103	BELT	1
40	100101	SCREW, hex, cap, 3/8-16 x 1"	5	70	19B435	KEY, 3/8" x 3.5"	1
60	19C102	PULLEY, v-belt	1	129▲	16C393	LABEL, warning, foot cut	1
61	18B180	BUSHING, tapered, 35mm	1	132▲	16C394	LABEL, warning, entanglement	2
62	18B363	KEY, 8mm x 10mm x 1.75"	1	143	19C108	GUARD	1
63	18B460	PULLEY, bottom, stop	1	144	100052	WASHER, lock	2
64	19B999	CLUTCH, centrifugal	1	145	19C114	SCREW, button, 7/16-14 x .75"	2
65	18A503	GUARD, belt	1	▲ Replacement safety labels, tags, and cards are available at no cost.			
66	18A505	SPACER, clutch	1				
67	18A500	WASHER, clutch	1				

### Standard Speed (Model 25R100)

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
63	18B480	KEY, 3/8" x 4.25"	1	73	19B499	PULLEY, 28 tooth	1
64	18B344	BELT	1	74	18B524	SCREW, set	2
65	18A503	GUARD, belt	1	129▲	16C393	LABEL, warning, foot cut	1
66	18B363	KEY, 8mm x 10mm x 1.75"	1	132▲	16C394	LABEL, warning, entanglement	2
67	18B590	PULLEY, 56 tooth	1	143	19C108	GUARD	1
68	19B422	BUSHING, taper, lock, 35mm	1	144	100052	WASHER, lock	2
69	18B460	PULLEY, bottom, stop	1	145	19C114	SCREW, button, 7/16-14 x .75"	2
70	100101	SCREW, hex, cap, 3/8-16 x 1"	5	▲ Replacement safety labels, tags, and cards are available at no cost.			
71	100133	WASHER, lock, 3/8"	5				
72	100023	WASHER, flat, 3/8"	4				

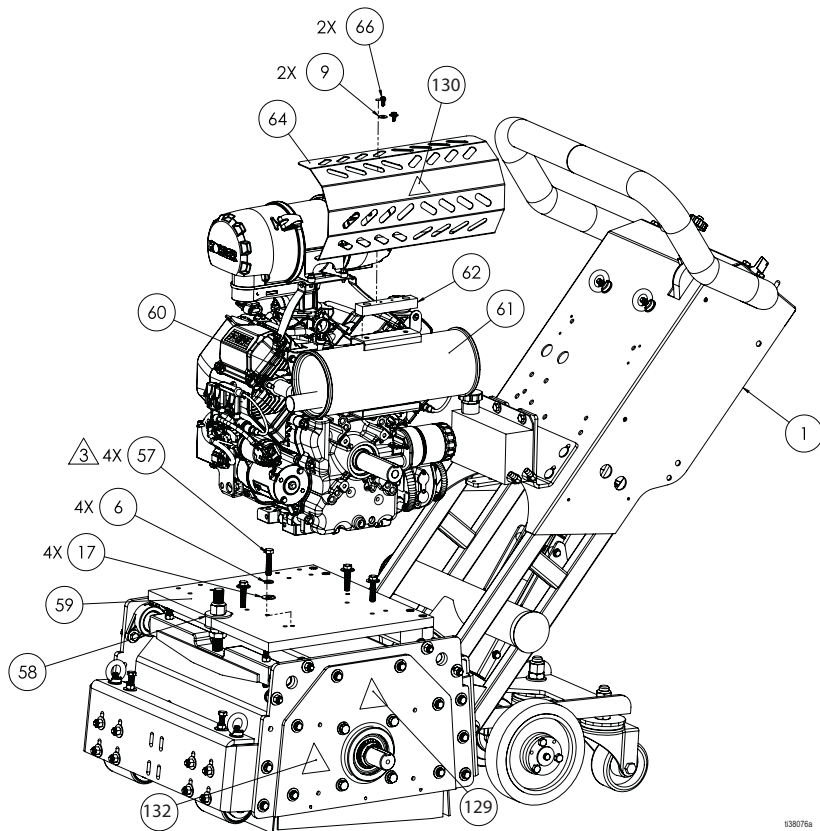
Parts - Dashboard / Battery Assemblies (Gas)







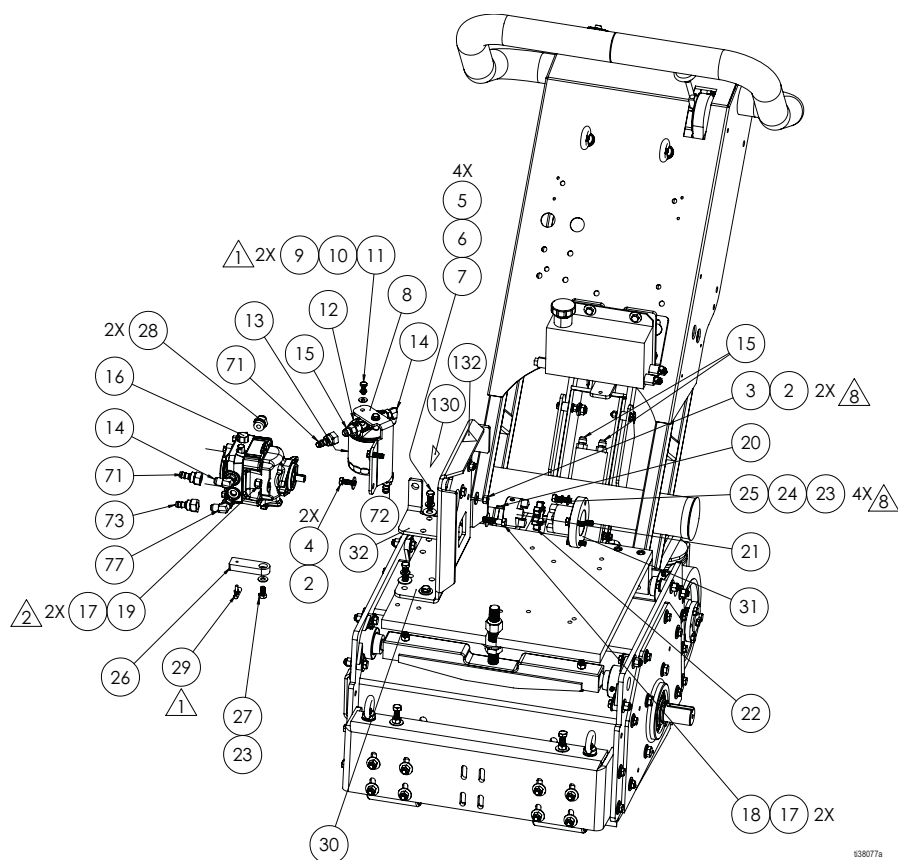
## Parts List - Dashboard / Battery Assemblies (Gas)

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
41	18B394	CABLE, vernier, control	1	49	18Y705	FOAM, urethane, 1/4"	1
42	17W073	SWITCH, kill	1	50	115753	BATTERY, 35 AH agm	1
43	17W294	TACHOMETER	1	51	18A786	STRAP, Velcro, 2" x 24"	1
44	17Z193	SWITCH, power, assembly	1	52	110823	SCREW, low profile, 1/4-20 x 1"	2
45	17Z340	BOOT, toggle	1	53	801958	TERMINAL, battery, protector, red	1
46	17Y121	BOX, battery	1	54	801959	TERMINAL, battery, protector, black	1
47	18Y704	FOAM, urethane, 1/2"	1	71	18B851	GROMMET, 1 1/16" OD, 3/4" ID	2
48	18Y701	FOAM, urethane, 1/4"	3				

# Parts - Motor / Hydraulic Assemblies (Propane)



-  Torque to  $90 \pm 5$  in-lbs  
( $10.2 \pm 0.6$  N·m)
-  Torque to  $30 \pm 5$  ft-lbs  
( $40.7 \pm 6.8$  N·m)
-  Torque to  $40 \pm 5$  ft-lbs  
( $54.2 \pm 6.8$  N·m)
-  Torque to  $15 \pm 5$  ft-lbs  
( $20.3 \pm 6.8$  N·m)



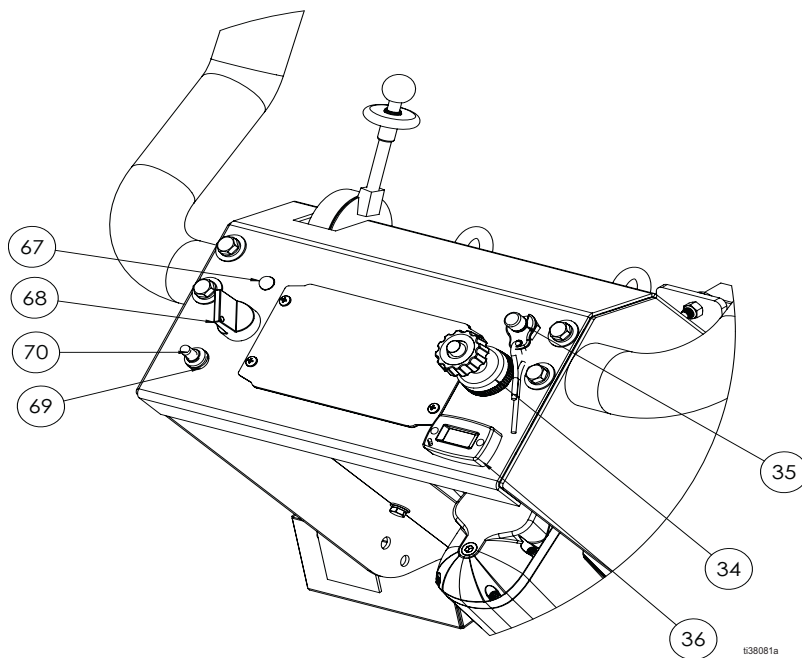
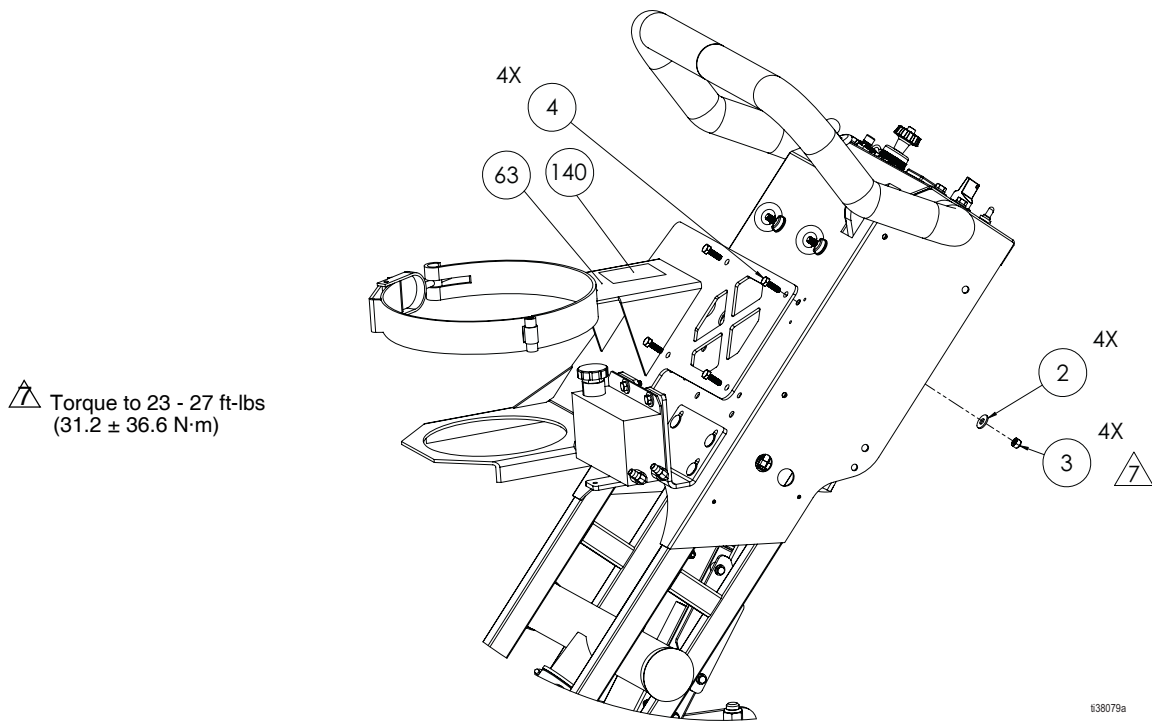


## Parts List - Motor / Hydraulic Assemblies (Propane)

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
2	100527	WASHER, flat, 5/16"	4	26	18B368	ARM, pump control	1
3	110838	NUT, nylock, 5/16-18	2	27	18B516	SCREW, hex, cap, 1.25 x 16mm	1
4	124227	SCREW, hex, cap, 5/16-18 x 1	2	28	18B445	FITTING, adapter	2
5	100023	WASHER, flat, 3/8"	4	29	18B423	BALL, joint	1
6	100133	WASHER, lock, 3/8"	8	30	19B314	MOUNT, hydro-gear pump	1
7	18B501	BOLT, hex, head, 3/8-16 x 1.25"	4	31	19B313	COUPLER, hydrostatic pump	1
8	18B378	MOUNT, hydraulic filter	1	32	19B315	SHIFTER, hydro gear support	1
9	17W020	WASHER, flat, 1/4"	4	57	18B502	SCREW, hex, cap, 3/8-16 x 1.75"	4
10	100016	WASHER, lock, 1/4"	2	58	18B493	WASHER, fender, 3/4"	1
11	100022	SCREW, hex, cap, 1/4-20 x .75	2	59	18B290	PLATE, motor	1
12	116828	HEAD, filter, spin on	1	60	18B439	MOTOR, Kohler, 25HP	1
13	116830	FILTER, oil	1	61	18B431	KIT, muffler	1
14	18B444	FITTING, adapter, 90°	2	62	18B384	BLOCK, mount, heat shield	1
15	18B443	FITTING, adapter	3	64	18B357	SHIELD, heat	1
16	19B304	PUMP, hydraulic	1	66	17W089	SCREW, self tapping, 10-32 x .5"	2
17	18B490	WASHER, flat 3/8"	8	71	18B312	HOSE, hydraulic, 15"	2
18	102637	SCREW, hex, cap, 3/8-16 x 1.5	2	72	18B313	HOSE, hydraulic, 16"	1
19	101566	NUT, nylock, 3/8-16	2	73	18B742	HOSE, hydraulic, 20"	1
20	19B334	KEY, 1/8" SQ x 0.5"	1	77	19B332	FITTING, hydraulic, 90°	1
21	19B333	COUPLER, Lovejoy, 1/2"	1	129▲	16C393	LABEL, warning, foot cut	1
22	18B451	SPIDER	1	130▲	16D646	LABEL, warning, hot surface	2
23	108788	WASHER, flat, M8	5	132▲	16C394	LABEL, warning, entanglement	1
24	104572	WASHER, lock, M8	4				
25	18B517	SCREW, hex, cap, 1.25 x 30mm	4				

▲ Replacement safety labels, tags, and cards are available at no cost.

## Parts - Propane Tank / Dashboard Assemblies (Propane)

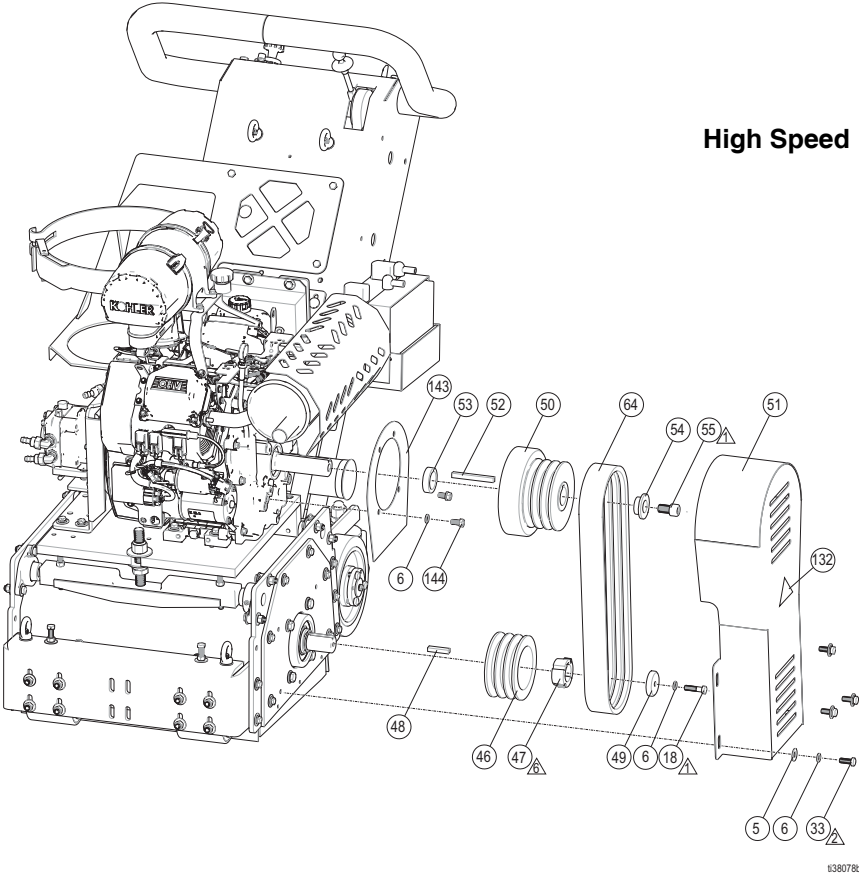


## Parts List - Propane Tank / Dashboard Assemblies (Propane)

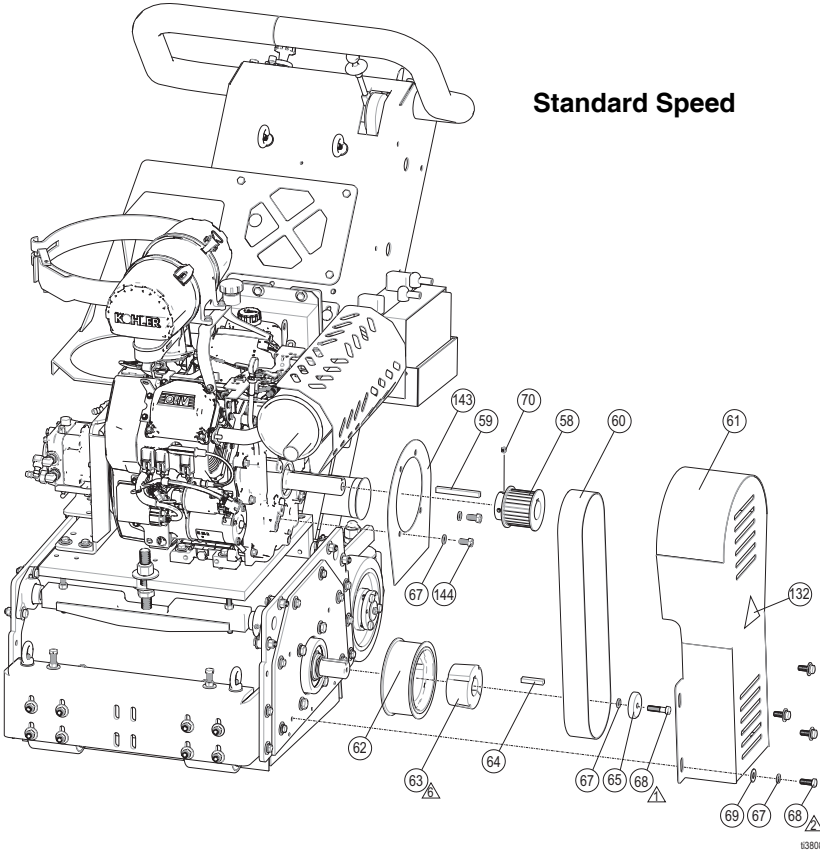
Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
2	100527	WASHER, flat, 5/16"	4	68	18B120	SWITCH, key	1
3	110838	NUT, nylock, 5/16-18	4	69	17Z193	SWITCH, power, assembly	1
4	124227	SCREW, hex, cap, 5/16-18 x 1	4	70	17Z340	TOGGLE, boot	1
34	18B396	CABLE, vernier, control	1	140▲	19B539	LABEL, warning, fire & explosion	1
35	17W073	SWITCH, kill	1				
36	17W294	TACHOMETER	1				
63	18B379	BRACKET, propane, tank	1				
67	18B434	LAMP, oil	1				

▲ Replacement safety labels, tags, and cards are available at no cost.

# Parts - Pulley Assemblies (Propane)



- 1 Torque to 90 ± 5 in-lbs (10.2 ± 0.6 N·m)
- 2 Torque to 30 ± 5 ft-lbs (40.7 ± 6.8 N·m)
- 6 See manufacturer's package



## Parts List - Pulley Assemblies (Propane)

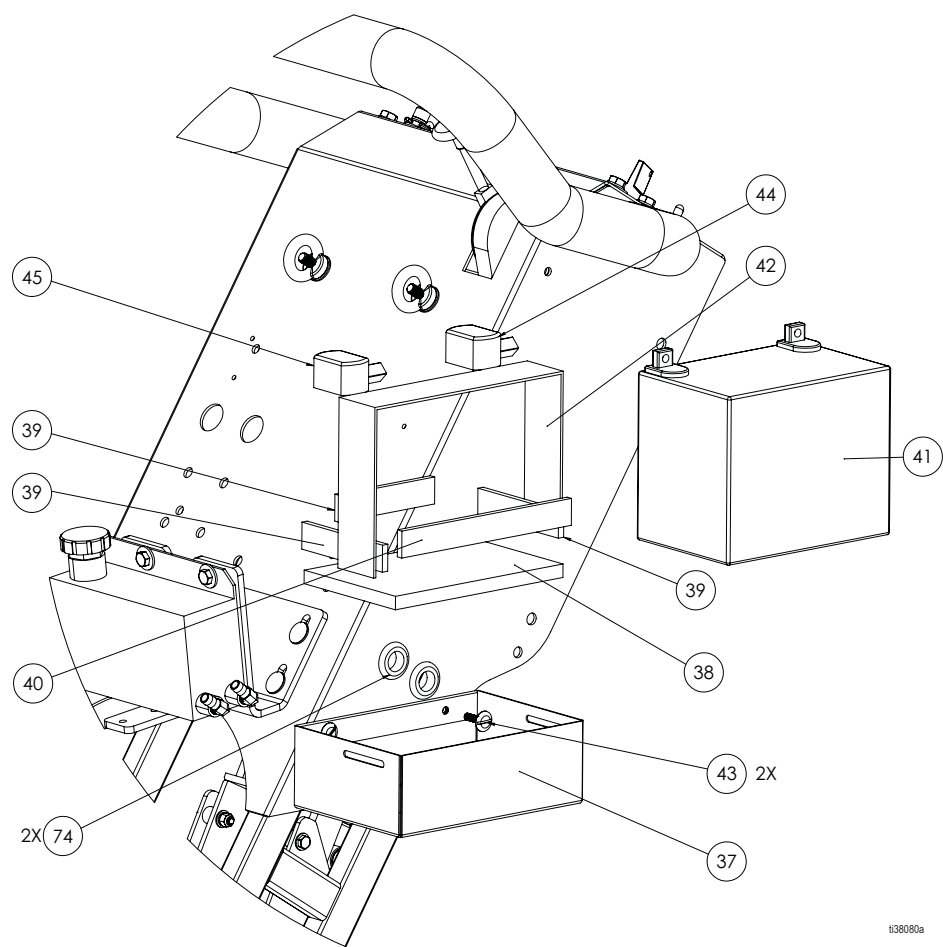
### High-Speed (Model 25P475)

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
5	100023	WASHER, flat, 3/8"	4	53	18A504	SPACER, clutch	1
6	100133	WASHER, lock, 3/8"	9	54	18A500	WASHER, clutch	1
18	102637	SCREW, hex, cap, 3/8-16 x 1.5"	1	55	18A501	SCREW, socket head cap, 5/8-18 x 1"	1
33	100101	SCREW, hex, cap, 3/8-16 x 1"	4	64	19C103	BELT	1
46	19C102	PULLEY, v-belt	1	132▲	16C394	LABEL, warning, entanglement	1
47	18B180	BUSHING, tapered, 35mm	1	143	19C109	GUARD	1
48	19B398	KEY, 8mm x 10mm x 1.75"	1	144	17W979	SCREW, cap, 3/8-16 x 3/4"	4
49	18B460	PULLEY, bottom, stop	1	▲ Replacement safety labels, tags, and cards are available at no cost.			
50	19B999	CLUTCH, centrifugal	1				
51	18A503	GUARD, belt	1				
52	19B435	KEY, 3/8" X 3.5"	1				

### Standard-Speed (Model 25R101)

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
58	19B499	PULLEY, 28 tooth	1	68	100101	SCREW, hex, cap, 3/8-16 x 1"	5
59	19B435	KEY, 3/8" x 3.125"	1	69	100023	WASHER, flat, 3/8"	4
60	18B344	BELT, power grip	1	70	18B524	SCREW, set	2
61	18A503	GUARD, belt	1	132▲	16C394	LABEL, warning, equipment	1
62	18B590	PULLEY, 56 tooth	1	143	19C109	GUARD	1
63	19B422	BUSHING, taper, lock, 35mm	1	144	17W979	SCREW, cap, 3/8-16 x 3/4"	4
64	18B363	KEY, 8mm x 10mm x 1.75"	1	▲ Replacement safety labels, tags, and cards are available at no cost.			
65	18B460	PULLEY, bottom, stop	1				
67	100133	WASHER, lock, 3/8"	9				

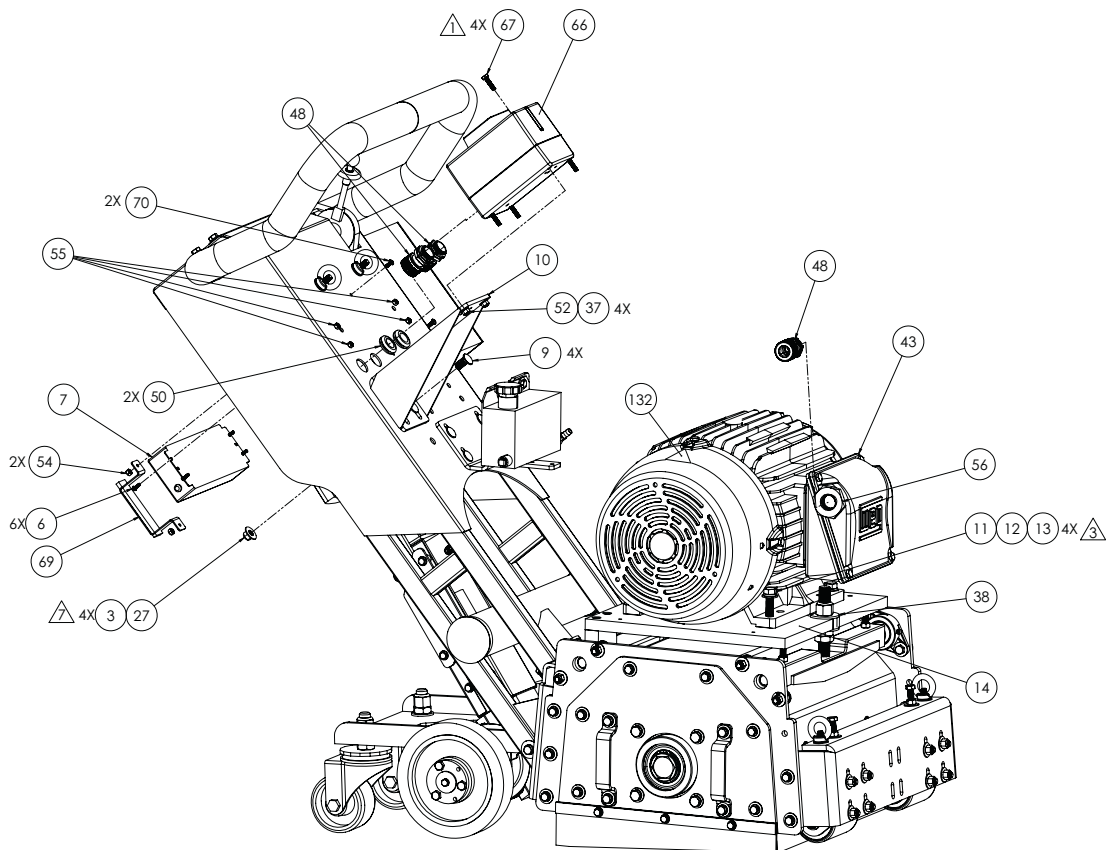
# Parts - Battery Assembly (Propane)



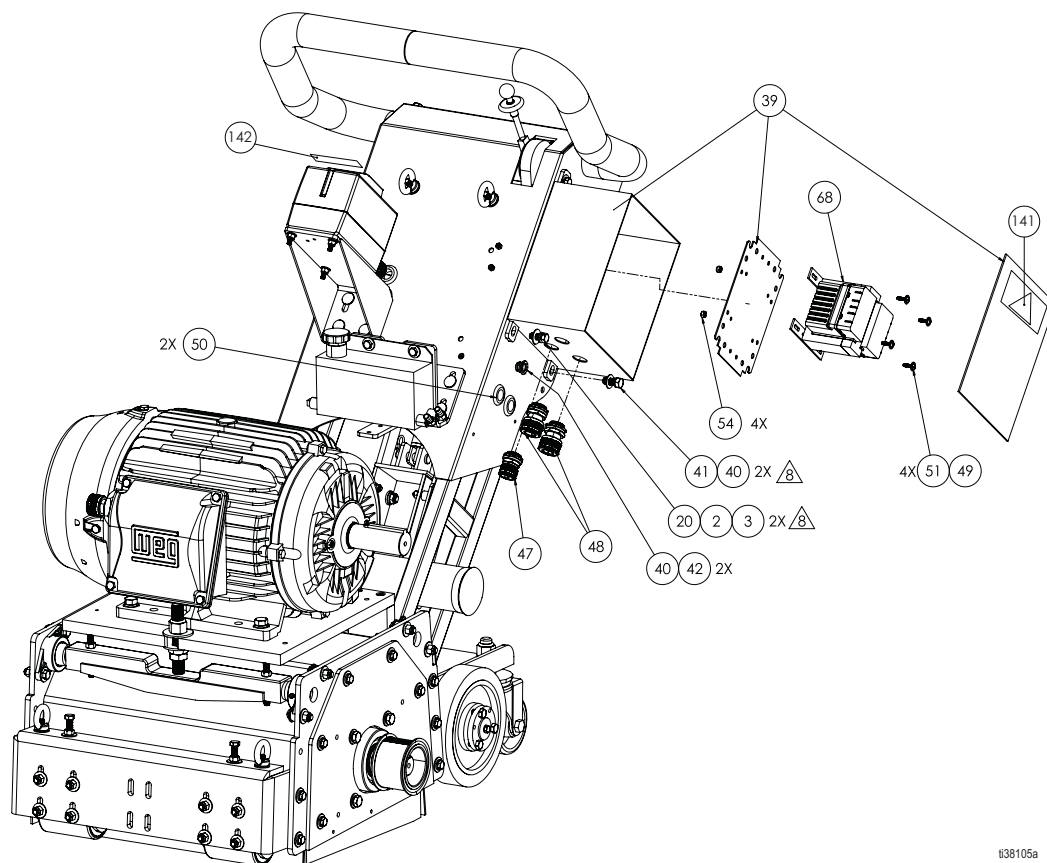
## Parts List - Battery Assembly (Propane)

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
37	17Y121	BOX, battery	1	43	110823	SCREW, low profile, 1/4-20 x 1"	2
38	18Y704	FOAM, urethane, 1/2"	1	44	801958	TERMINAL, battery, protector, red	1
39	18Y701	FOAM, urethane, 1/4"	3	45	801959	TERMINAL, battery, protector, black	1
40	18Y705	FOAM, urethane, 1/4"	1	74	18B851	GROMMET, 1 1/16" OD, 3/4" ID	2
41	115753	BATTERY, 35 AH agm	1				
42	18A786	STRAP, Velcro, 2" x 24"	1				

# Parts - Electrical Components (Electric)



ti38104a



1 Torque to 90 ± 5 in-lbs  
(10.2 ± 0.6 N·m)

3 Torque to 40 ± 5 ft-lbs  
(54.2 ± 6.8 N·m)

7 Torque to 23 - 27 ft-lbs  
(31.2 ± 36.6 N·m)

8 Torque to 15 ± 5 ft-lbs  
(20.3 ± 6.8 N·m)

ti38105a





## Parts List - Electrical Components (Electric)

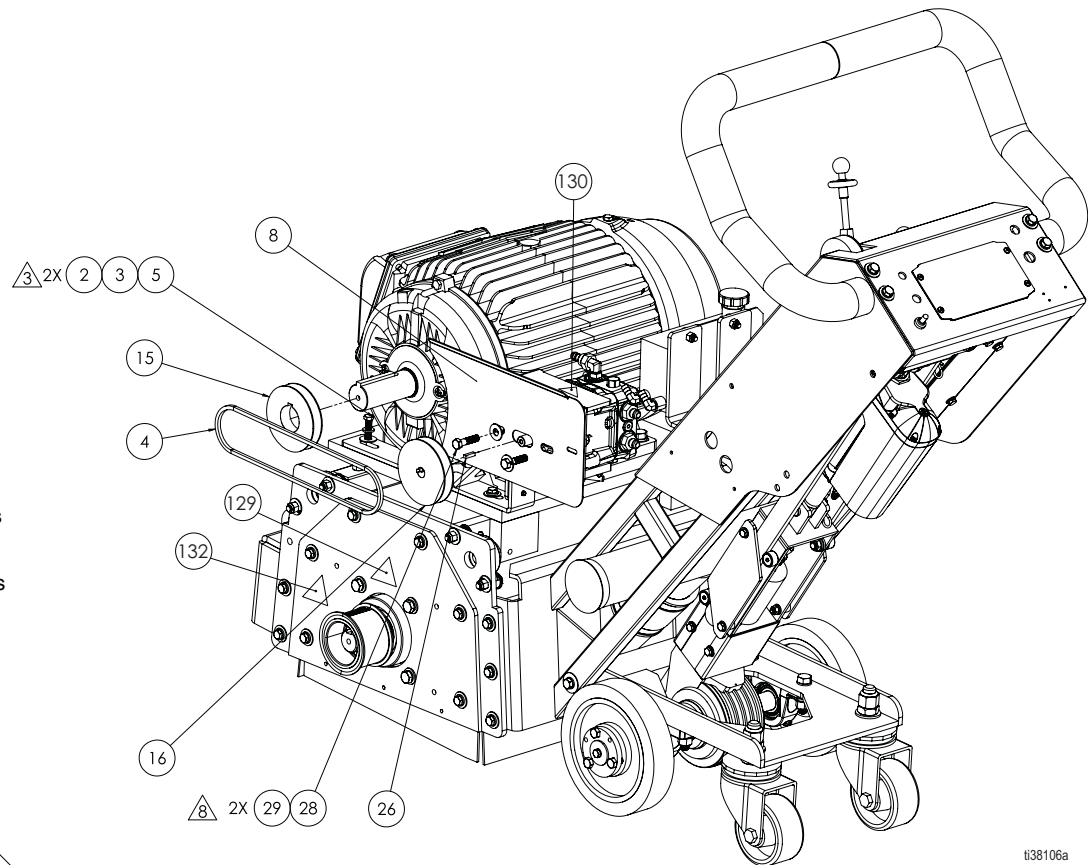
Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
2	100133	WASHER, lock, 3/8"	2	47	18B763	STRAIN, wire, relief, .25-.38	1
3	100023	WASHER, flat, 3/8"	6	48	18B762	STRAIN, wire, relief, .63-.75	5
6	117501	SCREW, hex, hd, 8-32 x 1/2"	6	49	102360	WASHER, flat, #10	4
7	18B861	CONVERTER, assy, 12V	1	50	18B851	GROMMET, 1 1/16" OD, 3/4" ID	4
9	113956	BOLT, carriage, 3/8"-16 x 1"	4	51	128990	SCREW, head, 10-32 x .75"	4
10	19B305	BRACKET, electric starter	1	52	102040	NUT, nylock, 1/4"-20	4
11	18B507	SCREW, hex, 1/2"-13 x 2"	4	54	102920	NUT, nylock, 10-32"	2
12	100018	WASHER, lock, 1/2"	4	55	109466	NUT, nylock, 8-32"	4
13	17W098	WASHER, flat, 1/2"	4	56	18B846	REDUCER, 1.5" NPT - .75" NPT	1
14	18B292	PLATE, motor	1	66	19B320	BOX, electric, start	1
20	100101	SCREW, cap, 3/8"-16 x 1"	2	67	100021	SCREW, hex, cap, 1/4"-20 x 1"	4
27	101566	NUT, nylock, 3/8"-16	4	69	19B485	BRACKET, support	1
37	17W020	WASHER, flat, 1/4"	4	70	116610	SCREW, Phillips, 10-32" x 0.5"	2
38	18B579	WASHER, fender, 3/4"	1	132▲	16C394	LABEL, warning, entanglement	1
39	18B753	BOX, junction w/ bolts	1	141▲	25E178	LABEL, safety, danger (60Hz)	1
40	100132	WASHER, flat, 7/16"	4		196548	LABEL, caution (50Hz)	1
41	116645	SCREW, cap, 7/16-20 x 1"	2	142▲	19B507	LABEL, warning	1
42	114907	NUT, nylock, 7/16"-20	2				
43	18B754	MOTOR, electric, 480V, 60Hz	1				
	18B755	MOTOR, electric, 380V, 50Hz	1				

▲ Replacement safety labels, tags, and cards are available at no cost.

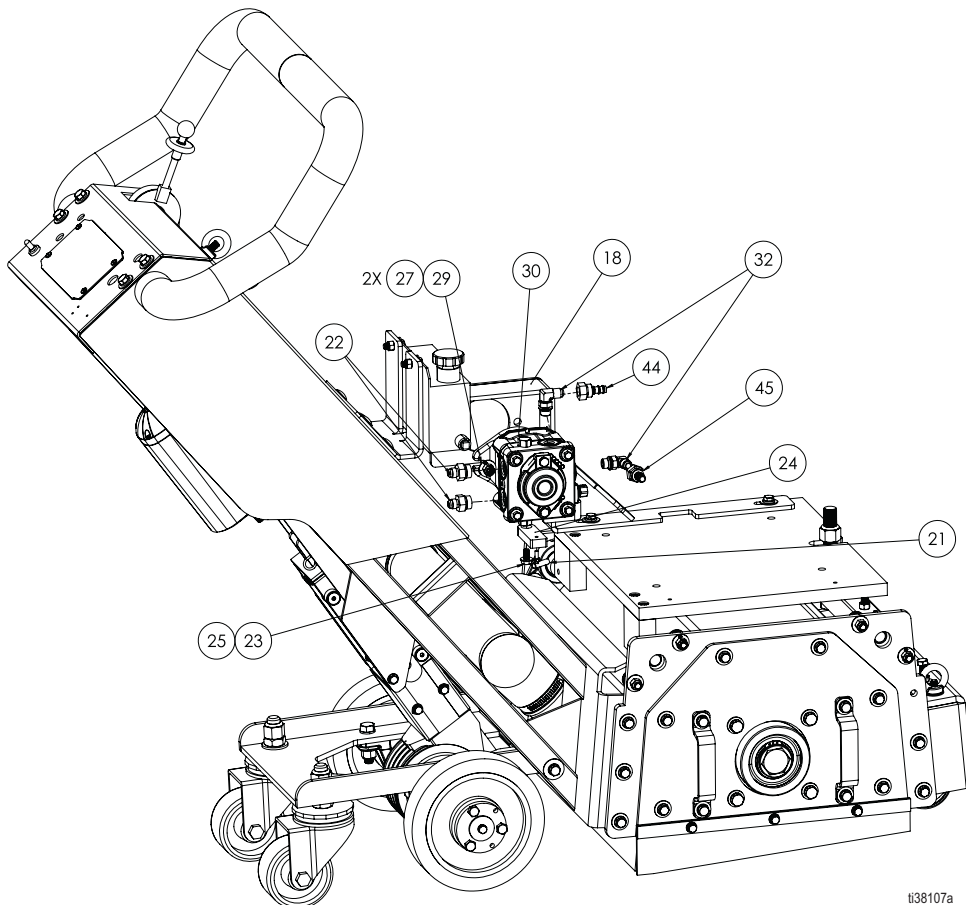
# Parts - Hydraulic Motor Assemblies (Electric)

 Torque to  $40 \pm 5$  ft-lbs  
( $54.2 \pm 6.8$  N·m)

 Torque to  $15 \pm 5$  ft-lbs  
( $20.3 \pm 6.8$  N·m)



ti38106a



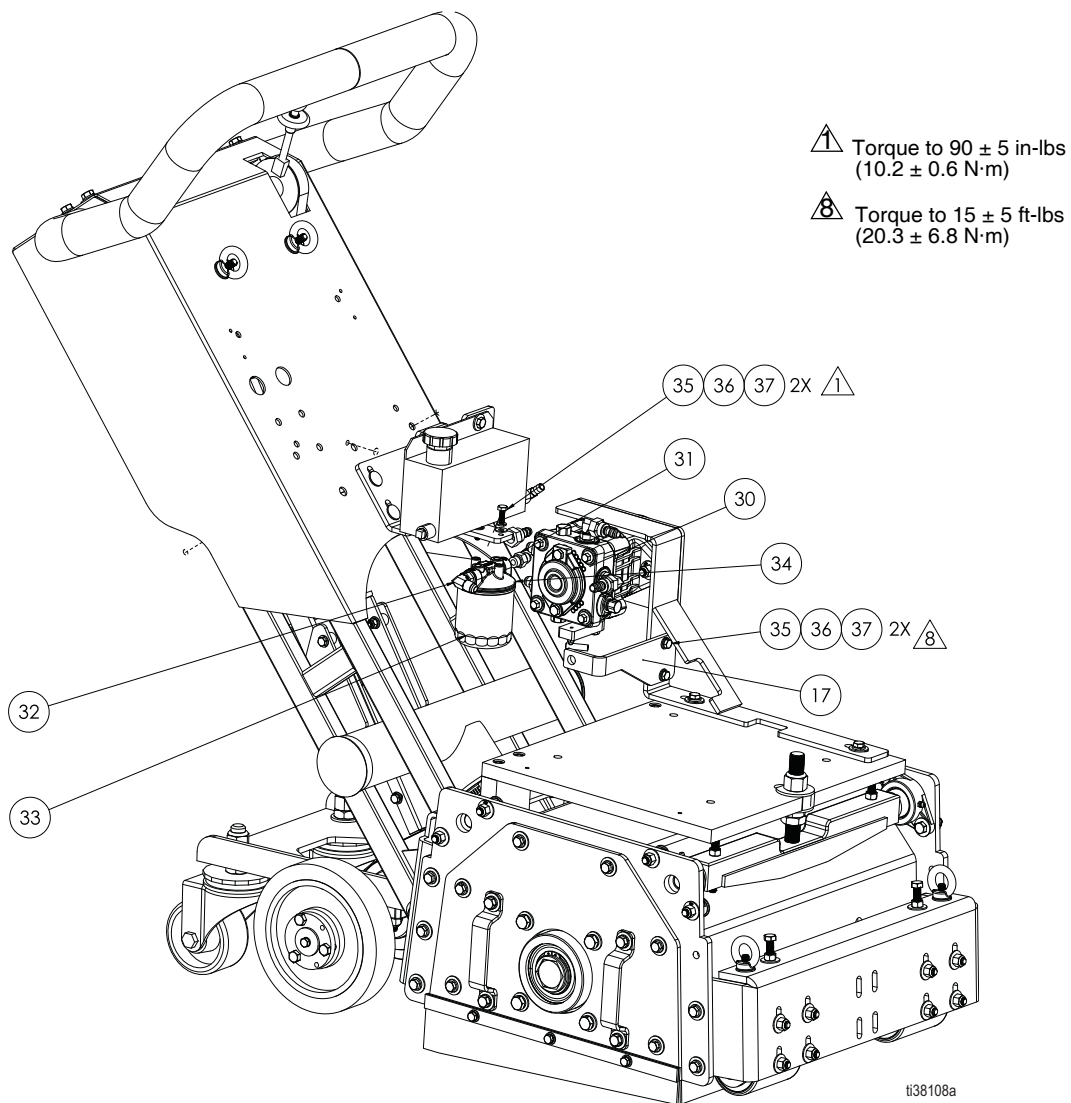
ti38107a

## Parts List - Hydraulic Motor Assemblies (Electric)

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
2	100133	WASHER, lock, 3/8"	2	26	18B339	KEY, 3/16 x .75	1
3	100023	WASHER, flat, 3/8"	2	27	101566	NUT, nylock, 3/8"-16	2
4	18B584	BELT, hydraulic, pulley	1	28	102637	SCREW, hex, cap, 3/8"-16 x 1.5"	2
5	18B501	BOLT, hex, head, 3/8"-16 x 1.25"	2	29	18B490	WASHER, flat, 3/8"	4
8	18B561	GUARD, belt, rear side	1	30	18B729	PUMP, hydraulic	1
15	18B581	V-PULLEY (1.625" bore)	1	32	18B444	FITTING, adapter, 90°	2
16	18B582	V-PULLEY (0.625" bore)	1	44	18B743	HOSE, hydraulic, 15"	1
18	18B589	SUPPORT, gear pump, hydro	1	45	18B744	HOSE, hydraulic, 8"	1
21	18B423	JOINT, ball	1	129▲	16C394	LABEL, warning, entanglement	1
22	18B445	FITTING, adapter	2	130▲	16D646	LABEL, warning, hot surface	1
23	18B516	SCREW, hex, cap, 1.25 x 16mm	1	132▲	16C393	LABEL, warning, foot cut	1
24	18B368	ARM, pump control	1				
25	108788	WASHER, flat, M8	1				

▲ Replacement safety labels, tags, and cards are available at no cost.

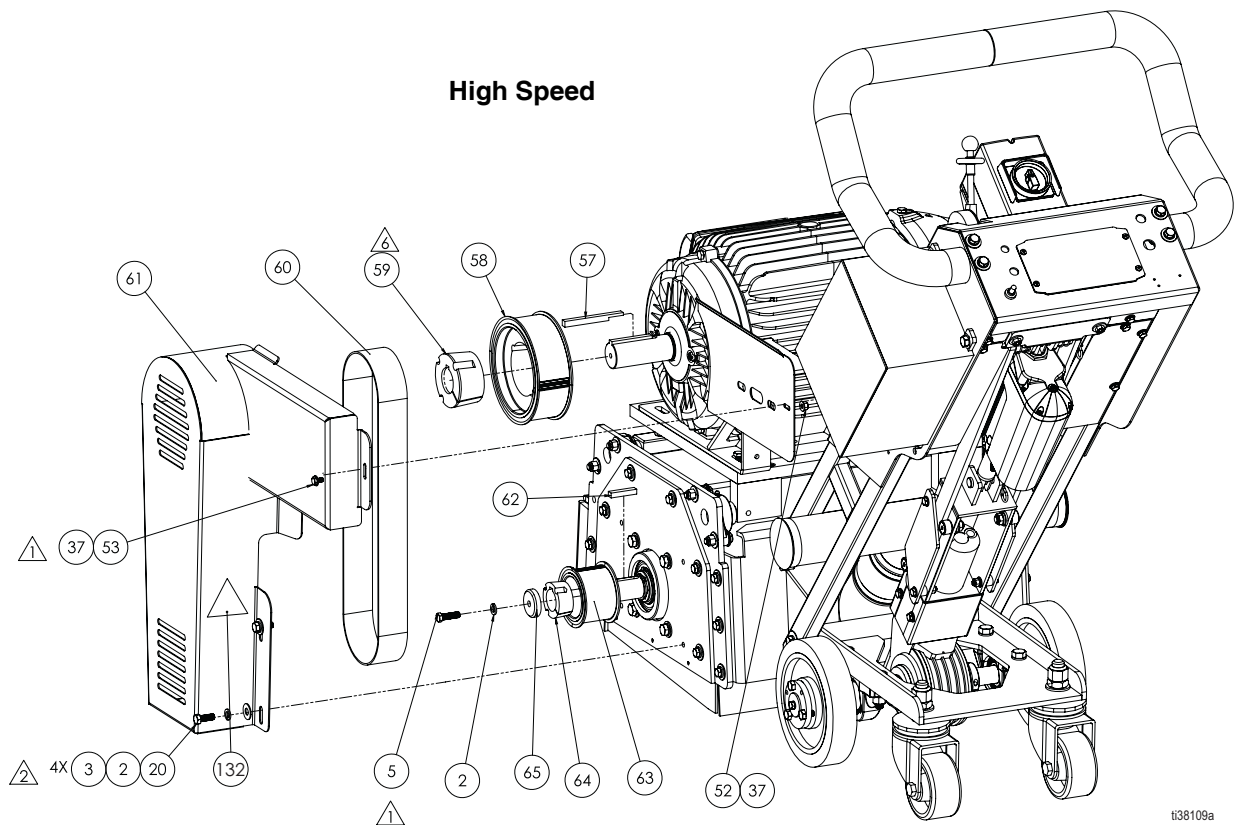
## Parts - Hydraulic Assembly (Electric)



## Parts List - Hydraulic Tank Assembly (Electric)

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
17	18B585	MOUNT, control, cable	1	34	116828	HEAD, filter, spin-on	1
30	18B729	PUMP, hydraulic	1	35	100022	SCREW, hex, 1/4"-20 x .75"	4
31	18B443	FITTING, adapter	1	36	100016	WASHER, lock, 1/4"	4
32	18B444	FITTING, adapter, 90°	1	37	17W020	WASHER, flat, 1/4"	4
33	116830	FILTER, oil	1				

## Parts - Pulley Assemblies (Electric - 480V & 380V)

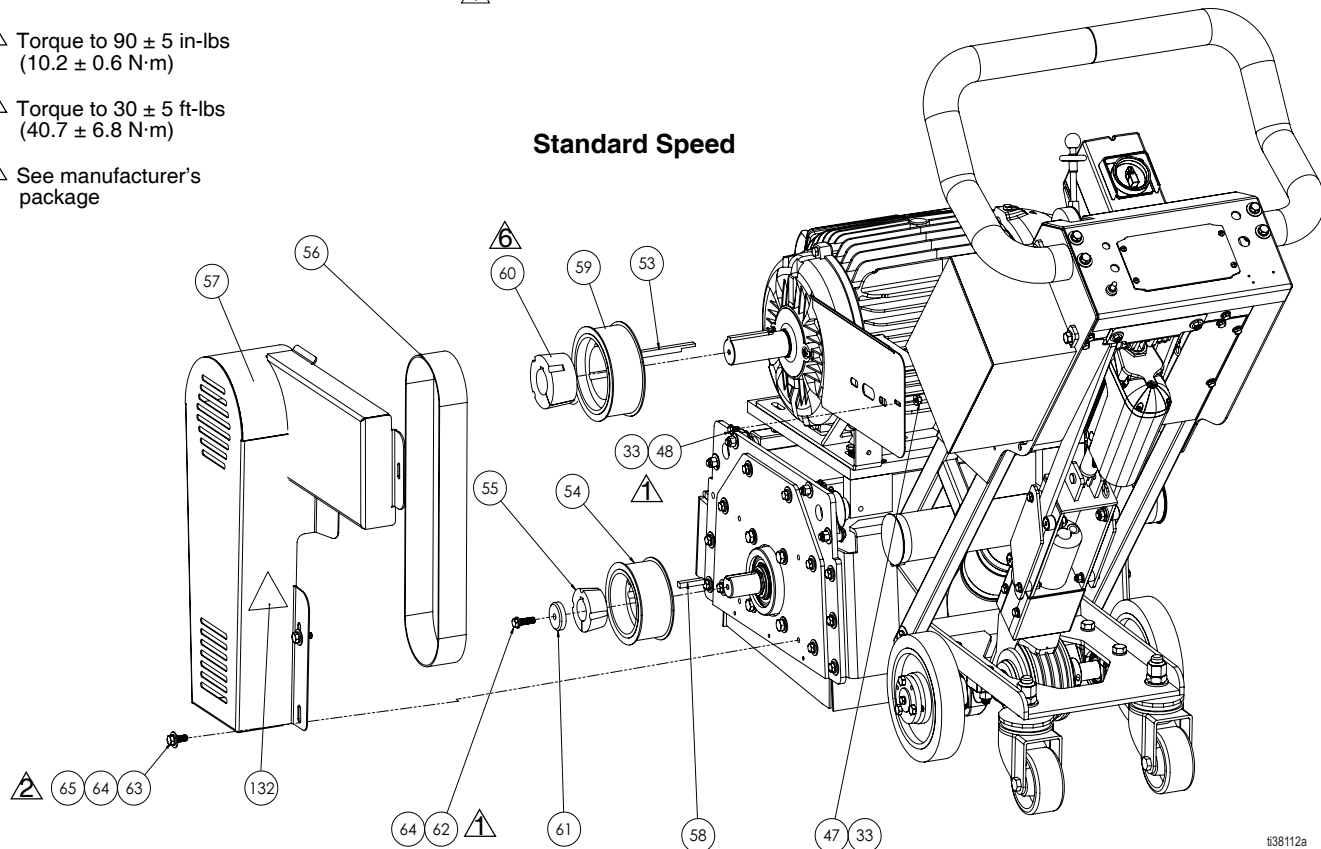


t38109a

△ Torque to 90 ± 5 in-lbs  
(10.2 ± 0.6 N·m)

△ Torque to 30 ± 5 ft-lbs  
(40.7 ± 6.8 N·m)

△ See manufacturer's  
package



t38112a

## Parts List - Pulley Assemblies (Electric 480V & 380V)

### High Speed (Models 25P476 & 25P783)

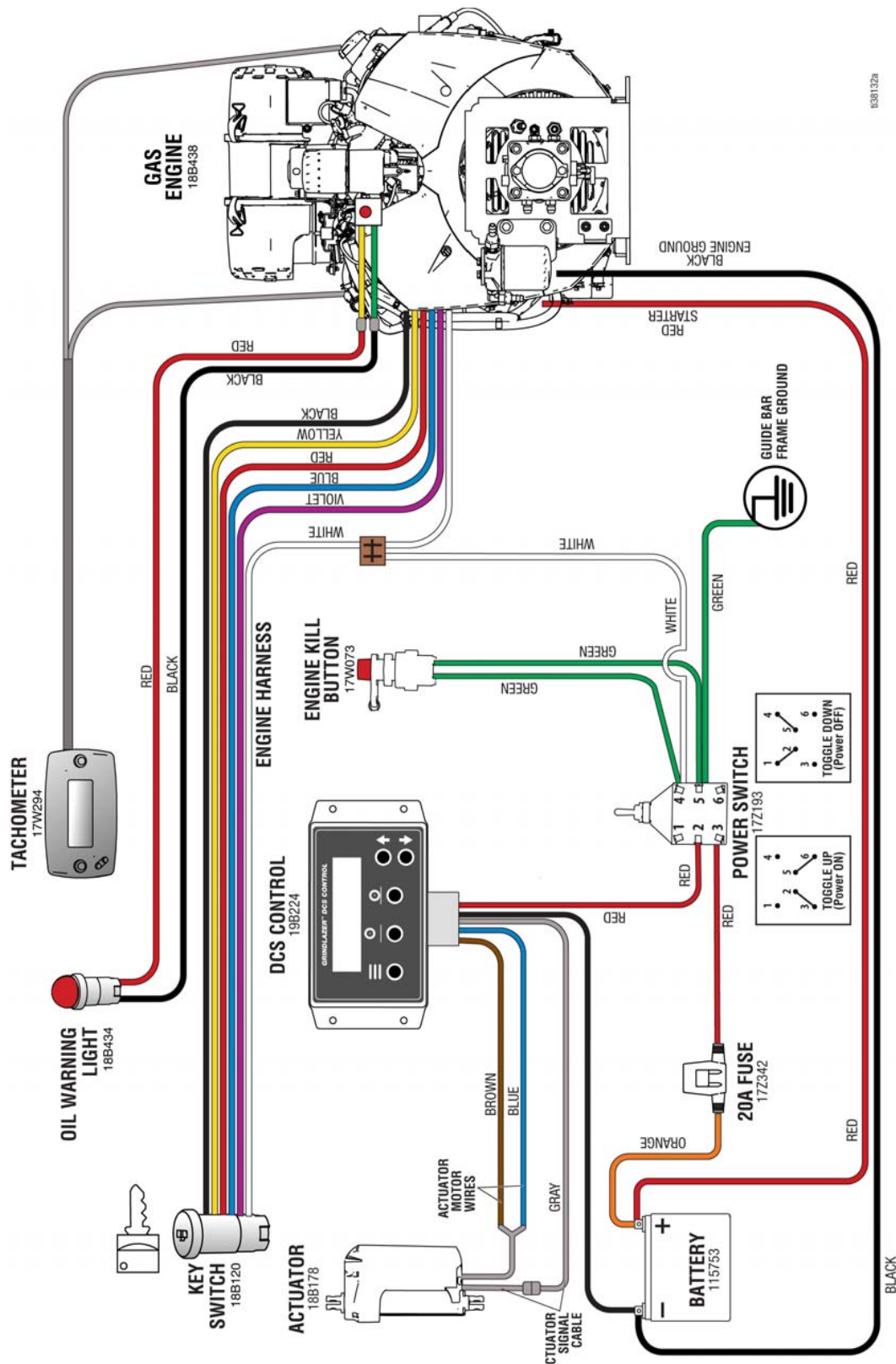
Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
2	100133	WASHER, lock, 3/8"	5	60	19B362	BELT, power grip	1
3	100023	WASHER, flat, 3/8"	4	61	19B383	GUARD, belt	1
5	18B501	BOLT, hex, 3/8"-16 x 1.25"	1	62	18B363	KEY, 8mm x 10mm	1
20	100101	SCREW, hex, 3/8"-16 x 1"	1	63	19B378	PULLEY, 34 tooth, drum side	1
37	17W020	WASHER, flat, 1/4"	2	64	18B180	BUSHING, taper, lock, 35mm	1
52	102040	NUT, nylock, 1/4-20	1	65	18B586	STOP, pulley	1
53	100333	SCREW, hex, 1/4"-20 x .5"	1	132▲	16C394	LABEL, warning, entanglement	1
57	18B587	KEY, step	1	▲ Replacement safety labels, tags, and cards are available at no cost.			
58	19B379	PULLEY, 64 tooth	1				
59	18B588	BUSHING, tapered, 1-5/8"	1				

### Standard Speed (Models 25R102 & 25R103)

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
33	17W020	WASHER, flat, 1/4"	2	60	18B588	BUSHING, tapered, 1-5/8"	1
47	102040	NUT, nylock, 1/4-20	1	61	18B586	STOP, pulley	1
48	100333	SCREW, hex, 1/4"-20 x .5"	1	62	18B501	BOLT, head, 3/8-16 x 1.25"	1
53	18B587	KEY, step	1	63	100101	SCREW, hex, cap, 3/8-16 x 1"	1
54	18B459	PULLEY, 48 tooth	1	64	100133	WASHER, lock, 3/8"	2
55	18B463	LOCK, taper, 35mm	1	65	100023	WASHER, flat, 3/8"	1
56	19B464	BELT, power grip	1	132▲	16C394	LABEL, warning, entanglement	1
57	19B383	GUARD, belt	1	▲ Replacement safety labels, tags, and cards are available at no cost.			
58	18B363	KEY, 8mm x 10mm	1				
59	18B590	PULLEY, 56 tooth	1				

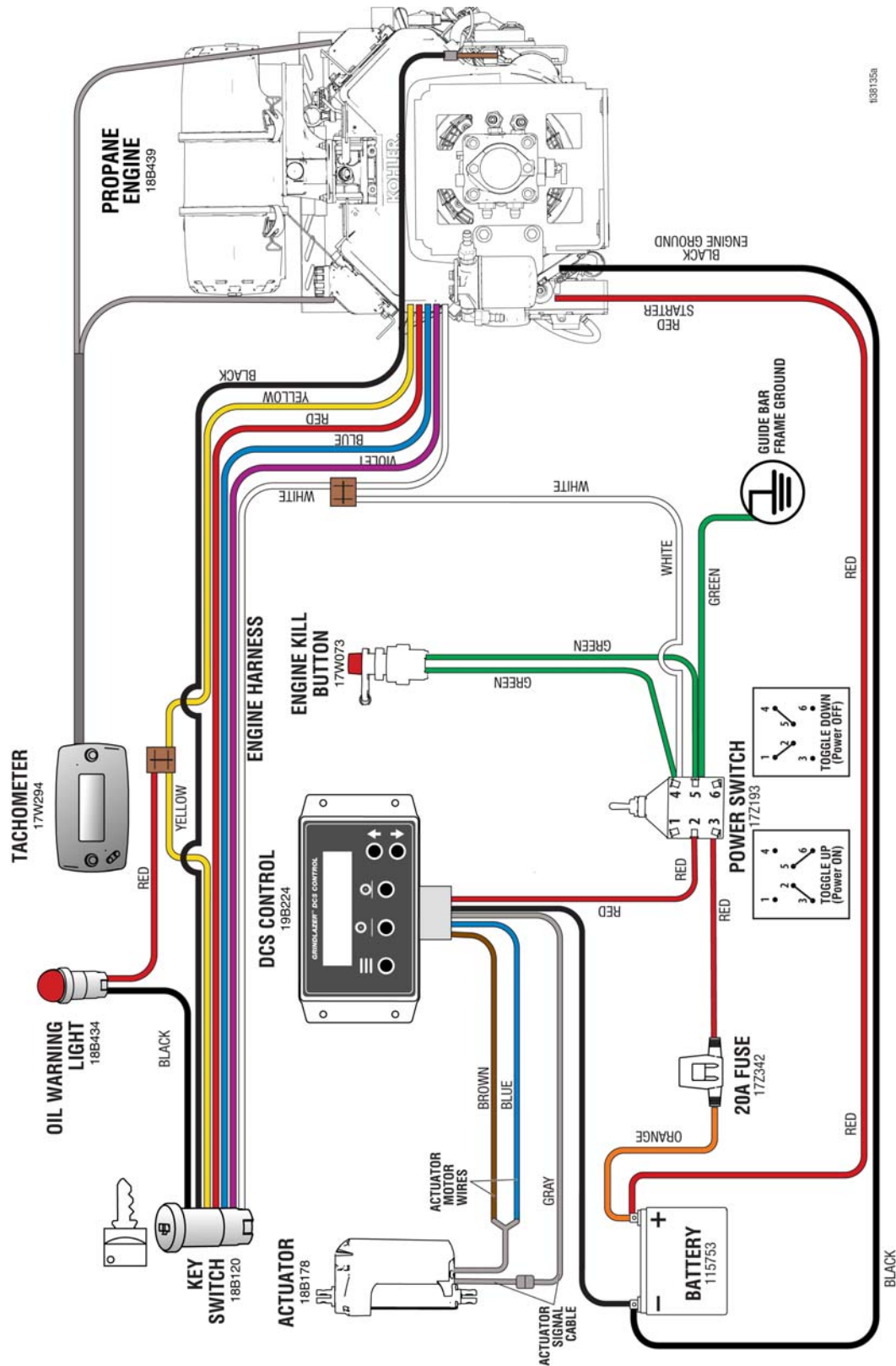
# Wiring Diagram

## Gas Models

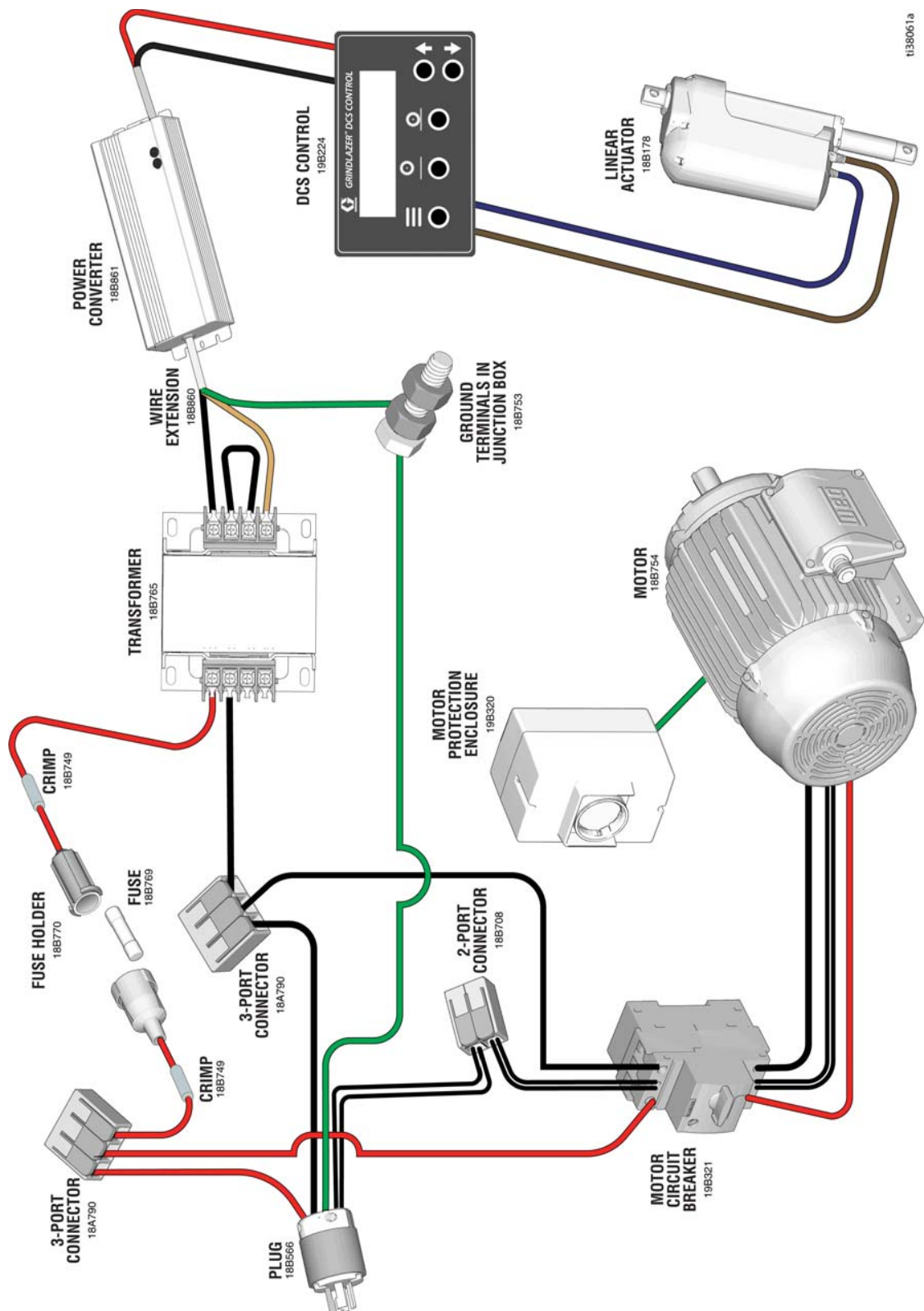




# Propane Models

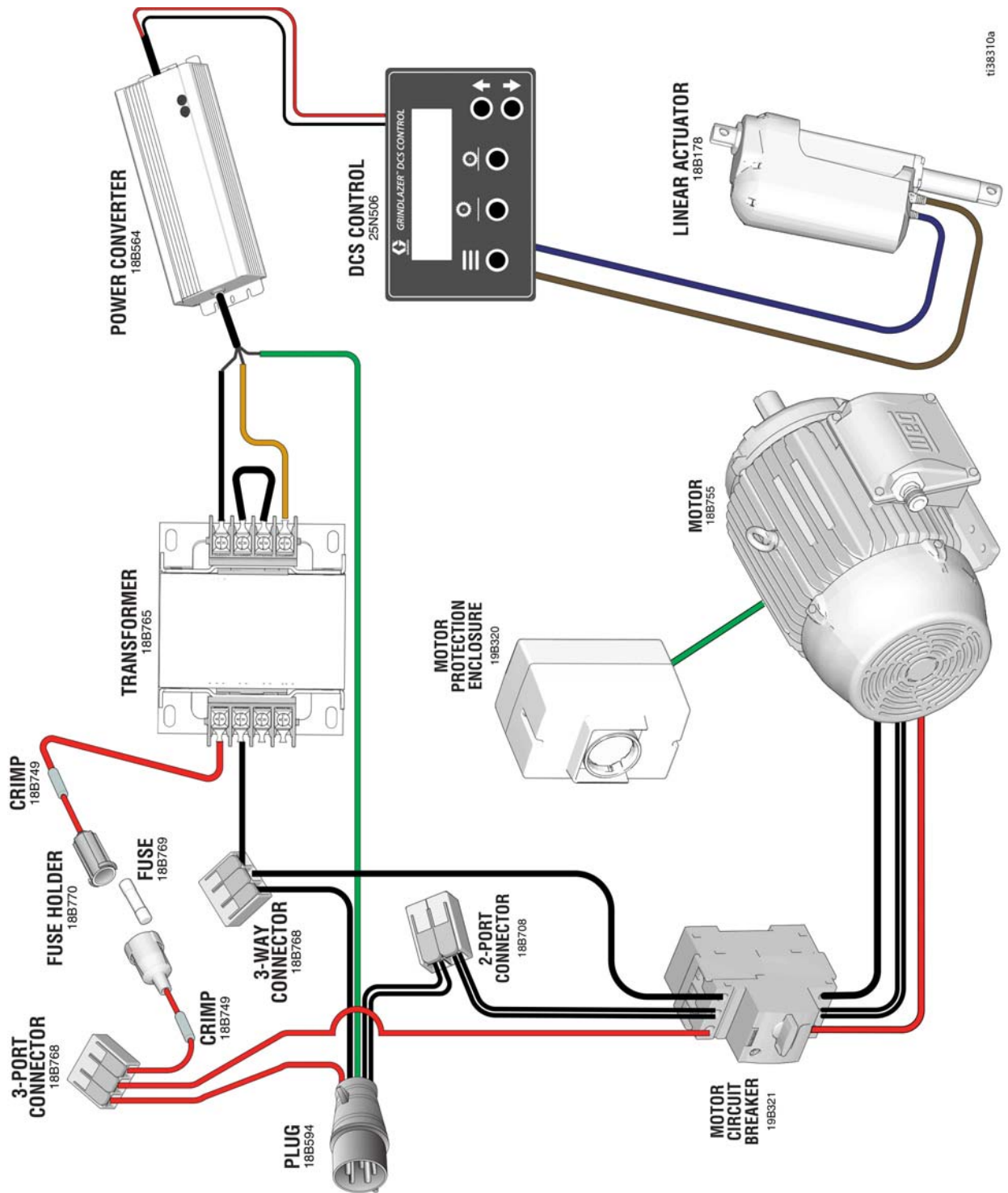


Electric Models (480V)



t138061a

# Electric Models (380V)



ti38310a

# Technical Data

DC1538 G DCS (Models 25P474 / 25R100)		
Maximum Working Pressure	1750 psi	121 bar, 12.1 MPa
Noise level (dBa)		
Sound power	107 dBa per ISO 3744	
Sound pressure	91 dBa measured at 3.1 feet (1m)	
Vibration level*		
Right/Left Hand	14.5 m/sec <sup>2</sup>	
* Vibration measured per ISO 5349 based on 8 hour daily exposure		
Dimensions/Weight (unpackaged)	US	Metric
Height	42 in.	107 cm
Length	57 in.	145 cm
Width	46 in.	117 cm
Weight	725 lb	329 kg

DC1525 P DCS (Models 25P475 / 25R101)		
Maximum Working Pressure	1750 psi	121 bar, 12.1 MPa
Noise level (dBa)		
Sound power	106 dBa per ISO 3744	
Sound pressure	90 dBa measured at 3.1 feet (1m)	
Vibration level*		
Right/Left Hand	10.0 m/sec <sup>2</sup>	
* Vibration measured per ISO 5349 based on 8 hour daily exposure		
Dimensions/Weight (unpackaged)	US	Metric
Height	42 in.	107 cm
Length	60 in.	152 cm
Width	46 in.	117 cm
Weight	715 lb	324 kg

DC1520 E DCS (Models 25P476 / 25R102 / 25P783 / 25R103)		
Maximum Working Pressure	1750 psi	121 bar, 12.1 MPa
Power Requirements		
25P476 / 25R102	480V, 60 Hz, 3 phase, 25 A	
25P783 / 25R103	380V, 50 Hz, 3 phase, 28 A	
Noise level (dBa)		
Sound power	105 dBa per ISO 3744	
Sound pressure	88 dBa measured at 3.1 feet (1m)	
Vibration level*		
Right/Left Hand	6.9 m/sec <sup>2</sup>	
* Vibration measured per ISO 5349 based on 8 hour daily exposure		
Dimensions/Weight (unpackaged)	US	Metric
Height	36 in.	91 cm
Length	60 in.	152 cm
Width	46 in.	117 cm
Weight	910 lb	413 kg

# California Proposition 65

## CALIFORNIA RESIDENTS

 **WARNING:** Cancer and reproductive harm – [www.P65warnings.ca.gov](http://www.P65warnings.ca.gov).

# Graco Standard Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

**THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.**

Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within two (2) years of the date of sale.

**GRACO MAKES NO WARRANTY, AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IN CONNECTION WITH ACCESSORIES, EQUIPMENT, MATERIALS OR COMPONENTS SOLD BUT NOT MANUFACTURED BY GRACO.** These items sold, but not manufactured by Graco (such as electric motors, switches, hose, etc.), are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of Graco, or otherwise.

## **FOR GRACO CANADA CUSTOMERS**

The Parties acknowledge that they have required that the present document, as well as all documents, notices and legal proceedings entered into, given or instituted pursuant hereto or relating directly or indirectly hereto, be drawn up in English. Les parties reconnaissent avoir convenu que la rédaction du présente document sera en Anglais, ainsi que tous documents, avis et procédures judiciaires exécutés, donnés ou intentés, à la suite de ou en rapport, directement ou indirectement, avec les procédures concernées.

## Graco Information

For the latest information about Graco products, visit [www.graco.com](http://www.graco.com).

For patent information, see [www.graco.com/patents](http://www.graco.com/patents).

**TO PLACE AN ORDER**, contact your Graco distributor or call 1-800-690-2894 to identify the nearest distributor.

*All written and visual data contained in this document reflects the latest product information available at the time of publication.  
Graco reserves the right to make changes at any time without notice.*

Original instructions. This manual contains English. MM 3A7600

**Graco Headquarters:** Minneapolis

**International Offices:** Belgium, China, Japan, Korea

**GRACO INC. AND SUBSIDIARIES • P.O. BOX 1441 • MINNEAPOLIS MN 55440-1441 • USA**  
**Copyright 2020, Graco Inc. All Graco manufacturing locations are registered to ISO 9001.**

[www.graco.com](http://www.graco.com)  
Revision C, June 2021