



E26800-00
E26900-00



GENESYS™ SERIES

**20" Transaxle Drive
Automatic Scrubber**

With Wet or AGM Batteries



**Operator and Parts
Manual**

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SPECIFICATIONS

Specifications	GeneSys™ 20DT	GeneSys™ 200RB
Productivity (sq. ft./hour)	Up to 22,500	Up to 22,500
Cleaning Pad Width	20 in. Disk	20x14 in. Orbital
Pad / Brush Dimensions	(1) 20 in. Disk	(1) 20x14 in. Orbital
Brush Motor(s)	1.0 HP	.75 HP
Pad Speed	230 RPM	2,200 RPM
Down Pressure	60, 80, 100 lbs.	60, 85, 110 lbs.
Solution Tank	13 gal.	13 gal.
Recovery Tank	15 gal.	15 gal.
Solution Flow	0 - 0.5 gpm	0 - 0.5 gpm
Battery Option (2x 12V)	130, 150 AH Wet 110 AH AGM	130, 150 AH Wet 110 AH AGM
Run Time	Up to 3.5 hr.	Up to 3.5 hr.
Sound Level	<65 dBA	<65 dBA
Vac Motor / Filter	0.62 HP / HEPA	0.62 HP / HEPA
Machine Weight (w/ Largest Battery Option)	425 lbs.	425 lbs.
Machine Dimensions	51 x 21 x 42 in.	46 x 21 x 42 in.
Squeegee Width	30 in.	30 in.
Warranty*	Rotomold - 10 years Parts/Labor - 3 years Travel - 180 days Wet and AGM Batteries - 1 year (pro-rated) Charger - 1 year	Rotomold - 10 years Parts/Labor - 3 years Travel - 180 days Wet and AGM Batteries - 1 year (pro-rated) Charger - 1 year
*See full warranty for details		

Key Options & Accessories

Fortify™ Wet Battery Protection System
 Fortify™ Programmable timer Lock-out
 Fortify™ Armor Telemetry & Reporting
 Fortify™ Foam Control
 Brush: General Purpose

SoliChem™ Chemicals: Daily: pH7 Ultra
 Degreaser: EnviroZyme® Grease Solv

For more information on the available options and accessories for your machine, contact your nearest authorized Betco® equipment representative.



SAFETY INFORMATION



The safety instructions and guidelines below must be carefully followed in order to avoid harm to the operator and damage to the machine.

- Read all labels on the machine carefully. Do not cover labels for any reason and replace damaged labels immediately.
- Before using the machine, make sure that all doors and covers are positioned as shown in this manual.
- Never remove guards that require tools for removal.
- The power cable outlet must be provided with a proper ground.
- The machine must be used exclusively by authorized and trained personnel.
- The operator must always use appropriate personal protective equipment (gloves, shoes, helmet, glasses, etc.)
- When operating the machine, the operator must be careful of people and obstructions in the surrounding area.
- Machine operating conditions are room temperature between 33°F and 100°F with relative humidity between 30% to 95%.
- Only use the machine in closed areas and do not expose it directly to rain.
- Never use the machine in an explosive environment.
- Never vacuum up flammable liquids.
- Never use the machine to gather dangerous powders.
- In the case of fire, use a powder fire extinguisher. Do not use water.
- When appropriate, use suitable signs to warn others of the presence of wet floors.
- The machine is not designed for cleaning carpets.
- Avoid running the brushes with the machine stopped; doing so may damage the floor.
- Do not hit against shelving or scaffolding.
- Avoid damaging the power cable of the battery charger from crushing, bending, cutting or stressing it.
- Whenever the power cable of the battery charger is damaged, immediately contact a BETCO® service center.
- Do not use the machine on surfaces with an inclination greater than the one shown on the serial plate.
- Do not use the machine as a means of transport.
- Do not set containers on the machine.
- Machine storage temperature is between -10°F and 130°F, never store outside under humid conditions.
- To prevent the formation of scale in the solution tank filter, do not store the machine with detergent solution in the tanks.
- Never wash the machine with direct or pressurized jets of water or with corrosive substances.
- Do not mix different types of detergent as this may produce harmful gases.
- Never use acidic chemicals which could damage the machine.
- If the machine does not work properly, perform routine maintenance. Otherwise, contact BETCO Technical Support.
- Whenever maintenance is performed, always turn off the machine and disconnect the battery connector.
- When removing the battery, unplug the battery connection, unplug the charger, and disconnect the battery terminals.
- To ensure safety, only use pads specified in this manual.
- When replacing parts, ask for ORIGINAL spare parts from an Authorized BETCO Dealer and/or Retailer.
- Have your BETCO service center check the machine once a year.
- When your BETCO machine is ready to be retired, the machine must be disposed of properly. It contains oils and electronic components. The machine was built using totally recyclable materials.
- Before recycling the machine, remove the battery.

INTRODUCTION

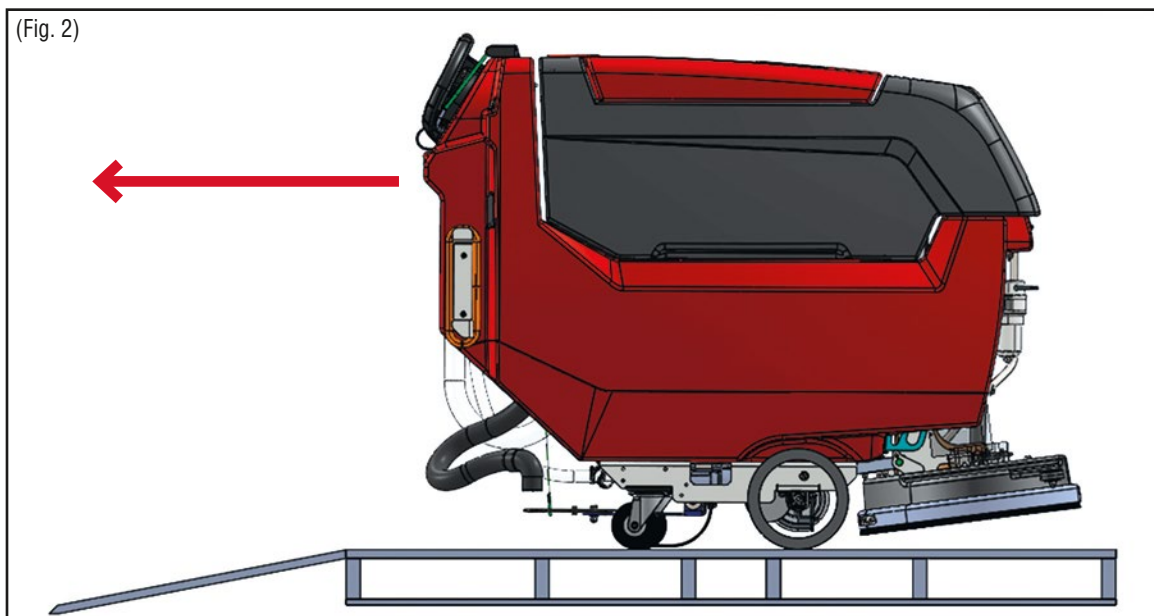
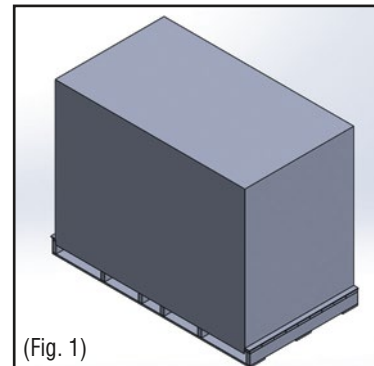
The GeneSys™ 20" Automatic Scrubber is designed for cleaning many types of hard flooring. As it advances, the scrub deck agitation combined with water/detergent solution loosens accumulated dirt from floors, and the squeegee and vacuum system collect the dirt and solution, leaving the floor clean. Use of this machine for any other purpose is not recommended.

For best performance and long machine life, the GeneSys™ 20" Automatic Scrubber must be properly maintained through regular cleaning and maintenance as outlined in this manual. Use of genuine Betco OEM parts is strongly recommended. For any questions about caring for the machine, or if issues should arise, please contact Betco's Technical Support Department or the nearest authorized Betco Equipment dealer.

MACHINE PREPARATION: UNPACKING

NOTE: Immediately upon receipt of the machine, check that all the materials indicated on delivery documents have been received and that the machine has not been damaged in transit. To receive any missing materials or to be compensated for shipping damage, immediately report any missing materials or damage to the carrier and to Betco's customer service department.

1. Remove the outer packing from the machine's shipping pallet. (Fig. 1)
2. Inspect the machine and contents for damage. Immediately report any damage found to Betco's Customer Service Department.
3. Remove interior packing materials and place contents of the box away from the pallet.
4. Cut all banding straps from machine.
5. Use a screwdriver to remove squeegee blocks and squeegee.
6. Raise the recovery tank and connect the red battery plug using the wrench provided.
7. Tuck the squeegee hose behind the water sight hose to prevent damage during unloading.
8. Fold down hinged ramp at back of machine. (Fig. 2)
9. Power the unit on with the key and raise the scrub head up to transport position.
10. Slowly reverse the machine backwards down the ramp. (Fig. 2)



TRANSPORTING THE MACHINE: TIE DOWN PROCEDURE

When transporting, the GeneSys™ 20" Automatic Scrubber must be properly tied down to keep the machine protected and in good working condition. Using features of the machine's design, below are suggestions to secure the machine efficiently and effectively during transport.



STEP 1

Before transporting up a trailer ramp, remove the squeegee assembly and place in an open, secure location on the trailer. If possible, wrap with a shipping blanket. Raise the scrub deck to the transport position.



STEP 2

Transport machine forward up the ramp into trailer and position it so that tie-downs can be used forward and rear of the machine. With pads installed, lower the scrub deck.



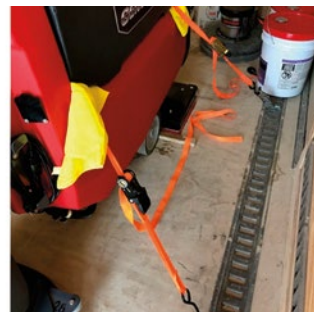
STEP 3

Open the recovery tank and route tie-down straps across the front and rear of the battery compartment as shown. Placing micro-fiber cloths or other material under the tie-down straps is recommended to protect the tanks from scratches.



STEP 4

Route front straps to tie-down locations forward of the machine. Route rear straps to tie down locations to the rear of the machine. Ratchet tie-downs until machine is secure.



BATTERIES

The GeneSys 20" Automatic Scrubber is supplied with two 12-volt batteries and an onboard battery charger. The batteries, installed in the battery compartment beneath the recovery tank, may be either Wet Cell (aka Flooded), which require periodic maintenance, or maintenance-free Absorbed Glass Mat (AGM). To avoid possible damage or injury, the charger must be properly configured for the type of batteries being used.

BATTERY INSTALLATION/REPLACEMENT



WARNING: Wet Cell batteries release hydrogen gas!

- Keep sparks and open flame away.
- Do not smoke near the machine
- Charge batteries in a well-ventilated area with the battery compartment open.

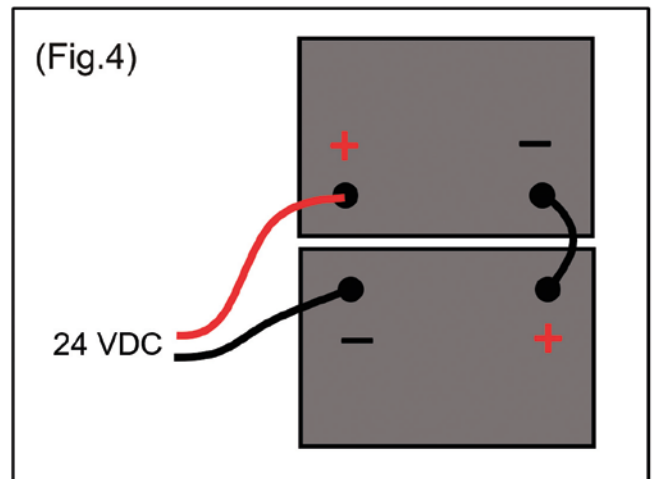


WARNING: Do not wear jewelry when working near moving or electrical components.

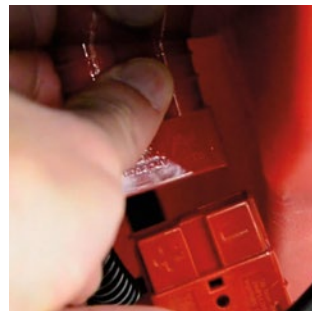


CAUTION: Always wear appropriate protective equipment (gloves, goggles, etc.) when handling and charging batteries.

1. Lower the squeegee and brush deck.
2. Turn key off.
3. Open the battery compartment by using the side handle to lift the recovery tank.
4. Place the two 12-volt batteries into the battery compartment with positive and negative posts oriented as shown in Figure 4.
5. Wire the batteries with battery cables as shown in Figure 4.
6. Using the supplied 9/16" wrench, tighten the nuts to the battery terminals. To avoid damage to the batteries and sparking during operation, all nuts to the battery terminals must be torqued to 95-105 in-lb (11-12 N-m).



7. Connect the two red Anderson plugs located on the right side of the back control panel.



Note: The 12-volt batteries must be wired in series to achieve the required 24 VDC. Orienting the batteries as shown in Fig.4 allows for ease of wiring and proper connections between battery terminals.



WARNING: Perform one battery charging cycle before using the machine.

BATTERIES *continued*

BATTERY MAINTENANCE - WET CELL (FLOODED) BATTERIES ONLY

Wet cell (Flooded) batteries need water. Wet cell batteries contain lead plates submerged in an acidic electrolyte solution. The level of electrolyte decreases over time, potentially exposing the lead plates to air and causing poor performance and possible damage to the battery. The electrolyte level also varies with the amount of charge on the battery (higher with more charge, lower with less charge), but the level should always be enough to cover the lead plates regardless of charge.

The electrolyte levels of all wet cell batteries need to be checked periodically to ensure proper performance and long battery life. Depending on the local climate and use, Betco recommends that batteries should be checked at least once a week. If the machine sees heavy use, check batteries every 2 to 3 days.



CAUTION: The electrolyte solution is a highly corrosive mixture of sulfuric acid and water -- always wear appropriate protective equipment.

WARNING: Only add water to batteries. NEVER add acid to the batteries.

NOTE: It is strongly recommended to use distilled or deionized water only. Tap water or water with a high mineral content is not recommended and should be avoided.

STEPS TO PROPERLY “WATER” BATTERIES:

1. Before charging, open the fill cap to check the current electrolyte levels of each cell.
2. For any cell where the plates are not submerged and are exposed, add only enough water to cover the exposed plates and replace the fill cap. Do not completely fill partially or fully discharged batteries.

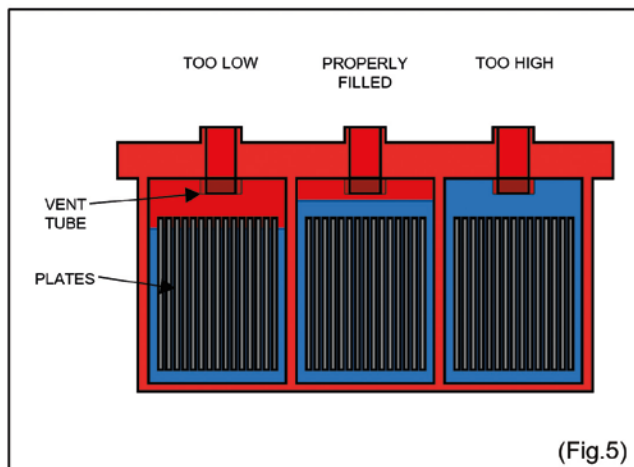


WARNING: Filling partially or fully discharged batteries to the recommended fill level will overfill the cell, causing the electrolyte solution to leak as the solution expands during charging.

3. Tightly replace all fill caps and fully charge the batteries.
4. After fully charging, open the fill cap to check the current electrolyte levels of each cell.
5. Add water to bring the electrolyte level of any cell to the recommended fill level as necessary. Fill levels for batteries generally are 1/8" to 1/4" below the vent tubes (See Fig.5). Check with the battery's manufacturer for the proper fill level for that brand and model.
6. Tightly replace all fill caps.



NOTE: Lead plates exposed to air can cause corrosion on the plates, decreasing performance and negatively impacting battery life. Proper electrolyte levels are only determined with fully charged batteries. Adding water to partially or fully discharged batteries should only be done to cover the lead plates and prevent corrosion.



(Fig.5)

GENERAL BATTERY MAINTENANCE

Keeping the batteries clean from dust, dirt, and grime will help spot signs of trouble when they appear and avoid associated problems.

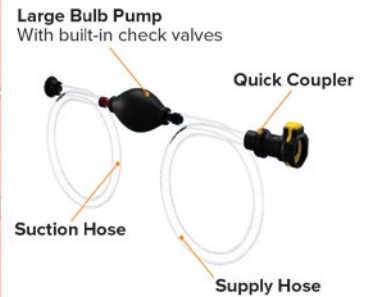
- Check that all vent caps are tightly in place.
- Clean the battery top with a cloth or brush and a solution of baking soda and water, rinse with clean water, and dry with a clean cloth. When cleaning, do not allow any cleaning solution or other foreign matter to get inside the battery.
- Clean battery terminals and the inside of cable clamps to a bright metallic shine using a post and clamp cleaner.
- Reconnect the clamps to the terminals and thinly coat them with an anti-corrosive spray or silicone gel.
- Keep the area around batteries clean and dry.

BATTERIES *continued*

MAINTAINING LEAD-ACID BATTERIES WITH FORTIFY™ WET BATTERY PROTECTION SYSTEM

The Fortify™ Wet Battery Protection System monitors the electrolyte levels of the batteries using a sensor inserted into the batteries and lights an indicator LED to notify the operator to water the batteries when levels are low.

NOTE: When low water levels are detected, scrubbing functions will be disabled until watering is completed.



WARNING: Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. During charging, strong inorganic acid mists containing sulfuric acid are released, a chemical known to the State of California to cause cancer.

STEPS TO “WATER” THE BATTERIES:

1. Use distilled water for filling the batteries. Place the distilled water jug below the top of the batteries to prevent siphoning. Insert the open end of the bulb pump into the jug of distilled water and prime the pump bulb by squeezing it until it is filled with water.
2. Attach the other end of the hose to the quick connect already on the batteries.
3. Squeeze the bulb to pump water into the battery cells. When the bulb becomes firm, all cells are full.



NOTE: Battery packs equipped with Fortify™ Wet Battery Protection may use more distilled water than expected to make the light turn off. Compress the bulb pump until it is no longer compresses. Not doing so may result in uneven filling and premature battery failure.



4. Immediately disconnect the couplers and replace the cap.

NOTE: Do not leave the pump and hose connected to the batteries after filling is complete.



ON-BOARD CHARGER

WARNING: Perform one battery charging cycle before using the machine.

The on-board charger, located on the bottom of the lower control panel, has LEDs to indicate the charging status and the type of battery to charge.

Before charging any batteries, use the “Select Battery Type” button on the charger to configure the charger for the type of battery that is being charged.

WET – Wet Cell (Flooded), requires regular “watering” (see BATTERY MAINTENANCE - WET CELL (FLOODED) BATTERIES ONLY)

AGM – Absorbed Glass Mat, maintenance-free

LITH – Lithium

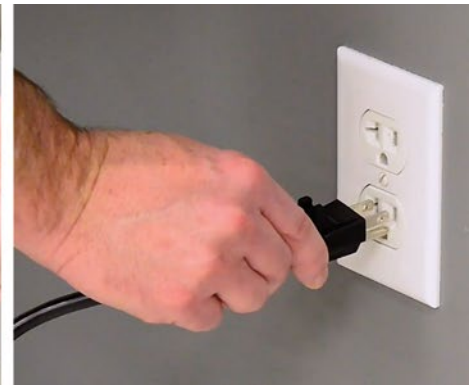
NOTE: When replacing batteries with batteries of a different type, the charger must be configured to the new battery type. Not doing so can decrease performance and damage the battery.

While charging, the “Charge Status” LED change according to the charging stage of the charger.

Blinking Red – Bulk Stage

Solid Red – Absorption Stage

Solid Green – Charge Complete / Float Maintenance



MACHINE PREPARATION / SETUP

SQUEEGEE INSTALLATION

1. Position the squeegee behind the machine and align the knob posts with the squeegee carrier slots.
2. Lift the squeegee and slide into the slots. (Fig. 1)
3. Tighten down the knobs to secure the squeegee. (Fig. 2)
4. Attach the vacuum hose to the squeegee. (Fig. 3)



(Fig. 1)



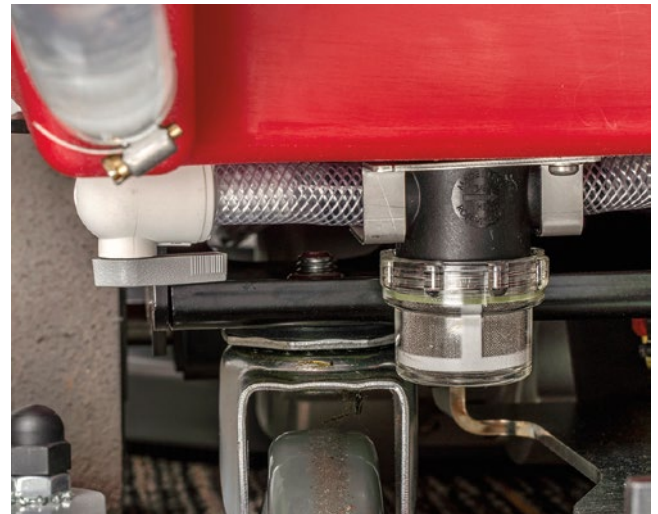
(Fig. 2)



(Fig. 3)

FILTER INSPECTION AND CLEANING

1. Close the shutoff valve for the solution tank.
2. Locate the filter housing under the frame between the transaxle and casters on the left side of the machine.
3. Unscrew and remove the filter bowl and screen to clean and remove debris.
4. For mineral deposits on the screen, descale the screen using a descaler or white vinegar.
5. Place the screen in the filter bowl and replace the bowl into the filter housing.



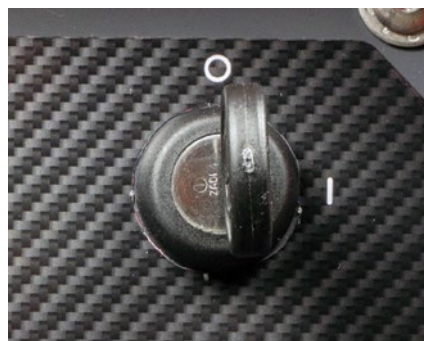
NOTE: If there is excessive debris found in the screen and bowl, drain and flush the solution tank thoroughly to remove any further debris.



MACHINE OPERATIONAL CONTROLS

ON/OFF KEY SWITCH

The key switch controls power to the machine and is located on the lower control panel. Turn the key clockwise for on **(I)** and counterclockwise for off **(O)**.



CIRCUIT BREAKERS

Circuit breakers protect the GeneSys™ machine's motors from excessive electrical loads due to misapplications of the machine. Repeated tripping of a breaker will cause damage to the motor, potentially requiring the motor to be replaced.

⚠ NOTE: If a breaker trips, allow the breaker to first cool, then press the white button on the breaker to reset it.

CAUTION: Repeated tripping of a breaker may cause damage to any of the electrical components being protected by the breaker. A breaker repeatedly tripping may be an indication of a component failure or an electrical short – contact Betco® Technical Support immediately to address the issue.



BATTERY METER

The battery meter reports the accumulated machine hours and battery charge status. The number of battery charge lights indicates the amount of charge left in the batteries. When the battery has completely discharged leaving only a single red light, the machine will disable the brush drive motor to conserve the remaining charge, allowing pickup of any remaining solution on the floor and transport back to a charging location.



MACHINE OPERATIONAL CONTROLS

HEAD LIFT

The scrub deck control knob located on the console sets the scrub deck down pressure for cleaning, as well as raising the scrub deck for transport.

Select a scrub deck down pressure appropriate for the cleaning task to be done.

Low Pressure: Daily cleaning of normal soils

Medium Pressure: Heavy soils
Deep scrub
Orbital finish removal

High Pressure: Heavy soils
Orbital finish removal
Chemical stripping



SCRUB HEAD DOWN PRESSURE SETTING		
	GeneSys™ 20DT	GeneSys™ 200RB
Low	60	60
Medium	80	85
High	100	110

SOLUTION FLOW

The solution control knob adjusts the cleaning solution flow rate and is located on the lower control panel left of the key switch. Turn the solution control knob clockwise to increase and counterclockwise to decrease the flow rate.



NOTE: Cleaning solution is only dispensed when the scrub deck is down and the console bail is pushed forward or back.



DRIVE SYSTEM

MACHINE OPERATION

To drive the machine, use the console bail located just in front of the machine handle to control the forward and reverse movement, and the speed control knob to adjust the movement speed.

The speed control knob is located on the console handle and is used to control the movement speed of the machine. Rotating the speed control knob clockwise increases the movement speed, while rotating the knob counterclockwise decreases the speed. The speed can be adjusted while the machine is in motion or when it is at rest.

⚠ NOTE: Before engaging the console bail to drive the machine, check that the speed control knob is not set to too high of a movement speed and adjust as necessary.

To move the machine forward, place hands around the console and bail and pull the bail back.

To reverse the machine, push the bail forward away from the console handle.

To stop the movement of the machine, release the bail and allow it to return to its neutral position.



DISK MACHINE PAD DRIVER AND BRUSH

PAD DRIVER AND BRUSH REMOVAL

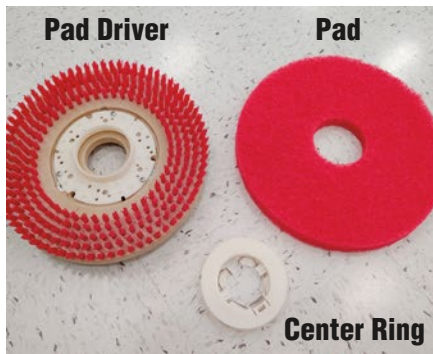
NOTE: DO NOT use any machine without a pad or brush. Operating a machine without a pad or brush will damage the machine.

1. Raise the scrub deck to the transport position.
2. Press the red "Auto Off" button, found in the center of the lower control panel. The pad drivers or brushes spin and release from the scrub deck.
3. Remove the pad drivers or brushes from under the scrub deck.



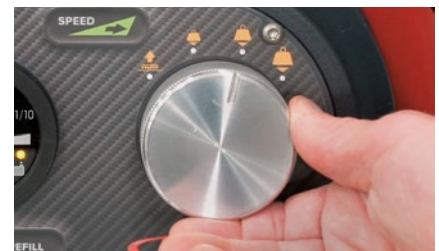
NEW PAD INSTALLATION

1. Release the centering ring by pressing down on the pad and squeezing the wire lock tabs of the centering ring inward until it releases.
2. Remove the old pad and any remnants from the bristles of the pad driver.
3. Place the new pad on the bristles of the pad driver, making sure to align center holes of the pad and pad driver.
4. Place the centering ring over the center of the pad and press down until the wire lock tabs click into place, securing the pad and centering ring to the pad driver.



PAD DRIVER AND BRUSH INSTALLATION

1. Place the pad driver assemblies under the scrub deck and within the skirt of the scrub deck shroud.
2. Turn the key switch to the on position (I) and adjust the speed control knob to the slowest speed by turning the knob fully counterclockwise.
3. Lower the scrub deck to MEDIUM down pressure.
4. To help align the attachment lugs of the pad driver to the scrub deck motors, slightly pull or push the machine, allowing the motor hubs to drop into the center holes of the pad driver assemblies.
5. Pull back on the console bail to activate the scrub deck motors and engaging the attachment lugs with the motor hubs.
6. Raise the scrub deck to the transport position to check that the pad driver assemblies correctly attached to the scrub deck. If the pad driver did not attach, return to step 3 and repeat as necessary.



ORBITAL MACHINE PAD

STANDARD CLEANING OPERATIONS

⚠ NOTE: DO NOT use any machine without a pad. Operating a machine without a pad will damage the machine.

1. Attach an orbital pad to the scrub head by overlapping the front by ½” and aligning the sides. The overlap of the pad to the scrub head helps the pad more evenly absorb and distribute the cleaning solution.
2. Press the pad into position once the pad is aligned.
3. Lower the scrub deck onto the floor and check that the pad is properly aligned.



ORBITAL FINISH REMOVAL

Finish removal uses a two-pad setup. A red or white pad acts as a “backer pad” that helps compensate for flaws and variations in the floor. A maroon pad is for surface preparation.

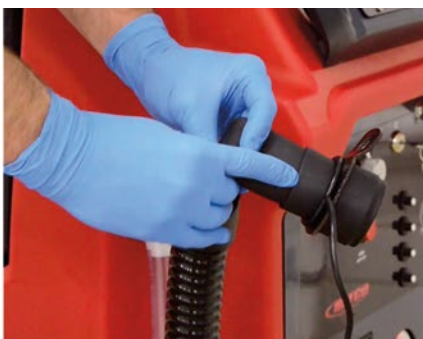
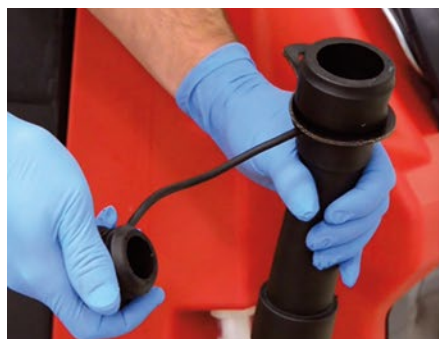
1. Attach the red pad to the orbital pad driver plate as shown above.
2. Wet the maroon pad prior to installation to minimize excessive friction upon initial start up.
3. Place the maroon pad on the floor and position it so that when the scrub deck is lowered the red and maroon pads are aligned and stacked.
4. Fill the solution tank with clean water.
5. Install the pad assembly as described above.
6. Depending on condition or hardness of the finish being removed, the scrub deck down pressure should be set to medium or high pressure
7. The solution flow rate should be set to a low flow rate (approximately 25% of full flow rate) to maximize finish removal, to rinse, clean the floor and pad.
8. Forward speed should be set to 25% to 50% of normal speed to ensure maximum finish removal (approximately 50-100 feet per minute).



RECOVERY SYSTEM

DRAINING THE RECOVERY TANK

1. Find an approved drain location to empty the recovery tank.
2. Lift the drain hose off of the hose hook, remove the cap (keeping it above the tank's water level), fold over the collar and lower into the drain location.
3. Let the dirty water drain into the drain by slowly releasing the collar.
4. While draining, lift the recovery tank lid to the wide-open position.



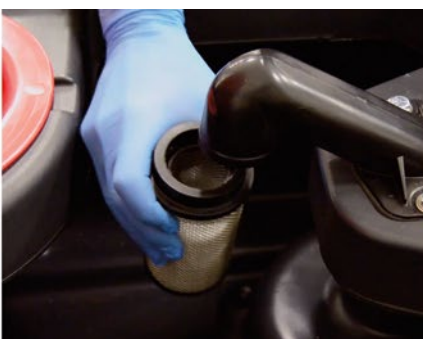
CLEANING THE RECOVERY TANK WHEN DRAINING

1. Rinse out the recovery tank often to prevent buildup of dirt, debris, and any contaminants.
2. Use a hose to wash debris and sediment from the bottom of the tank.

⚠ NOTE: Regularly use cleaner and sanitizer with a cloth or sponge to prevent mold and mildew inside the recovery tank.

VACUUM BALL CAGE

1. Remove clamp (if present) and vacuum ball cage filter.
2. Rinse the filter thoroughly.
3. Replace vacuum ball cage filter and clamp (if present).



RECOVERY SYSTEM *continued*

FORTIFY™ FOAM CONTROL

Proactively control foam in the recovery tank and protect the vacuum fan with the Fortify™ foam control puck underneath the debris tray inside the recovery tank.

FORTIFY™ FOAM CONTROL PUCK REPLACEMENT

1. Open the recovery tank lid. Remove the debris tray and flip it over.
2. Turn the puck cage counterclockwise to release it from the debris tray. Replace puck as needed. Reattach puck cage to the debris basket.
3. Return debris basket to recovery tank.



⚠ WARNING: DO NOT use chlorine. Harmful fumes can be created from mixed cleaners and chlorine.



RECOVERY LID

Leave the recovery lid open after cleaning and while in storage. This allows the recovery tank to dry quickly and reduces the chance of mold and mildew growth.



SQUEEGEE ASSEMBLY

The GeneSys™ 20" Automatic Scrubber comes standard with Linatex® squeegee blades, providing tear-resistance and wet-abrasion resistance for optimal water pick-up on most floor surfaces.

The Linatex® blades use the patented Airoflex® design which features valves along the squeegee blade edge. The Airoflex® valves flex open when on smooth floors and close on porous or grouted tile floors to increase vacuum performance by up to 40%.



⚠ CAUTION: DO NOT ADJUST SQUEEGEE CASTER HEIGHT.
The caster height has been set at the factory for optimal squeegee performance.

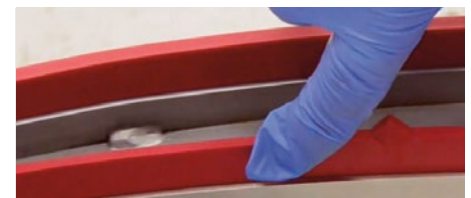
SQUEEGEE BLADES CLEANING

1. Remove the squeegee assembly from the machine by loosening the two knobs.
2. Thoroughly clean and rinse the underside of the squeegee frame, blades and neck.
3. Wipe down and dry the squeegee to remove any water and loose debris.



SQUEEGEE BLADES INSPECTION

1. Inspect the front and rear squeegee blades. The forward edges should be sharp and defined.
2. Worn blades should be flipped or replaced if worn halfway through the thickness.



SQUEEGEE BLADE REMOVAL AND INSTALLTION

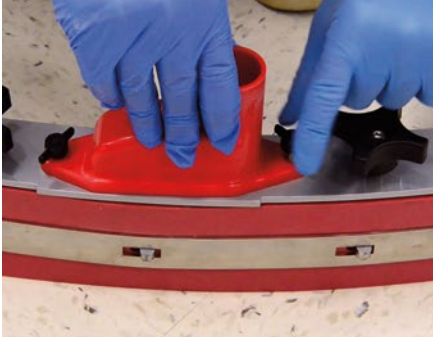
1. Release the latch and slide the band clamp off the hook on the other side.
2. Blades can be flipped length wise or top to bottom to use all four edges over the lifetime of the blade.
3. Place the blade over the assembly ensuring the holes align and replace the band clamp - make sure snug and tight when clamped.



SQUEEGEE ASSEMBLY *continued*

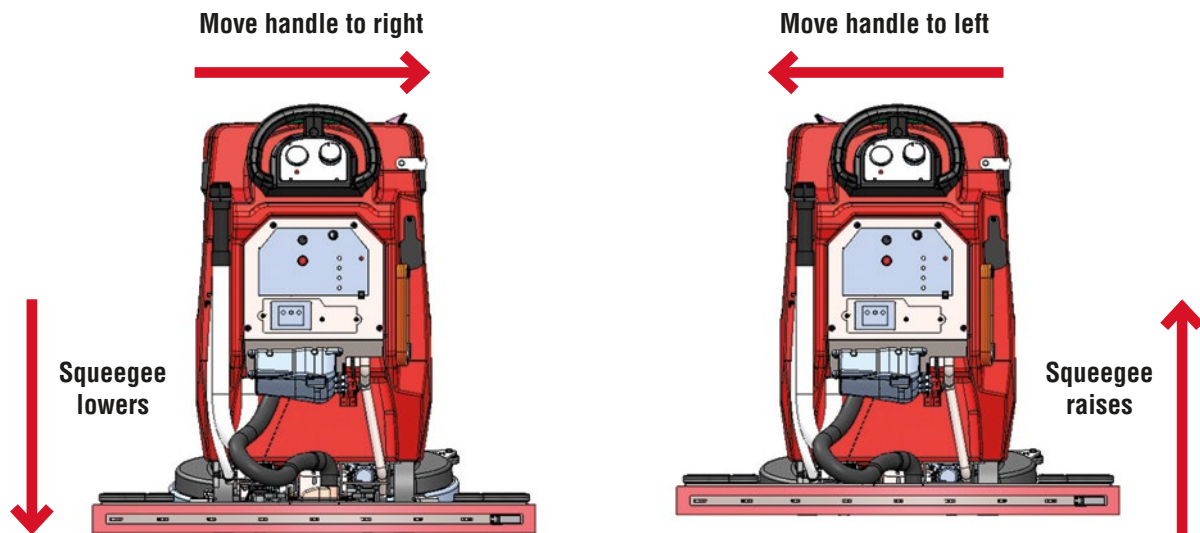
DRIP TRAP INSPECTION

1. Inspect the drip trap on the topside of the squeegee by removing the two thumb screws.
2. Rinse off the drip trap and remove any debris.
3. Wipe and clean the squeegee frame before re-installing the drip trap.



SQUEEGEE OPERATION

1. To lower the squeegee, move the squeegee lever to the right. The vacuum motor will come on.
2. To raise the squeegee, move the squeegee lever to the left. The vacuum motor will turn off after 7 seconds.



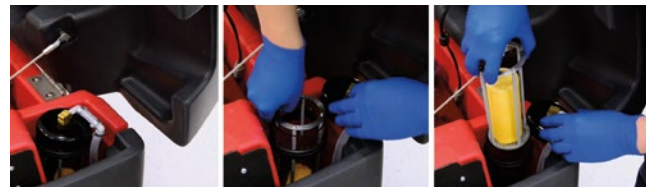
SOLICHEM™ TECHNOLOGY SYSTEM

Betco's SoliChem™ Technology is an on-board chemical proportioning system that eliminates the need to pour chemical into the solution tank. Plan water from the solution tank flows over a SoliChem™ solid, dissolving the solid, and the proportioned cleaning solution is delivered directly to the scrub deck. As the solid dissolves, the SoliChem™ system monitors the amount of cleaning agent delivered to the scrub deck and alerts the operator when the SoliChem™ solid has been depleted and needs to be replaced.

⚠ WARNING: Never use acidic chemicals which could damage the machine.
Do not use water exceeding 120° F (48.9° C).

SOLICHEM™ SETUP AND OPERATION

1. Add water to the solution tank through the front or rear fill locations, watching the sight tube on the back of the machine to determine when the solution tank is full.
2. Lift the recovery tank and remove the SoliChem™ canister cap.
3. Lift out the canister cage and remove any remaining solids (if present).
4. Place a new SoliChem™ solid into the canister cage and insert cage into canister.
5. Replace the SoliChem™ canister cap.
6. During scrubbing operations, the “SoliChem™ Refill” LED indicator on the console will light to indicate that the SoliChem™ solid has sufficiently dissolved and may need to be replaced. Follow Steps 3 thru 6 to replace the SoliChem™ solid.



CONVENTIONAL OPERATION WITHOUT SOLICHEM™

1. Lift the recovery tank and remove the SoliChem™ canister cap.
2. Lift out the canister cage and remove any remaining solids (if present).
3. Insert the empty cage into canister and replace the SoliChem™ canister cap.
4. Turn off SoliChem™ level monitoring using the “SoliChem™ On/Off” switch located on the lower controls panel.
5. Add in properly diluted chemical (as desired) into the front fill port.



FORTIFY™ ARMOR™ TELEMETRY

The optional ARMOR™ Telemetry unit can monitor and report various metrics of machine performance, including run time activity, charging history, and impact notifications. The information collected is sent via cellular network to Armordata.com, where the web-based dashboard interface allows easy viewing of the equipment's productivity can be tracked.

DEVICE REGISTRATION

1. Locate and write down the serial number of the machine on the bottom of the recovery tank in the battery compartment.
2. Determine the facility that the machine will operate in, the person that will be monitoring the machine, and the main service contact.
3. Go to www.armordata.com and click the "Register an ARMOR Device" link under ARMOR Support.
4. Fill out the form and click "Save info and register device".

NOTE: The machine data will appear in the Armordata.com dashboard on the next business day. A 12-month free subscription to Armordata.com is included with the purchase of the Fortify™ Armor™ option, and begins once the unit has been registered.

ARMOR™ TELEMETRY BUTTONS

Maintenance Performed
New Batteries Installed
Silence Alarm

Press and hold to log that the machine has been maintained
Press and hold to log that new batteries have been installed
Press to silence the alarm for 24 hours



DATA COLLECTION

The ARMOR™ Telemetry device automatically uploads collected data once a day and after every charge/discharge event. If the device cannot connect to a cellular network, it will store the data and send once a connection is restored. The data recorded by the ARMOR device can be viewed at ARMOR's website, <http://armordata.com>.

RECORDING MAINTENANCE EVENTS

The buttons on the ARMOR™ Telemetry device allow the operator to record when various maintenance events are performed on the machine. To record when general maintenance event has been completed, press and hold the "Maintenance Performed" button, or when batteries have been replaced, press and hold the "New Batteries Installed" button.

If the ARMOR™ Telemetry device alarm is activated, operator can silence the alarm by pressing the "Silence Alarm" button. The alert notification on Armordata.com will remain in effect until resolved.

When the operator has an issue with the machine and needs assistance, a notification can be sent to Armordata.com, which will notify anyone who has been registered to receive notifications, by pressing and holding the "Maintenance Performed" button and the "Silence Alarm" button at the same time.

FORTIFY™ PROGRAMMABLE TIMER LOCKOUT

The optional timer lockout can be programmed to limit operation of the machine by time of day and days of the week, preventing unauthorized use while not interfering with productivity. A red status light on the timer lockout is active when timer lockout has enabled machine operation. The timer is located on the back panel of the machine and is protected from tampering by a metal cover.

BUTTONS

WEEK	Changes the day of the week.
HOUR	Increments the hour.
MIN	Increments the minute.
RECALL	Recalls or clears the last settings of a program.
CLOCK	Allows adjustment of the clock when held down
PROG	Indexes through each programs on/off settings.
MANUAL	Cycles through machine modes.
R	Resets the timer to the factory settings.



TIME OF DAY CLOCK ADJUSTMENT

1. If necessary, press the **“CLOCK”** button to display the current time of day.
2. To adjust the current day of the week, press and hold the **“CLOCK”** button and press the **“WEEK”** button to select the current day of the week.
3. To adjust the current time of day, press and hold the **“CLOCK”** button and press the **“HOUR”** or **“MIN”** button to select the hour and minute of the current time of day.
4. Release the **“CLOCK”** button when correct day of week and time have been set.



NOTE: Pressing and holding the **“CLOCK”** button for 3 seconds toggles the clock display between 12-hour and 24-hour time.

TIMER LOCKOUT OPERATION

The timer lockout enables or disables machine operation based on the timer lockout mode selected. The timer lockout mode is selected by pressing the **“MANUAL”** button on the timer to cycle through the three modes of operation:

“ON”	Machine operation is enabled regardless of programming.
“OFF”	Machine operation is disabled regardless of programming.
“AUTO”	Machine operation is enabled or disabled based on programming.

TIMER LOCKOUT PROGRAMMING

When the timer lockout mode is set to **“AUTO”**, operation of the machine is enabled or disabled according to the programmed time schedules stored in the timer. Up to 16 programs can be created, each scheduling the day(s) of the week and times of day interval for the machine operation to be enabled and disabled (**“1on”**, **“1off”**, ... **“16on”**, **“16off”**).

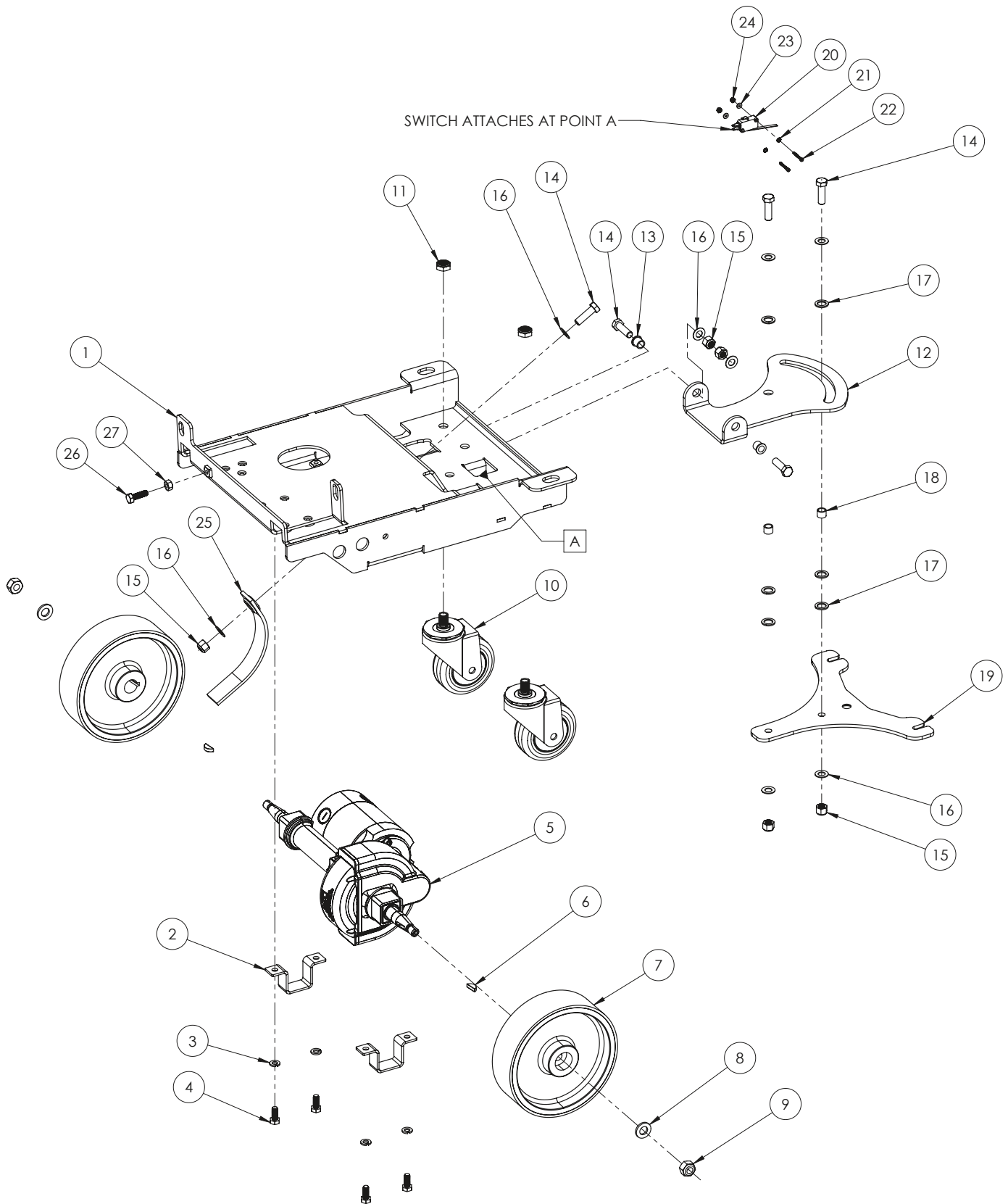
1. Press the **“PROG”** button to enter programming mode.
2. Press the **“PROG”** button to select the program number to configure. Each program requires setting a time to enable machine operation (e.g. **“4on”**) and a time to disable machine operation (e.g. **“4off”**). Pressing the **“PROG”** button will cycle thru all 16 programs and their respective **“on”** and **“off”** time settings.
3. With the desired program and **“on”** or **“off”** number selected, press the **“WEEK”** button until the desired day(s) are displayed at the top of the screen to enable or disable machine operation.
4. Press the **“HOUR”** and **“MIN”** buttons until the desired time is displayed to enable or disable machine operation.
5. While in programming mode, pressing **“PROG”** will continue to cycle through program numbers, allowing the configuring of any of the 16 available programs.
6. Press the **“CLOCK”** button to leave programming mode.
7. To enable the timer lockout to use the programmed time schedules for machine operation, press the **“MANUAL”** button until **“AUTO”** is shown on the right to enable the programs.



NOTE: While in the programming mode **“RECALL”** will disable the displayed program or load the previous setting used for that program.

NOTE: When setting a program to be used overnight, ensure that the **“on”** and **“off”** settings for consecutive days (e.g. Friday 10PM **“on”** and Saturday 8AM **“off”**).

FRAME DIAGRAM



FRAME PARTS LISTING

Item#	Part #	Description	Qty.
1	E28878	FRAME, WELDMENT, GENESYS 20	1
2	E29400	BRACKET, TRANSAXLE MTG	2
3	E81067	WASHER, LOCK, 0.322 ID x 0.583 OD, SPLIT, ZP	4
4	E81089	BOLT, HEX HD, 5/16-18 x 0.750 LG, ZP	4
5	E28876	TRANSAXLE, 16.8 LG	1
6	E29439	KEY, WOODRUFF, 19mm DIA x 5mm	2
7	E28882	WHEEL, 7in TRANSAXLE	2
8	E83702	WASHER, FLAT, 13mm ID x 24mm OD, 2.7mm THK	2
9	E86489	NUT, HEX, M12-1.75, NYLOC	2
10	E29021	CASTER, 3.500 WHEEL DIA, 1/2-13 x 0.750 STEM2	2
11	E81088	NUT, HEX, 1/2-13, JAM, NYLOC, ZP	2
12	E28879	BRACKET, SQUEEGEE LIFT	1
13	E28591	BEARING, SLEEVE, 0.376 ID x 0.501 OD, 0.500 LG, FLANGED	2
14	E29436	BOLT, HEX HD, 3/8-16 x 1.250 LG, SS	5

Item#	Part #	Description	Qty.
15	E11146	NUT, HEX, 3/8-16, NYLOC, ZP	5
16	E29438	WASHER, FLAT, 0.406 ID x 0.750 OD, 0.040 THK	8
17	E28937	WASHER, FLAT, 0.505 ID x 0.750 OD, 0.067 THK, NYLON	6
18	E28936	BEARING, SLEEVE, 0.375 ID x 0.501 OD x 0.375 LG	2
19	E28880	PLATE, SQUEEGEE SWING	1
20	E28952	SWITCH, SNAP ACTION, SPDT	1
21	E28821	WASHER, LOCK, 0.115 ID x 0.260 OD, EXT TOOTH, ZP	2
22	E28769	SCREW, SOC HD HEX, #4-40 x 0.875 LG, SS	2
23	E29368	WASHER, FLAT, 0.125 ID x 0.312 OD, 0.030 THK	2
24	E28770	NUT, HEX, #4-40, NYLOC	2
25	E29459	STATIC STRAP	1
26	E81072	BOLT, HEX HD, 5/16-18 x 1.000 LG	1
27	E12524	NUT, HEX, 5/16-18, SS	1

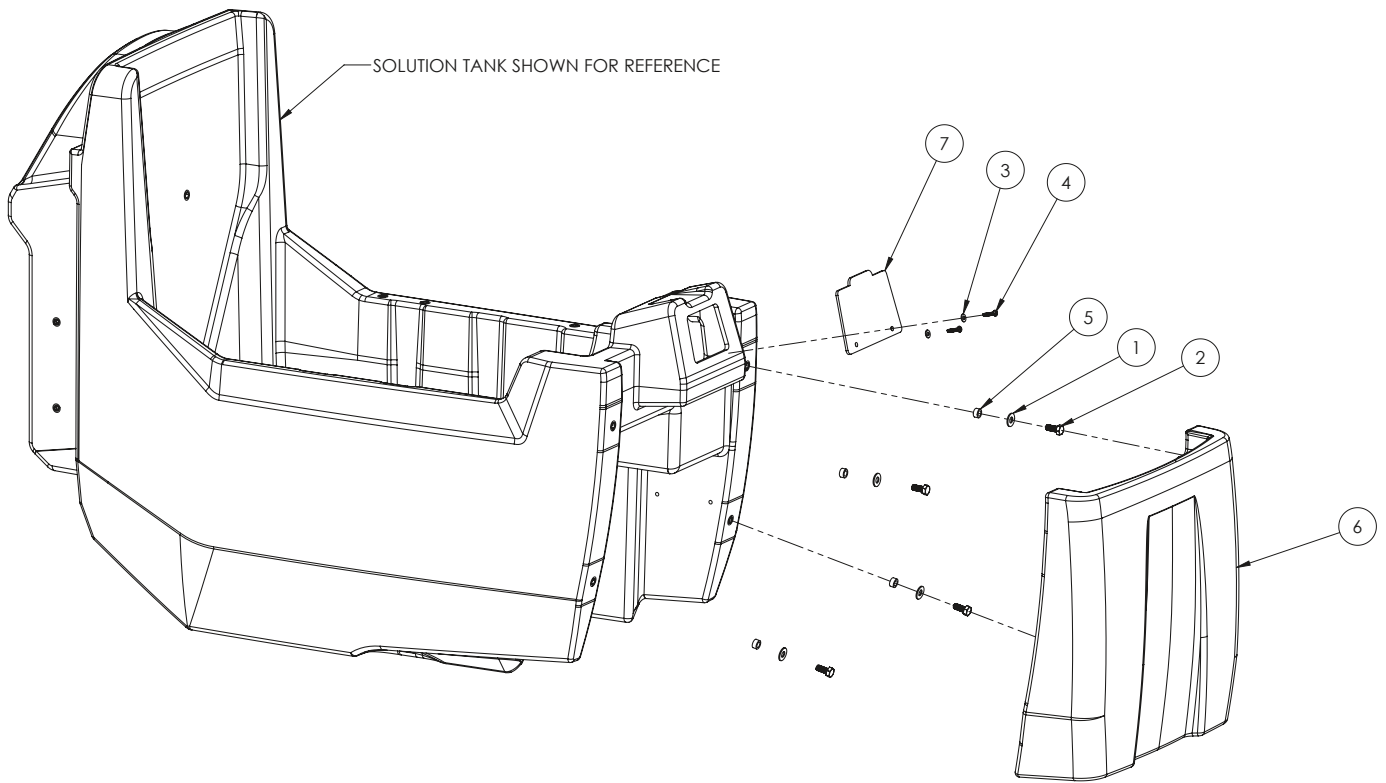
Exploded view diagram of the front panel assembly for a vacuum cleaner. The diagram shows the front panel (1) being attached to the main body (2) using various screws (3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21) and a hinge (17). The diagram includes a reference frame (FRAME SHOWN FOR REFERENCE) and a list of parts numbered 1 through 21.

Parts list:

- 1: Front panel
- 2: Main body
- 3: Screw
- 4: Screw
- 5: Screw
- 6: Screw
- 7: Screw
- 8: Screw
- 9: Screw
- 10: Screw
- 11: Screw
- 12: Screw
- 13: Screw
- 14: Screw
- 15: Screw
- 16: Screw
- 17: Hinge
- 18: Screw
- 19: Screw
- 20: Screw
- 21: Screw

Item#	Part #	Description	Qty.
12	E28761	SCREW, PAN HD TORX, #8-16 TF x 0.750 LG	4
13	EP50232	HOSE, 3/8 ID, REINFORCED CLEAR PVC, 1.50 LG	1
14	EP50226	HOSE, 3/8 ID, REINFORCED CLEAR PVC, 3.25 LG	1
15	EP50227	HOSE, 3/8 ID, REINFORCED CLEAR PVC, 4.25 LG	1
16	EP50229	HOSE, 3/8 ID, REINFORCED CLEAR PVC, 31.00 LG	1
17	EP50230	TUBE, 3/4 ID, CLEAR PVC, 24.00 LG	1
18	E89720	CLAMP, HOSE, 0.438 - 0.782 DIA	2
19	E28816	CHECK VALVE, 3/8 BARB, PLASTIC	1
20	E28773	CLAMP, HOSE, SINGLE PINCH	2
21	E28999	FITTING, BALL VALVE, 90, 3/8 BARB x 3/8 NPT, PLASTIC	1

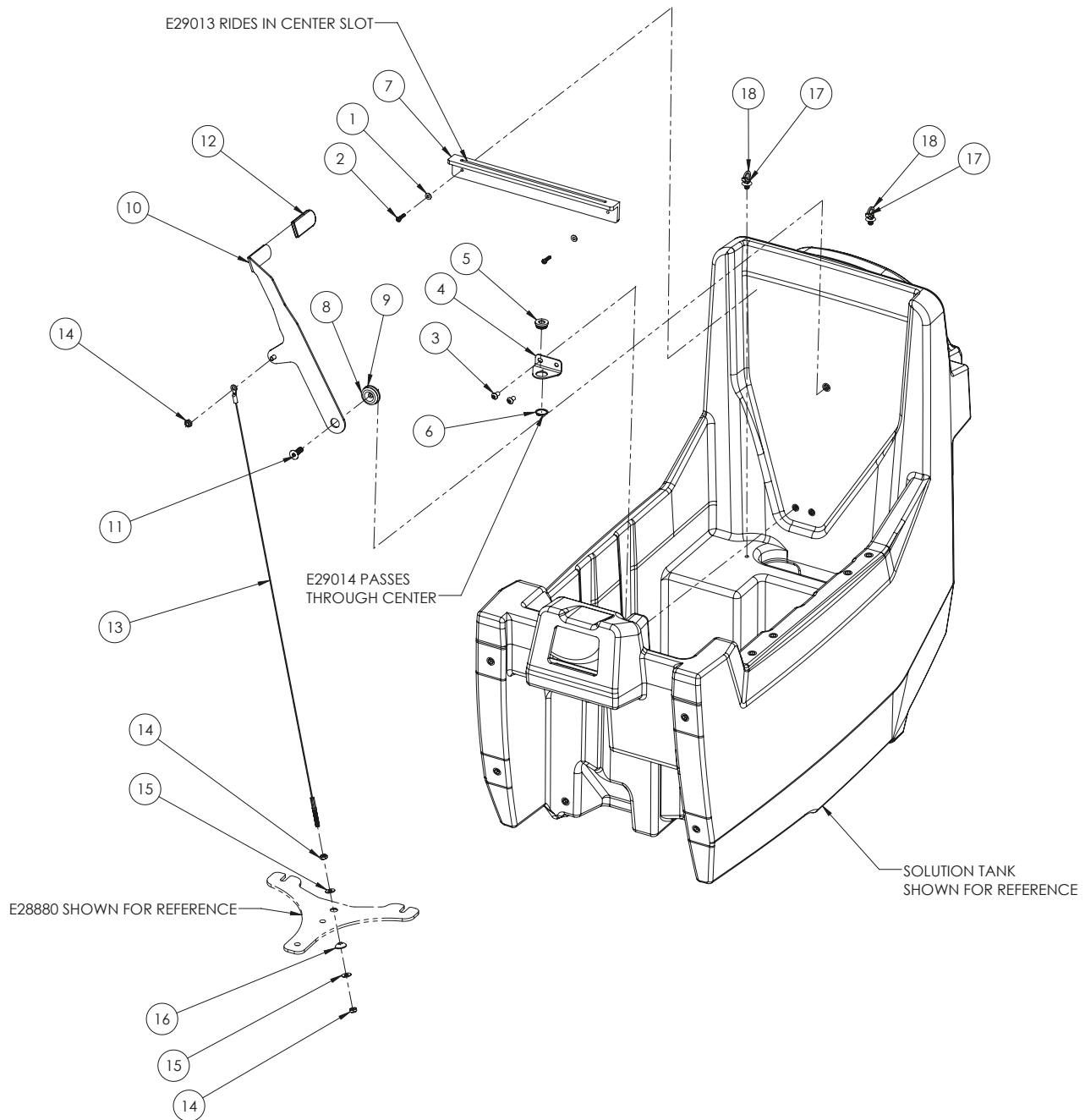
SOLUTION TANK FRONT COVER DIAGRAM AND PARTS LISTING



Item#	Part #	Description	Qty.
1	E29403	WASHER, FLAT, 0.344 ID x 0.750 OD, 0.057 THK	4
2	E81089	BOLT, HEX HD, 5/16-18 x 0.750 LG, ZP	4
3	E28775	WASHER, FLAT, 0.203 ID x 0.438 OD, 0.040 THK, SS	2
4	E28761	SCREW, PAN HD TORX, #8-16 TF x 0.750 LG	2

Item#	Part #	Description	Qty.
5	E29579	BUSHING, SLEEVE, 0.315 ID x 0.500 OD, 0.250 LG, OIB	4
6	E28888	FRONT COVER, SOLUTION TANK w/ CUTOUTS	1
7	E28825	COVER, FRONT FILL PORT	1

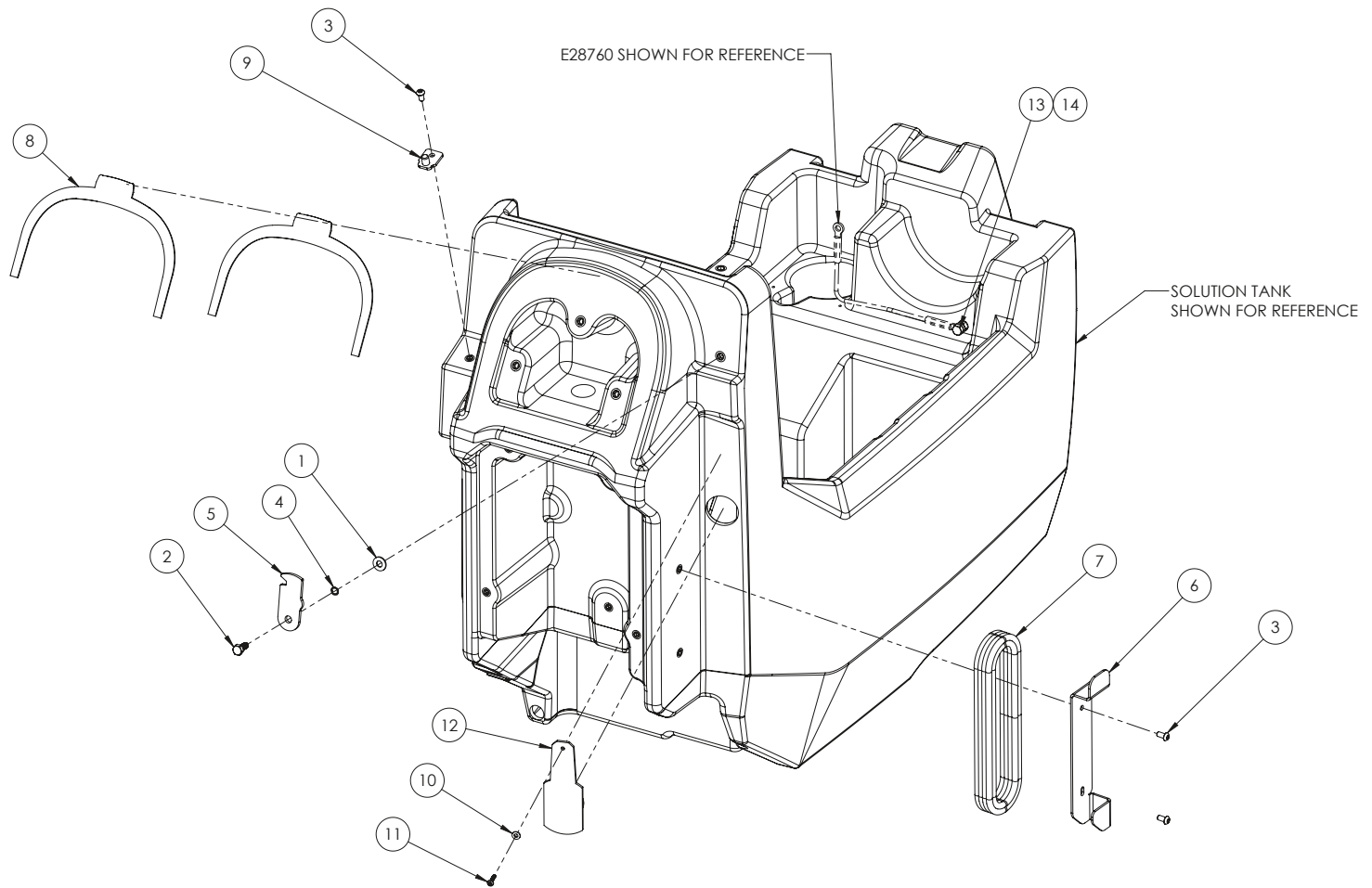
SOLUTION TANK SQUEEGEE LIFT LEVER DIAGRAM AND PARTS LISTING



Item#	Part #	Description	Qty.
1	E28775	WASHER, FLAT, 0.203 ID x 0.438 OD, 0.040 THK, SS	2
2	E28761	SCREW, PAN HD TORX, #8-16 TF x 0.750 LG	2
3	E28648	SCREW, BUTTON HD HEX, 1/4-20 X 0.500 LG	2
4	E28714	BRACKET, CABLE GUIDE	1
5	E28715	GUIDE, SQUEEGEE CABLE	1
6	E28722	RETAINING RING, EXTERNAL, 0.75 SHAFT X 0.046 GROOVE	1
7	E28992	GUIDE, SQUEEGEE LEVER, GENESYS 20	1
8	E28718	BUSHING, SQUEEGEE LEVER	1
9	E28719	WASHER, FLAT, 0.656 ID x 1.312 OD, 0.094 THK, NYLON	1

Item#	Part #	Description	Qty.
10	E29013	LEVER, SQUEEGEE LIFT, WELDMENT	1
11	E28763	SCREW, FLAT HD HEX, 5/16-18 x 1.000 LG, BO	1
12	E28721	CAP, SQUEEGEE LEVER	1
13	E29014	SQUEEGEE LIFT CABLE ASSY	1
14	E29565	NUT, HEX, 1/4-20, THIN, NYLOC	3
15	E28617	WASHER, FLAT, 0.281 ID x 0.625 OD, 0.050 THK, SS	2
16	E28717	WASHER, SPHERICAL, 0.280 ID x 0.750 OD, ZP	1
17	E28621	WIRE TIE PUSH MOUNT	2
18	E83523	CABLE TIE, 4.125 LG x 0.125 W	2

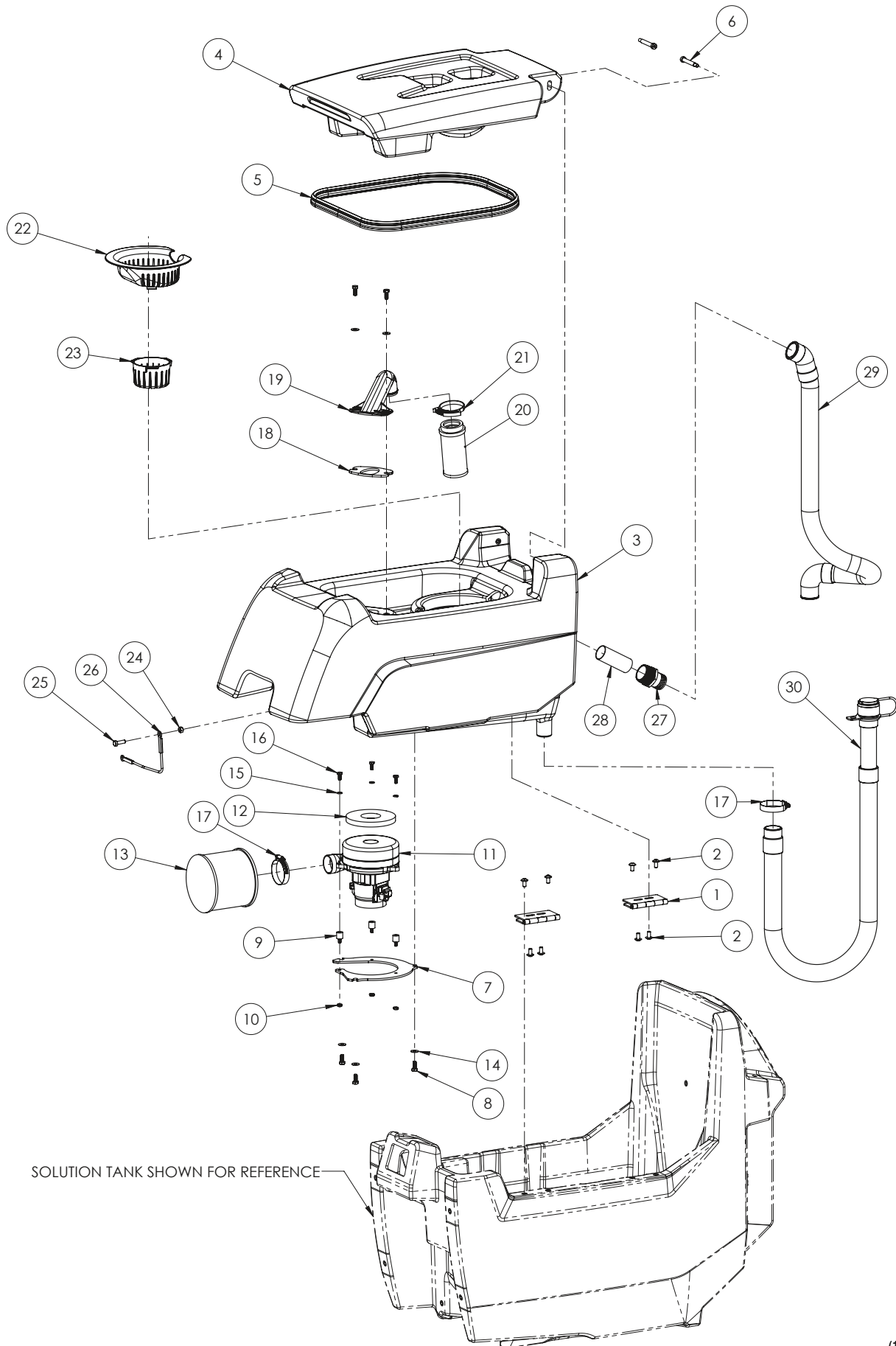
SOLUTION TANK REAR DIAGRAM AND PARTS LISTING



Item#	Part #	Description	Qty.
1	E29403	WASHER, FLAT, 0.344 ID x 0.750 OD, 0.057 THK	1
2	E81089	BOLT, HEX HD, 5/16-18 x 0.750 LG, ZP	1
3	E28648	SCREW, BUTTON HD HEX, 1/4-20 X 0.500 LG	3
4	E28765	WASHER, LOCK, 0.320 ID x 0.437 OD, WAVE, ZP	1
5	E28707	HANGER, SQUEEGEE	1
6	E28737	BRACKET, CHARGER CORD WRAP	1
7	E28704	ELECTRICAL CORD, 18/3 105C, BLACK	1

Item#	Part #	Description	Qty.
8	E28823	GASKET, GENESYS CONSOLE HANDLE	2
9	E28712	HANGER, DRAIN CUFF	1
10	E28775	WASHER, FLAT, 0.203 ID x 0.438 OD, 0.040 THK, SS	1
11	E28761	SCREW, PAN HD TORX, #8-16 TF x 0.750 LG	1
12	E28837	COVER, REAR FILL PORT	1
13	E29392	BOLT, HEX HD, 5/16-18 x 1.000 LG	1
14	E12524	NUT, HEX, 5/16-18, SS	1

RECOVERY TANK DIAGRAM

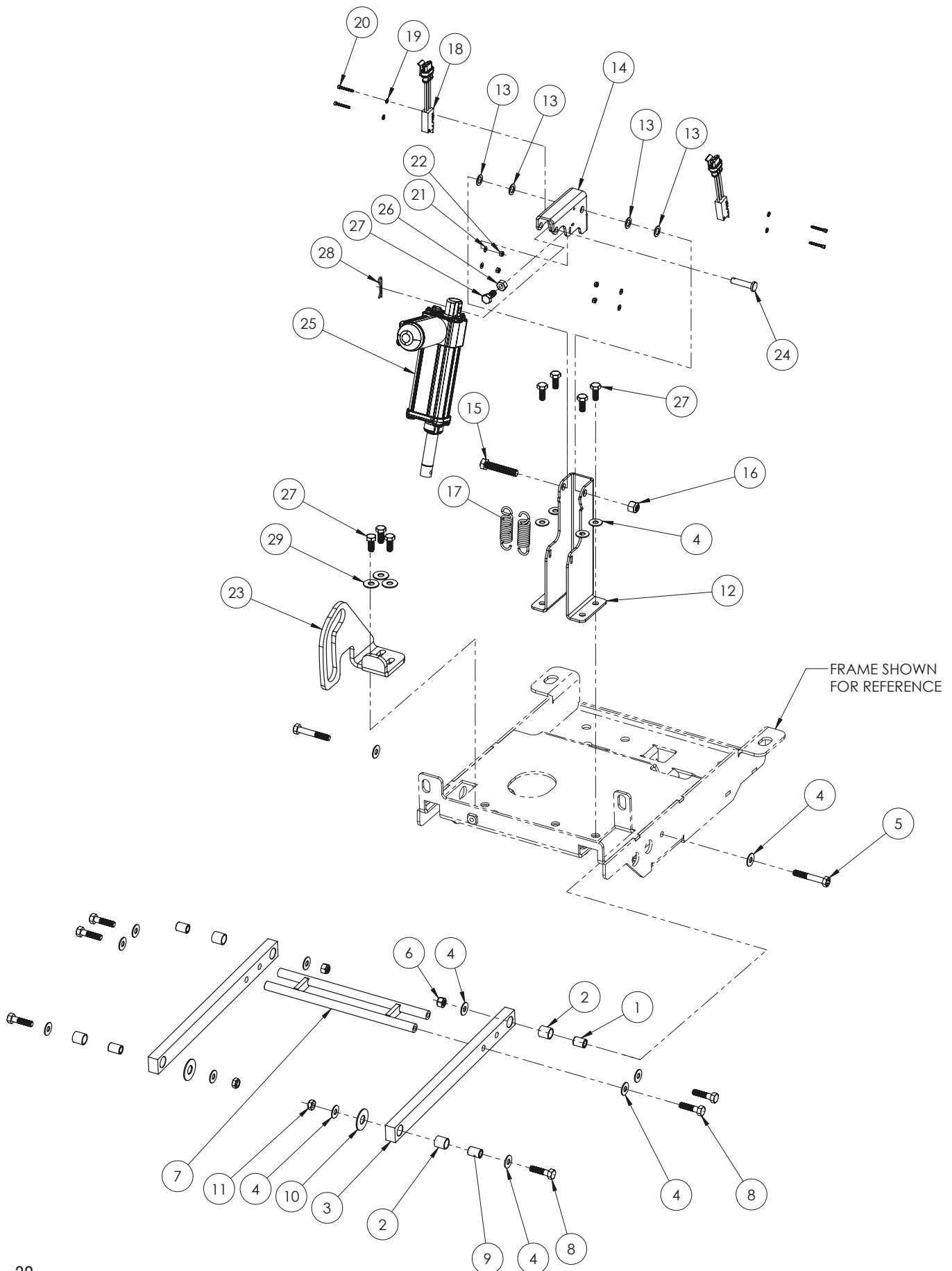


RECOVERY TANK PARTS LISTING

Item#	Part #	Description	Qty.
1	E28596	HINGE, 4.000 LEAF HT	2
2	E29569	SCREW, FLANGED BUTTON HD HEX, 5/16-18 x 0.625 LG, SS	8
3	E28886	RECOVERY TANK WITH INSERTS AND CUTOUTS	1
4	E28885	COVER, RECOVERY TANK WITH CUTOUT	1
5	EP50294	SEAL, G20 RECOVERY TANK LID, 63 IN LG	1
6	E29558	BOLT, SOC HD HEX, 5/16-18 x 0.500 LG, 0.375 DIA x 2.250 LG SHOULDER	2
7	E28995	BRACKET, VACUUM MOUNT	1
8	E81089	BOLT, HEX HD, 5/16-18 x 0.750 LG, ZP	5
9	E28914	ISOLATOR, 1/4 TAP, 1/4 STUD	3
10	E29565	NUT, HEX, 1/4-20, THIN, NYLOC	3

Item#	Part #	Description	Qty.
11	E28993	VACUUM FAN, 24VDC, 460W	1
12	E28608	GASKET, FOAM, 2.000 ID x 5.000 OD, 0.500 THK	1
13	E28994	FILTER, HEPA	1
14	E28622	WASHER, FLAT, 0.344 ID x 0.750 OD, 0.050 THK, SS	5
15	E81078	WASHER, LOCK, 0.250 ID x 0.487 OD, 0.062 THK, SPLIT, ZP	3
16	E10734	BOLT, HEX HD, 1/4-20 x 0.625 LG, ZP	3
17	E28755	CLAMP, HOSE, 1.560 - 2.500 ID, 0.500 W	2
18	E28607	GASKET, FLOAT MOUNT	1
19	E29562	MOUNT, FLOAT BALL CAGE	1
20	E29563	CAGE, FLOAT BALL	1

HEAD LIFT DIAGRAM

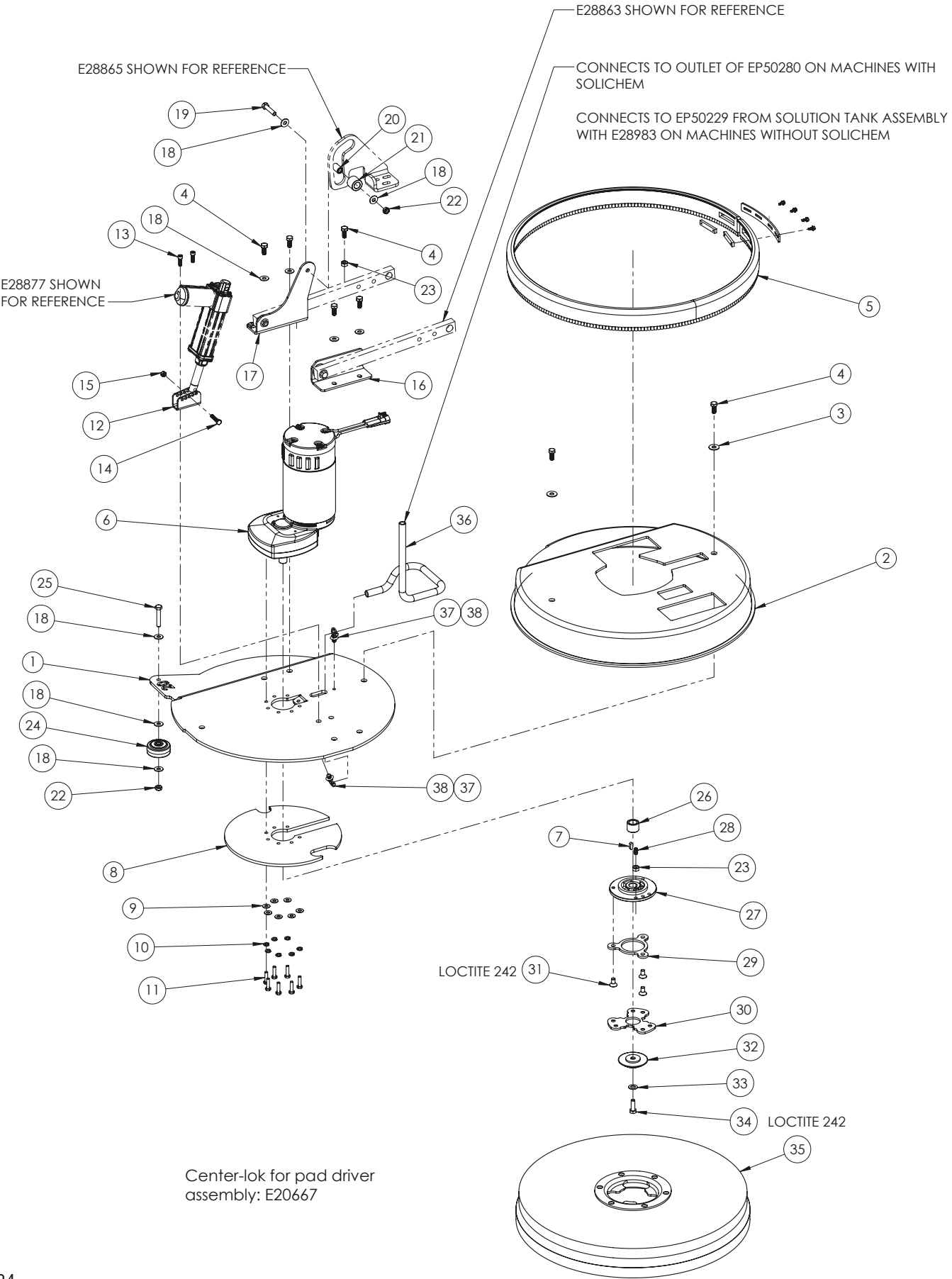


HEAD LIFT PARTS LISTING

Item#	Part #	Description	Qty.
1	E28684	BUSHING, SLEEVE, 0.323 ID x 0.497 OD, 0.655 LG	2
2	E28685	BUSHING, SLEEVE, 0.501 ID x 0.627 OD, 0.625 LG	4
3	E28863	ARM, HEAD LIFT	2
4	E28622	WASHER, FLAT, 0.344 ID x 0.750 OD, 0.050 THK, SS	16
5	E28982	BOLT, HEX HD, 5/16-18 x 2.000 LG, YC, GRADE 8	2
6	E81063	NUT, HEX, 5/16-18, NYLOC, ZP	2
7	E28864	BRACE, LIFT ARM, WELDMENT	1
8	E10112	BOLT, HEX HD, 5/16-18 x 1.250 LG, ZP	6
9	E28693	BUSHING, SLEEVE, 0.323 ID x 0.497 OD, 0.720 LG	2
10	E83145	WASHER, FLAT, 0.520 ID x 1.252 OD, 0.061 THK, NYLON	2
11	E28623	NUT, HEX, 5/16-18, THIN, NYLOC, SS	2
12	E28866	ACTUATOR TOWER	1
13	E28830	WASHER, FLAT, 0.390 ID x 0.625 OD, 0.041 THK, NYLON	4
14	E28867	ACTUATOR PIVOT	1
15	E87644	BOLT, HEX HD, 3/8-16 x 2.000 LG, ZP	1

Item#	Part #	Description	Qty.
16	E11146	NUT, HEX, 3/8-16, NYLOC, ZP	1
17	E81530	SPRING, HEAD LIFT	2
18	E20704	ASSEMBLY, HEAD LIFT SWITCH, GENESYS	2
19	E28821	WASHER, LOCK, 0.115 ID x 0.260 OD, EXT TOOTH, ZP	4
20	E28769	SCREW, SOC HD HEX, #4-40 x 0.875 LG, SS	4
21	E29368	WASHER, FLAT, 0.125 ID x 0.312 OD, 0.030 THK	4
22	E28770	NUT, HEX, #4-40, NYLOC	4
23	E28865	PLATE, HEAD LIFT GUIDE	1
24	E28985	PIN, CLEVIS, M8 x 30mm, ZP	1
25	E28877	ACTUATOR, 100mm TRAVEL	1
26	E12524	NUT, HEX, 5/16-18, SS	1
27	E81089	BOLT, HEX HD, 5/16-18 x 0.750 LG, ZP	8
28	E28847	COTTER PIN, 0.25 EYE, 0.125 WIRE, ZP	1
29	E81062	WASHER, FLAT, 0.344 ID x 0.875 OD, 0.063 THK, ZP	3

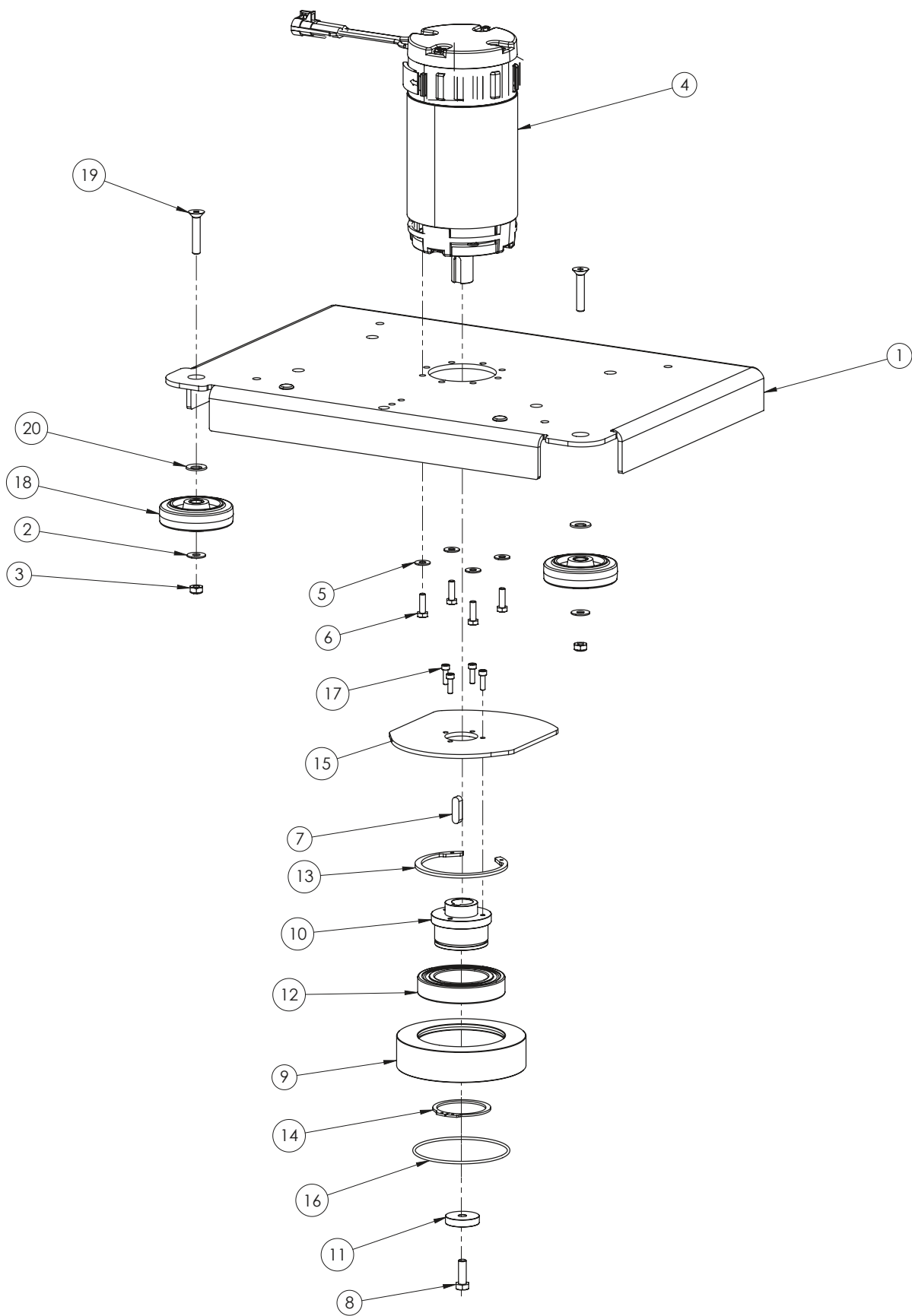
20" DISC HEAD DIAGRAM



20" DISC HEAD PARTS LISTING

Item#	Part #	Description	Qty.	Item#	Part #	Description	Qty.
1	E28855	FRAME, DISK HEAD, 20in, WELDMENT	1	20	E29019	BUSHING, SLEEVE, 0.323 ID x 0.563 OD, 0.90 LG	1
2	E28881	SHROUD, DISK HEAD w/ CUTOUTS, 20in	1	21	E29012	ROLLER, 0.575 ID x 1.000 OD, 0.850 LG	1
3	E81062	WASHER, FLAT, 0.344 ID x 0.875 OD, 0.063 THK, ZP	2	22	E28623	NUT, HEX, 5/16-18, THIN, NYLOC, SS	2
4	E81089	BOLT, HEX HD, 5/16-18 x 0.750 LG, ZP	7	23	E12524	NUT, HEX, 5/16-18, SS	2
5	E28857	ASSEMBLY, SKIRT, DISK HEAD, 20in	1	24	E28598	WHEEL, COLSON ROLLER, 2in	1
6	E29017	MOTOR, DISK HEAD, 230RPM	1	25	E29513	BOLT, HEX HD, 5/16-18 x 1.750 LG	1
7	E28911	KEY, MACHINE, 5mm x 5mm, ROUNDED	1	26	E29042	SPACER, 0.336 ID x 0.500 OD, 0.760 LG, ZINC	1
8	E28856	WEIGHT, DISK HEAD, 20in	1	27	E29037	HUB, DISK COUPLER	1
9	E28617	WASHER, FLAT, 0.281 ID x 0.625 OD, 0.050 THK, SS	7	28	E28910	SPRING PLUNGER, SLOTTED, 5/16-18 x 0.578 LG, SS	1
10	E29385	WASHER, LOCK, 6.5mm x 11.8mm, SPLIT, ZP	7	29	E29039	PLATE, ENGAGEMENT, DISK COUPLER	1
11	E29386	BOLT, HEX HD, M6-1 x 24mm LG, ZP	7	30	E29040	PLATE, RETAINER, DISK COUPLER	1
12	E28861	BRACKET, ACTUATOR MOUNT	1	31	E28639	SCREW, FLAT HD HEX, 5/16-18 x 0.625 LG	3
13	E28986	SCREW, SOC HD HEX, 1/4-20 x 0.750 LG, ZP	2	32	E29041	GUIDE, ALIGNMENT, DISK COUPLER	1
14	E84204	BOLT, HEX HD, M6-1 x 30mm LG, SS	1	33	E29438	WASHER, FLAT, 0.406 ID x 0.750 OD, 0.040 THK	1
15	E83550	NUT, HEX, M6-1, NYLOC, ZINC	1	34	E29426	BOLT, HEX HD, M8-1.25 x 20mm LG	1
16	E28860	BRACKET, LH DECK MOUNT, 20in	1	35	E28858	ASSEMBLY, PAD DRIVER, GENESYS 20	1
17	E28859	BRACKET, RH DECK MOUNT, 20IN, WELDMENT	1	36	EP50231	TUBE, 3/8" ID, CLEAR PVC, 18.00 LG	1
18	E28622	WASHER, FLAT, 0.344 ID x 0.750 OD, 0.050 THK, SS	9	37	E28621	WIRE TIE PUSH MOUNT	2
19	E28694	BOLT, HEX HD, 5/16-18 x 1.500 LG, PT	1	38	E83523	CABLE TIE, 4.125 LG x 0.125 W	2

20" ORBITAL HEAD MOTOR AND BEARING HUB DIAGRAM

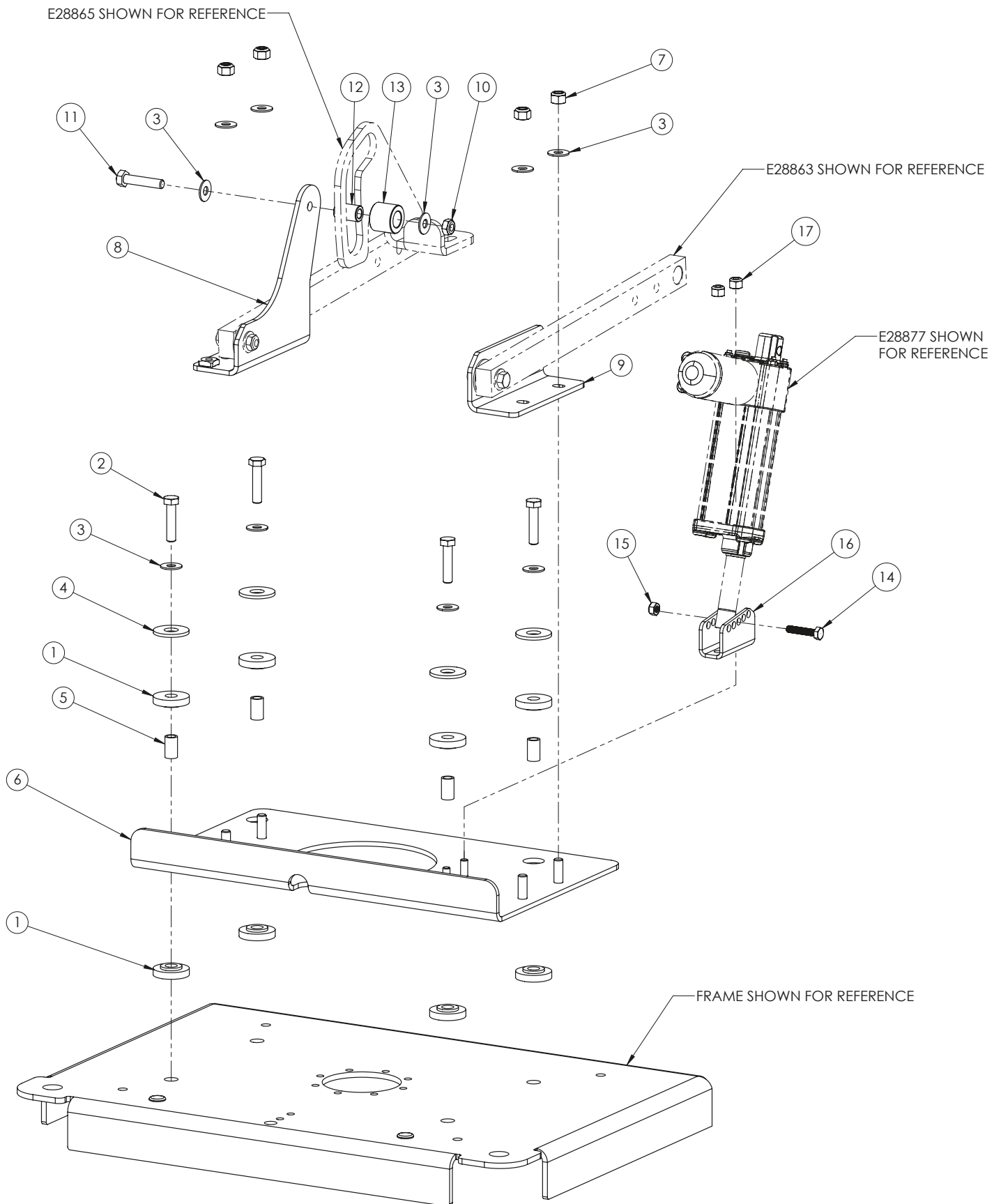


20" ORBITAL HEAD MOTOR AND BEARING HUB PARTS LISTING

Item#	Part #	Description	Qty.
1	E28896	FRAME, ORBITAL HEAD, 20in, WELDMENT	1
2	E28622	WASHER, FLAT, 0.344 ID x 0.750 OD, 0.050 THK, SS	2
3	E28623	NUT, HEX, 5/16-18, THIN, NYLOC, SS	2
4	E28521	MOTOR, 24VDC, 2200 RPM, 0.75 HP	1
5	E28617	WASHER, FLAT, 0.281 ID x 0.625 OD, 0.050 THK, SS	4
6	E83914	BOLT, HEX HD, M6-1 x 15mm LG	4
7	E28635	MACHINE KEY, 8mm x 7mm x 28mm, ROUNDED	1
8	E29426	BOLT, HEX HD, M8-1.25 x 20mm LG	1
9	E28525	HUB, ORBITAL BEARING	1
10	E29025	BEARING HUB, ECCENTRIC (0.85" OFFSET)	1

Item#	Part #	Description	Qty.
11	E28631	HUB WASHER	1
12	E28524	BALL BEARING, SKF DEEP GROOVE, 6011 2RS1/C3GJN	1
13	E28632	RETAINING RING, INT., 90mm BORE x 3.15mm GROOVE	1
14	E28529	RETAINING RING, EXT. 55mm SHAFT x 2.15mm GROOVE	1
15	E28009	COUNTERWEIGHT, ORBITAL, 20"	1
16	E28527	O-RING, 3.737 ID x 0.103 DIA, BUNA-N	1
17	E29431	SCREW, SOC HD HEX, #10-24 x 0.625 LG	4
18	E28509	WHEEL, COLSON ROLLER, 3in	2
19	E28634	SCREW, FLAT HD HEX, 5/16-18 x 1.750 LG	2
20	E28640	WASHER, LOCK, 0.451 ID x 0.848 OD, SPRING, PLASTIC	2

20" ORBITAL HEAD LIFT BRACKETS DIAGRAM

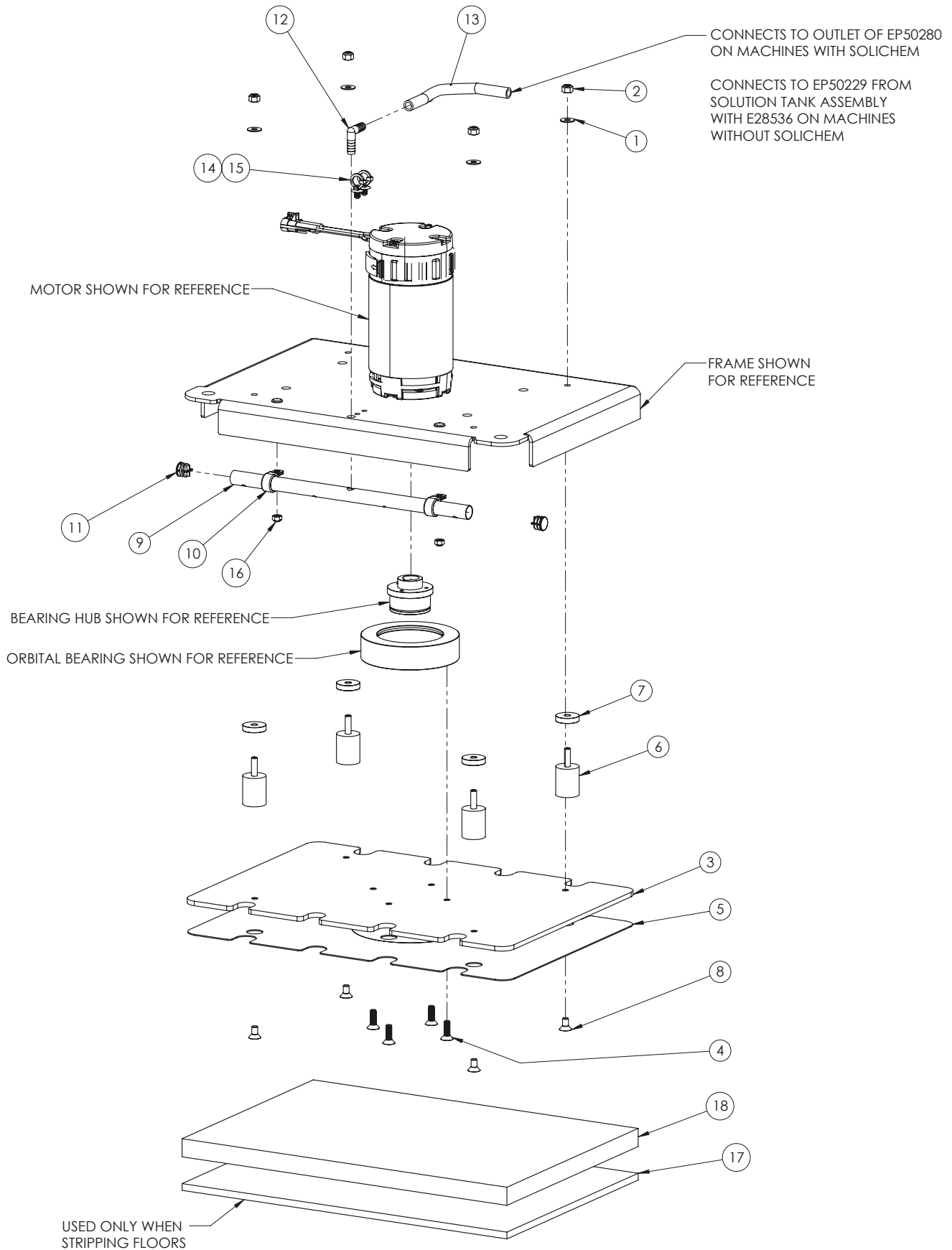


20" ORBITAL HEAD LIFT BRACKETS PARTS LISTING

Item#	Part #	Description	Qty.
1	E28531	ISOLATOR BUSHING, 0.313 ID x 1.250 OD, PVC BLUE	8
2	E29553	BOLT, HEX HD, 5/16-18 x 1.375 LG, SS	4
3	E28622	WASHER, FLAT, 0.344 ID x 0.750 OD, 0.050 THK, SS	10
4	E28764	WASHER, FLAT, 0.500 ID x 1.250 OD, 0.104 THK	4
5	E28656	BUSHING, 0.313 ID x 0.439 OD, 0.750 HT, BRONZE	4
6	E28981	BRACKET, ORBITAL HEAD LIFT, WELDMENT	1
7	E81063	NUT, HEX, 5/16-18, NYLOC, ZP	4
8	E28859	BRACKET, RH DECK MOUNT, 20IN, WELDMENT	1
9	E28860	BRACKET, LH DECK MOUNT, 20in	1

Item#	Part #	Description	Qty.
10	E28623	NUT, HEX, 5/16-18, THIN, NYLOC, SS	1
11	E28694	BOLT, HEX HD, 5/16-18 x 1.500 LG, PT	1
12	E29019	BUSHING, SLEEVE, 0.323 ID x 0.563 OD, 0.90 LG	1
13	E29012	ROLLER, 0.575 ID x 1.000 OD, 0.850 LG	1
14	E84204	BOLT, HEX HD, M6-1 x 30mm LG, SS	1
15	E83550	NUT, HEX, M6-1, NYLOC, ZINC	1
16	E28861	BRACKET, ACTUATOR MOUNT	1
17	E28618	NUT, HEX, 1/4-20, NYLOC, SS	2

20" ORBITAL HEAD SOLUTION DELIVERY DIAGRAM

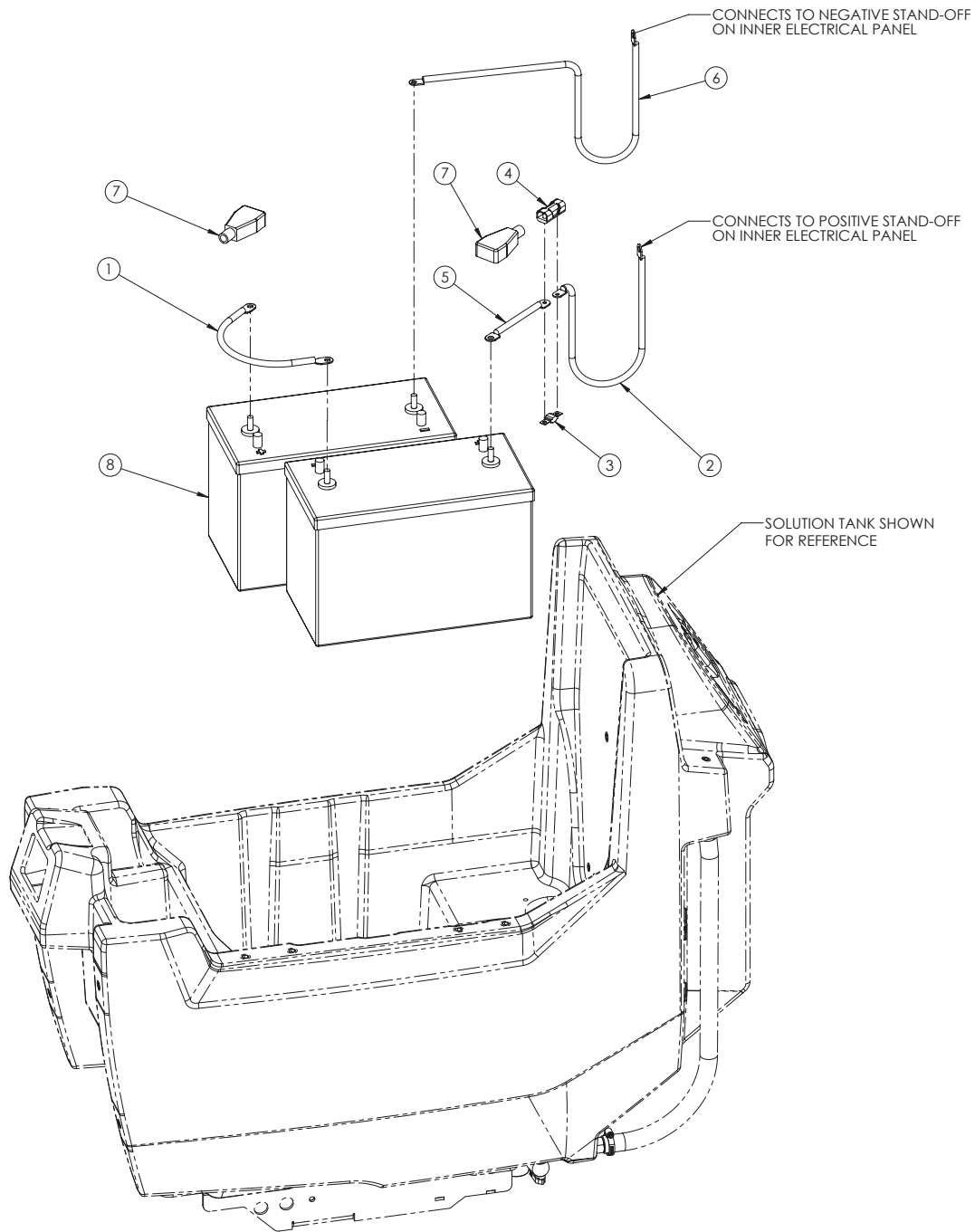


20" ORBITAL HEAD SOLUTION DELIVERY PARTS LISTING

Item#	Part #	Description	Qty.
1	E28622	WASHER, FLAT, 0.344 ID x 0.750 OD, 0.050 THK, SS	4
2	E81063	NUT, HEX, 5/16-18, NYLOC, ZP	4
3	E28897	PAD DRIVER, 20in ORBITAL	1
4	E28763	SCREW, FLAT HD HEX, 5/16-18 x 1.000 LG, BO	4
5	E28899	FACE, PAD DRIVER, 20in ORBITAL	1
6	E28530	ISOLATOR MOUNT, 1.563 TALL x 1.250 DIA, RUBBER	4
7	E28633	SPACER, 0.328 ID x 1.250 OD, ZINC	4
8	E28639	SCREW, FLAT HD HEX, 5/16-18 x 0.625 LG	4
9	E28898	MANIFOLD, WATER FEED	1

Item#	Part #	Description	Qty.
10	E28534	LOOP CLAMP, 0.75 DIA	2
11	E28535	HOLE PLUG, 0.59-0.70 DIA	2
12	E28536	FITTING, ELBOW 90, 3/8 BARB x 3/8 BARB, PLASTIC	1
13	EP50231	TUBE, 0.375 ID, CLEAR PVC, 18.000 LG	1
14	E28621	WIRE TIE PUSH MOUNT	2
15	E83523	CABLE TIE, 4.125 LG x 0.125 W	2
16	E28853	NUT, HEX, 1/4-20, FLEX-TOP LOCK, CDPL	2
17	E84057	FLOOR PAD, 20in x 14in, MAROON	1
18	E89831	FLOOR PAD, 20in x 14in, RED	1

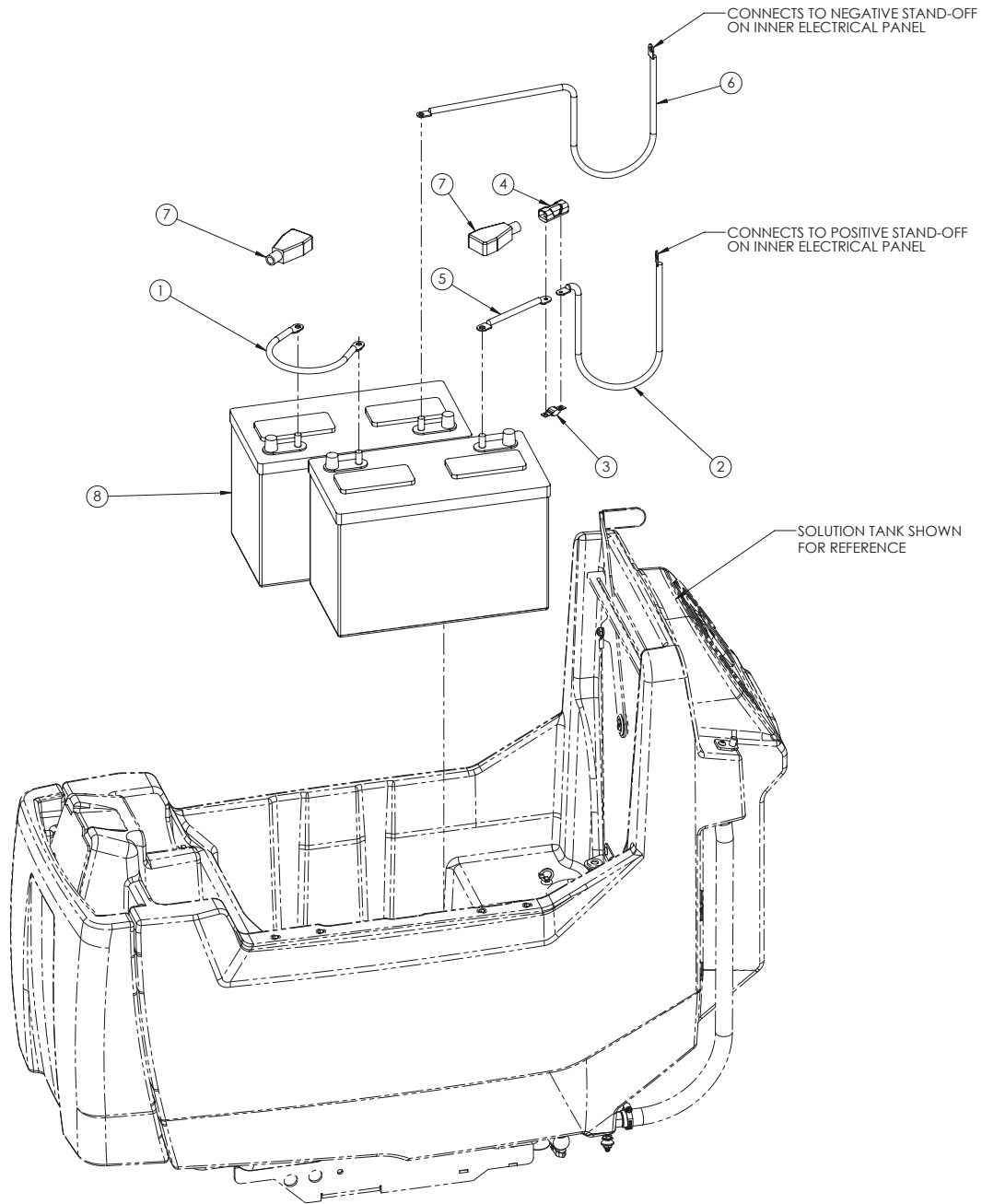
110AH AGM BATTERY DIAGRAM AND PARTS LISTING



Item#	Part #	Description	Qty.
1	E29203	BATTERY CABLE, 12in, BLACK	1
2	E29023	BATTERY CABLE, 17in, RED	1
3	E28975	FUSE, 100A	1
4	E28974	FUSE HOLDER	1

Item#	Part #	Description	Qty.
5	E29204	BATTERY CABLE, 5in, RED	1
6	E29022	BATTERY CABLE, 21in, BLACK	1
7	E12543	TERMINAL PROTECTOR, RED STRAIGHT	2
8	E88030	BATTERY, AGM, 12 VDC 110 AH	2

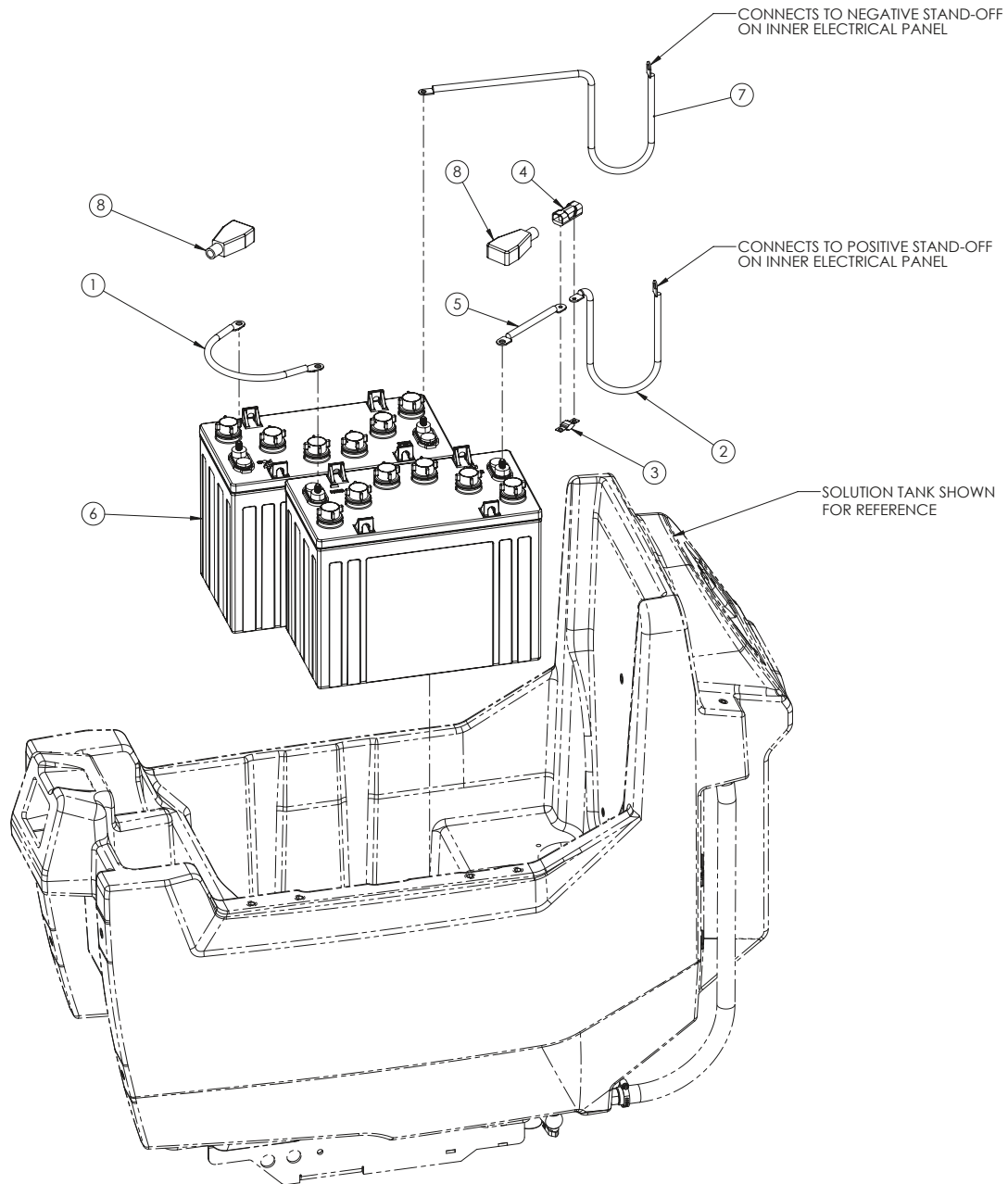
130AH WET BATTERY DIAGRAM AND PARTS LISTING



Item#	Part #	Description	Qty.
1	E29203	BATTERY CABLE, 12in, BLACK	1
2	E29023	BATTERY CABLE, 17in, RED	1
3	E28975	FUSE, 100A	1
4	E28974	FUSE HOLDER	1

Item#	Part #	Description	Qty.
5	E29204	BATTERY CABLE, 5in, RED	1
6	E29022	BATTERY CABLE, 21in, BLACK	1
7	E12543	TERMINAL PROTECTOR, RED STRAIGHT	2
8	E11767	BATTERY, WET, 12 VDC 130 AH	2

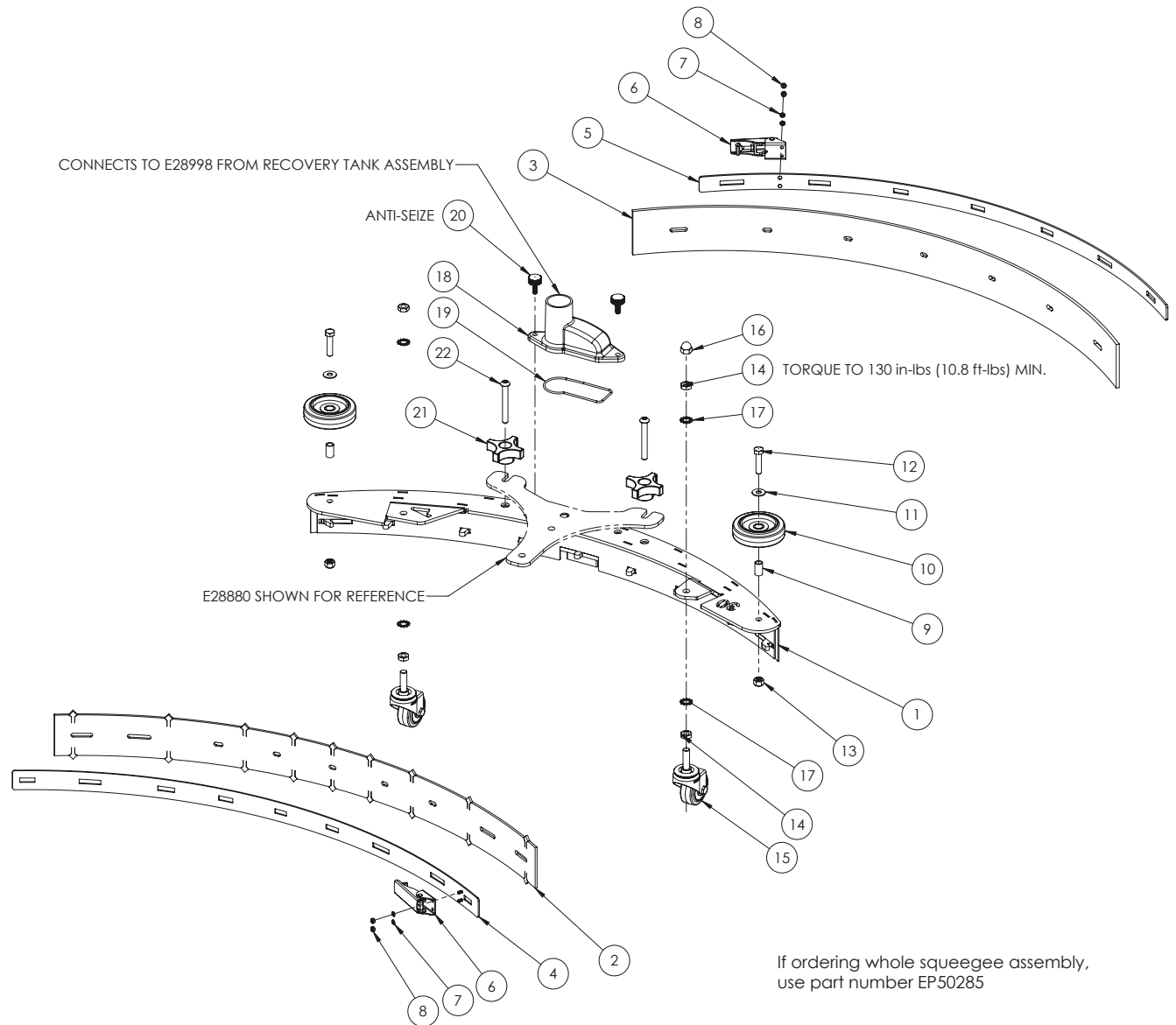
150AH WET BATTERY DIAGRAM AND PARTS LISTING



Item#	Part #	Description	Qty.
1	E29203	BATTERY CABLE, 12in, BLACK	1
2	E29023	BATTERY CABLE, 17in, RED	1
3	E28975	FUSE, 100A	1
4	E28974	FUSE HOLDER	1

Item#	Part #	Description	Qty.
5	E29204	BATTERY CABLE, 5in, RED	1
6	E28887	BATTERY, 12 VDC 150 AH, WET	2
7	E29022	BATTERY CABLE, 21in, BLACK	1
8	E12543	TERMINAL PROTECTOR, RED STRAIGHT	2

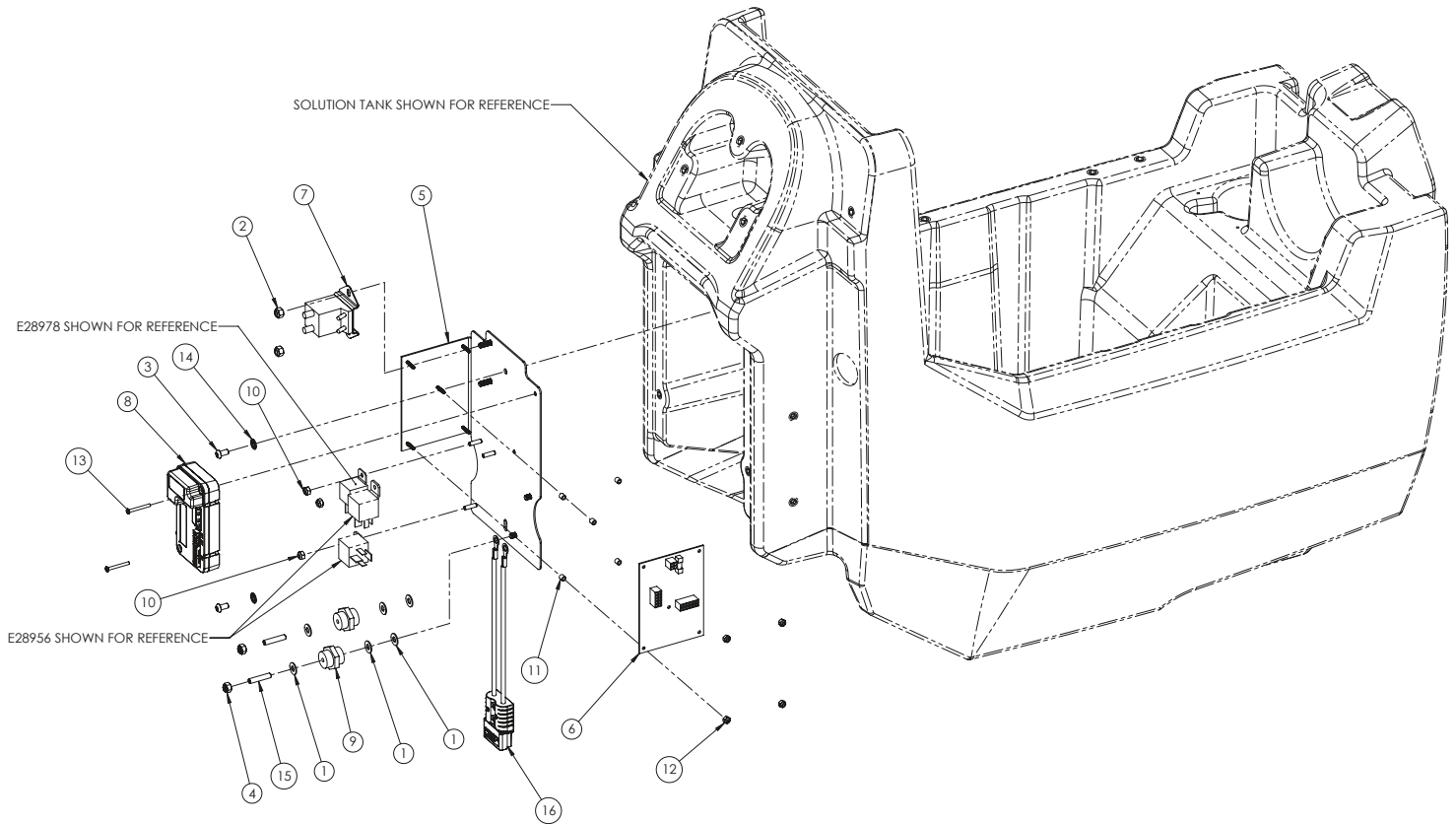
30" SQUEEGEE DIAGRAM AND PARTS LISTING



Item#	Part #	Description	Qty.
1	E28871	SQUEEGEE WELDMENT, 30.5in	1
2	E28872	BLADE, FRONT SQUEEGEE, 30.5in	1
3	E28873	BLADE, REAR SQUEEGEE, 30.5in	1
4	E28874	CLAMP ASSEMBLY, FRONT SQUEEGEE, 30.5in	1
5	E28875	CLAMP ASSEMBLY, REAR SQUEEGEE, 30.5in	1
6	E29521	CLAMP, OVER CENTER	2
7	E28806	WASHER, LOCK, 0.141 ID x 0.295 OD, INT TOOTH, SS	4
8	E29397	NUT, HEX, #6-32, SS	4
9	E28656	BUSHING, 0.313 ID x 0.439 OD, 0.750 HT, BRONZE	2
10	EP50279	WHEEL, COLSON ROLLER, 3in	2
11	E28622	WASHER, FLAT, 0.344 ID x 0.750 OD, 0.050 THK, SS	2

Item#	Part #	Description	Qty.
12	E29553	BOLT, HEX HD, 5/16-18 x 1.375 LG, SS	2
13	E81063	NUT, HEX, 5/16-18, NYLOC, ZP	2
14	E29398	NUT, HEX, 5/16-16, THIN, ZP	4
15	E28568	CASTER, SWIVEL, STUD MOUNT, 2in	2
16	E28851	NUT, ACORN HEX, 3/8-16, NYLON (BLACK)	1
17	E29050	WASHER, LOCK, 0.384 ID x 0.694 OD, EXT TOOTH, ZP	4
18	E28908	DRIP TRAP, SQUEEGEE	1
19	E28754	O-RING, SIZE - 151, VITON	1
20	E29554	SCREW, THUMB, 1/4-20 x 0.750 LG, SS	2
21	E28903	KNOB, 4-ARM, 5/16-18 HOLE, PLASTIC	2
22	E29547	SCREW, BUTTON HD HEX, 5/16-18 x 2.500 LG	2

INNER ELECTRICAL PANEL DIAGRAM AND PARTS LISTING



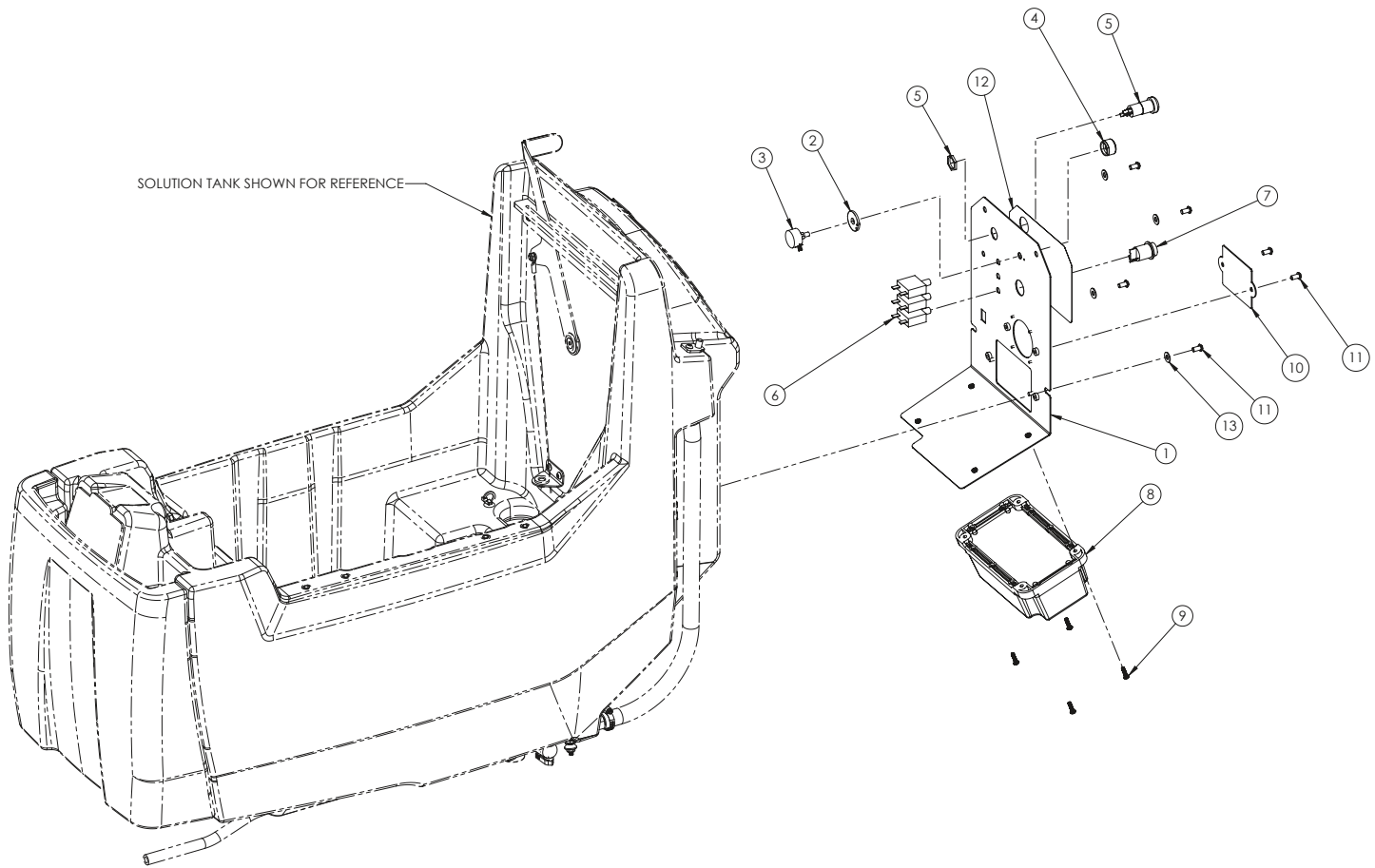
Control Board Fuse: E28852
Replacement Key: E89382

Item#	Part #	Description	Qty.
1	E28617	WASHER, FLAT, 0.281 ID x 0.625 OD, 0.050 THK, SS	6
2	E28618	NUT, HEX, 1/4-20, NYLOC, SS	2
3	E28648	SCREW, BUTTON HD HEX, 1/4-20 X 0.500 LG	2
4	E28853	NUT, HEX, 1/4-20, FLEX-TOP LOCK, CDPL	2
5	E28891	PANEL, INNER ELECTRICAL, WELDMENT	1
6	E28892	CONTROL BOARD, G20 TRACTION DISK/ORBITAL	1
7	E28924	CONTACTOR, 100A 24V	1
8	E28949	CONTROLLER, I-DRIVE	1

Item#	Part #	Description	Qty.
9	E28950	STANDOFF, ELECTRICAL, 1/4-20 FEMALE THREADS	2
10	E29366	NUT, HEX, #10-32, THIN, NYLOC, ZP	3
11	E29373	SPACER, 0.140 ID x 0.250 OD, 0.250 LG	5
12	E29381	NUT, HEX, #6-32, NYLOC, ZP	4
13	E29382	SCREW, PAN HD PHIL, #6-32 x 1.250 LG	2
14	E29446	WASHER, LOCK, 0.256 ID x 0.540 OD, INT TOOTH	2
15	E29447	SCREW, SET, CUP POINT, 1/4-20 x 1.250 LG	2
16	E28979	HARNES, CHARGER	1

DISC OUTER ELECTRICAL PANEL DIAGRAM AND PARTS LISTING

Only applies to machines with disc heads

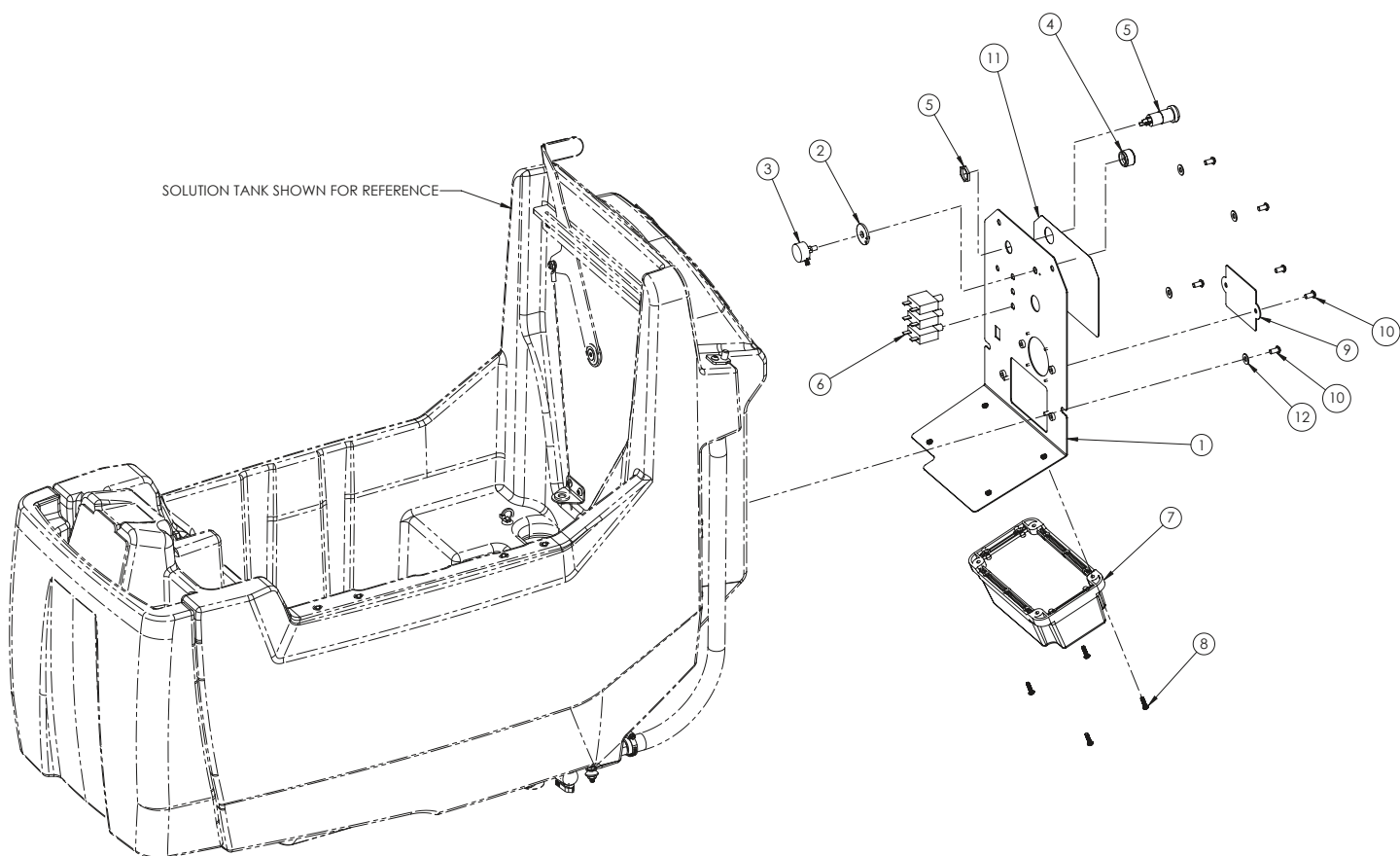


Item#	Part #	Description	Qty.
1	E28890	PANEL, OUTER ELECTRICAL, WELDMENT	1
2	E28768	POT SPACER AND PIN ASSEMBLY	1
3	E29706	POTENTIOMETER, 5K ohm	1
4	E28606	KNOB, KNURLED, 0.250 SHAFT, 0.925 OD, METAL	1
5	E12629	SWITCH, KEYED, SPE, WITH 2 KEYS	1
6	E28954	BREAKER, 30A	3
7	E28967	SWITCH, PUSH BUTTON, SPST NO, MOMENTARY	1

Item#	Part #	Description	Qty.
8	E28895	CHARGER, PCS 2412	1
9	E28912	SCREW, BUTTON HD HEX, #10-32 x 0.750 LG, SS	4
10	E29364	PLATE, TIMER COVER	1
11	E28648	SCREW, BUTTON HD HEX, 1/4-20 X 0.500 LG	6
12	E29007	DECAL, BACK PANEL, 20in	1
13	E28617	WASHER, FLAT, 0.281 ID x 0.625 OD, 0.050 THK, SS	4

ORBITAL OUTER ELECTRICAL PANEL DIAGRAM AND PARTS LISTING

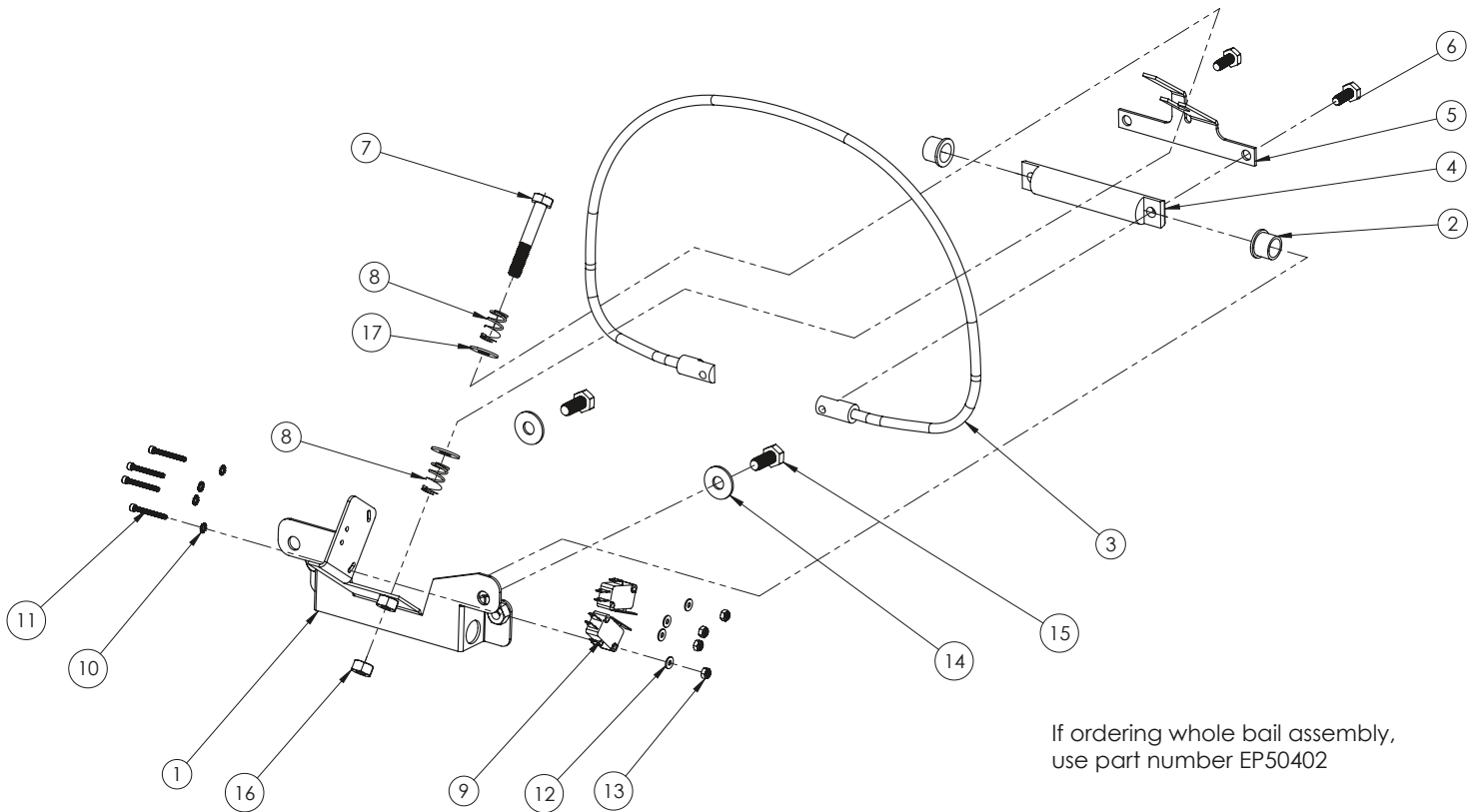
Only applies to machines with orbital heads



Item#	Part #	Description	Qty.
1	E28890	PANEL, OUTER ELECTRICAL, WELDMENT	1
2	E28768	POT SPACER AND PIN ASSEMBLY	1
3	E29706	POTENTIOMETER, 5K ohm	1
4	E28606	KNOB, KNURLED, 0.250 SHAFT, 0.925 OD, METAL	1
5	E12629	SWITCH, KEYED, SPE, WITH 2 KEYS	1
6	E28954	BREAKER, 30A	3

Item#	Part #	Description	Qty.
7	E28895	CHARGER, PCS 2412	1
8	E28912	SCREW, BUTTON HD HEX, #10-32 x 0.750 LG, SS	4
9	E29364	PLATE, TIMER COVER	1
10	E28648	SCREW, BUTTON HD HEX, 1/4-20 X 0.500 LG	6
11	E29007	DECAL, BACK PANEL, 20in	1
12	E28617	WASHER, FLAT, 0.281 ID x 0.625 OD, 0.050 THK, SS	4

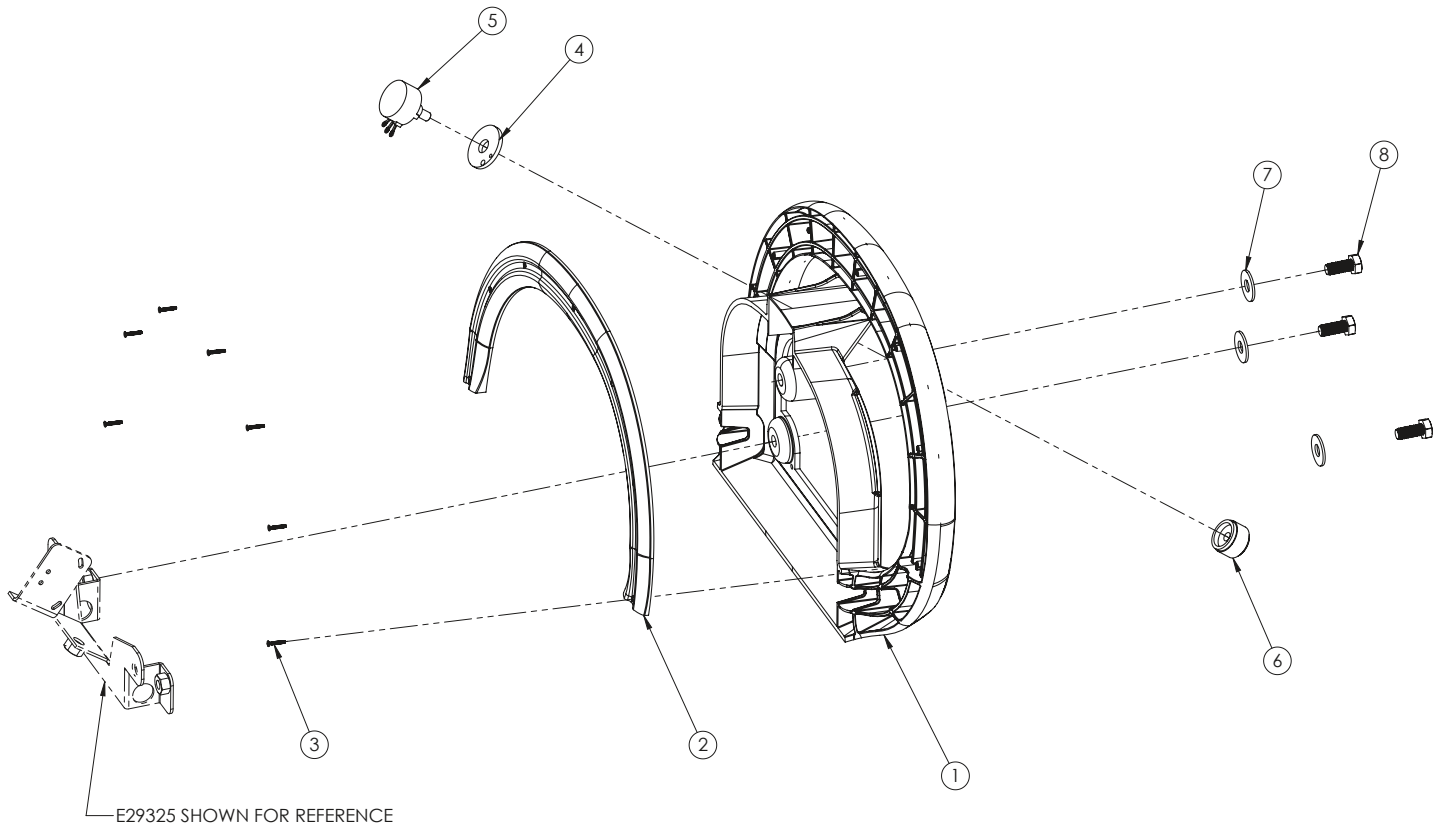
HANDLE BAIL DIAGRAM AND PARTS LISTING



Item#	Part #	Description	Qty.
1	E29325	BRACKET, CONTROLS HANDLE, WELDMENT	1
2	E29337	BEARING, SLEEVE, 0.500 ID x 0.750 OD, 0.500 LG	2
3	E29335	HANDLE BAIL WELDMENT	1
4	E29326	BAIL PIVOT	1
5	E29327	ARM, HANDLE BAIL	1
6	E10734	BOLT, HEX HD, 1/4-20 x 0.625 LG, ZP	2
7	E29329	BOLT, HEX HD, 5/16-18 x 2.000 LG	1
8	E29328	SPRING, COMPRESSION, 0.376 ID x 0.500 OD, 0.750 LG	2
9	E28669	SWITCH, 15A SPDT, LEVER ACTION	2

Item#	Part #	Description	Qty.
10	E28821	WASHER, LOCK, 0.115 ID x 0.260 OD, EXT TOOTH, ZP	4
11	E28762	SCREW, SOC HD HEX, #4-40 x 1.000 LG, BO	4
12	E29368	WASHER, FLAT, 0.125 ID x 0.312 OD, 0.030 THK	4
13	E28770	NUT, HEX, #4-40, NYLOC	4
14	E81062	WASHER, FLAT, 0.344 ID x 0.875 OD, 0.063 THK, ZP	2
15	E81089	BOLT, HEX HD, 5/16-18 x 0.750 LG, ZP	2
16	E12524	NUT, HEX, 5/16-18, SS	1
17	E28622	WASHER, FLAT, 0.344 ID x 0.750 OD, 0.050 THK, SS	2

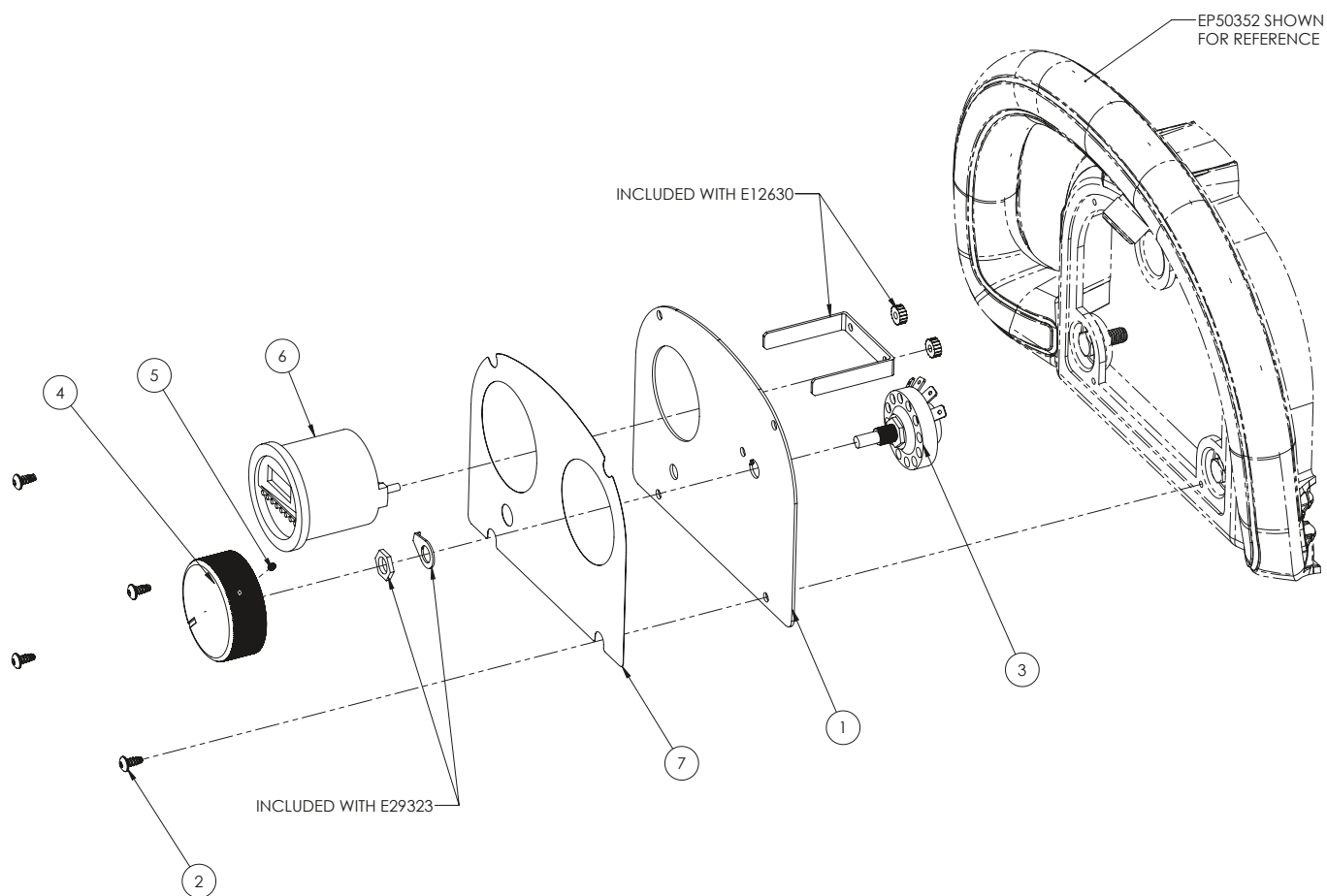
CONSOLE HANDLE DIAGRAM AND PARTS LISTING



Item#	Part #	Description	Qty.
1	E28915	HANDLE, CONSOLE CONTROLS, FRONT, GENESYS	1
2	E29301	HANDLE, CONSOLE CONTROLS, BACK, GENESYS	1
3	E29336	SCREW, FLAT HD TORX, #2 TF x 0.500 LG	7
4	E28768	POT SPACER AND PIN ASSEMBLY	1

Item#	Part #	Description	Qty.
5	E28955	POTENTIOMETER, SPEED CONTROL	1
6	E28606	KNOB, KNURLED, 0.250 SHAFT, 0.925 OD, METAL	1
7	E81062	WASHER, FLAT, 0.344 ID x 0.875 OD, 0.063 THK, ZP	3
8	E81089	BOLT, HEX HD, 5/16-18 x 0.750 LG, ZP	3

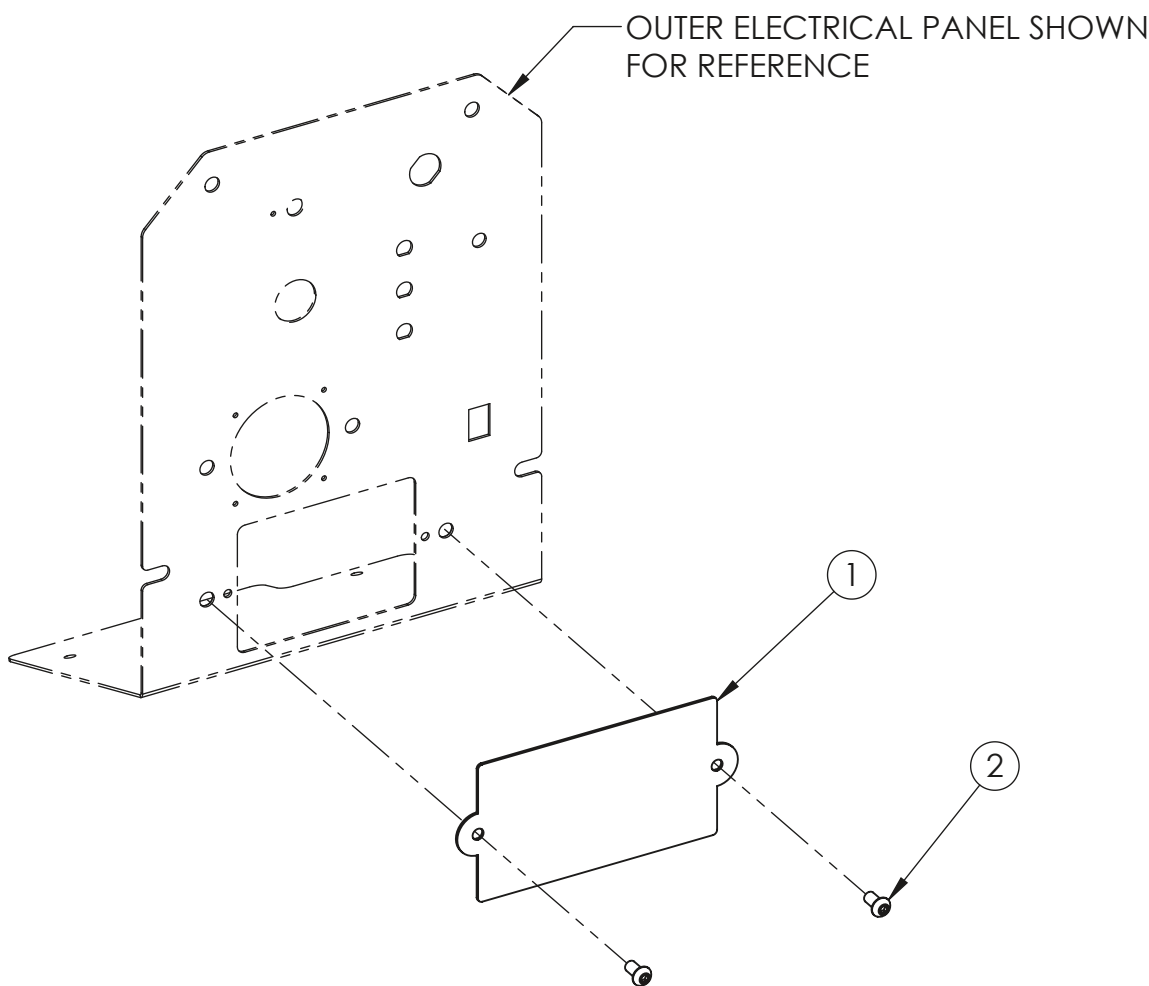
CONTROL PANEL DIAGRAM AND PARTS LISTING



Item#	Part #	Description	Qty.
1	E29322	CLUSTER PANEL, STANDARD	1
2	E29334	SCREW, PAN HD TORX, #8-16 TF x 0.375 LG	4
3	E29323	SWITCH, ROTARY	1
4	E29324	KNOB, 2.200 OD x 0.830 HT, KNURLED	1

Item#	Part #	Description	Qty.
5	E28788	SCREW, SET, CUP POINT, #5-40 x 0.188 LG	1
6	E12630	BDI (BATTERY DISCHARGE INDICATOR AND HOUR METER)	1
7	E28794	DECAL, CONTROL PANEL, STANDARD	1

ARMOR SLOT COVER PLATE DIAGRAM AND PARTS LISTING

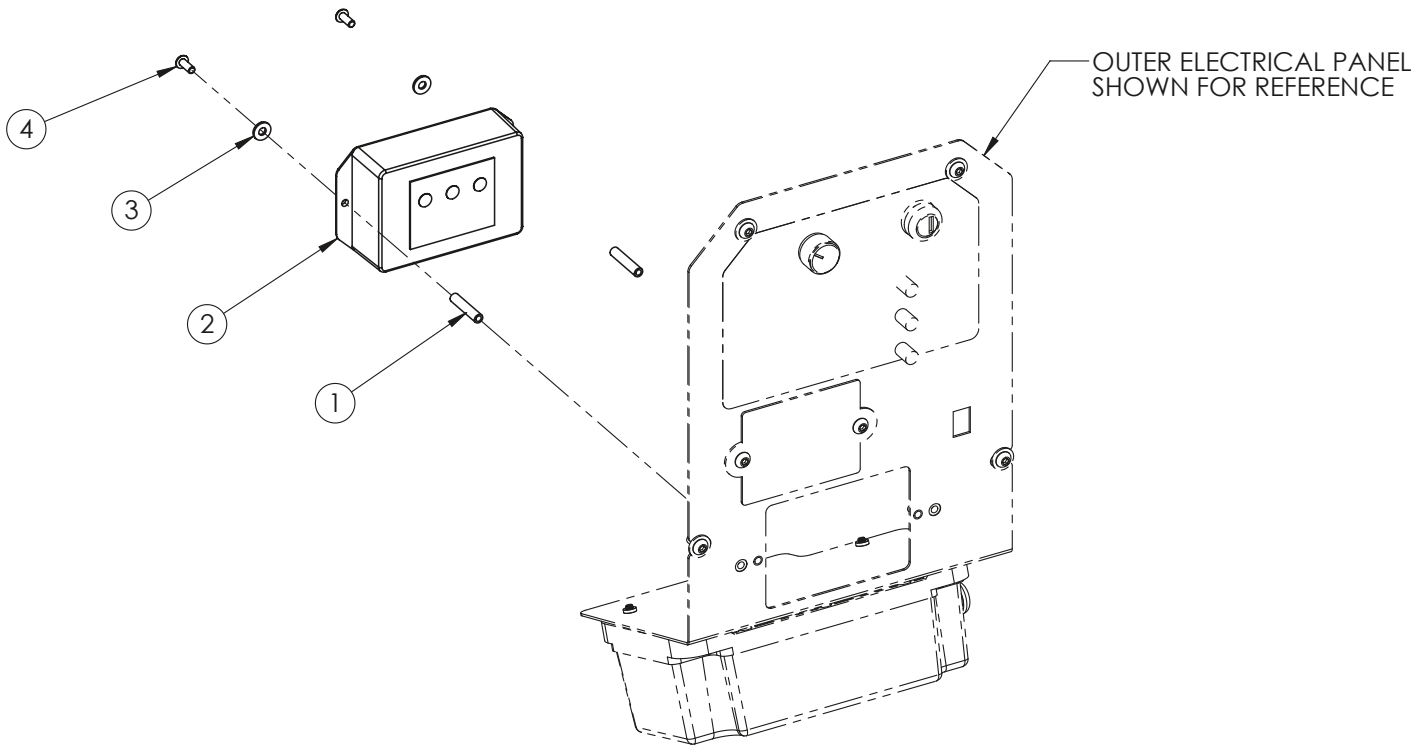


Item#	Part #	Description	Qty.
1	E29015	PLATE, ARMOR COVER	1

Item#	Part #	Description	Qty.
2	E28648	SCREW, BUTTON HD HEX, 1/4-20 X 0.500 LG	2

ARMOR OPTION DIAGRAM AND PARTS LISTING

Only applies to machines
with Armor Option

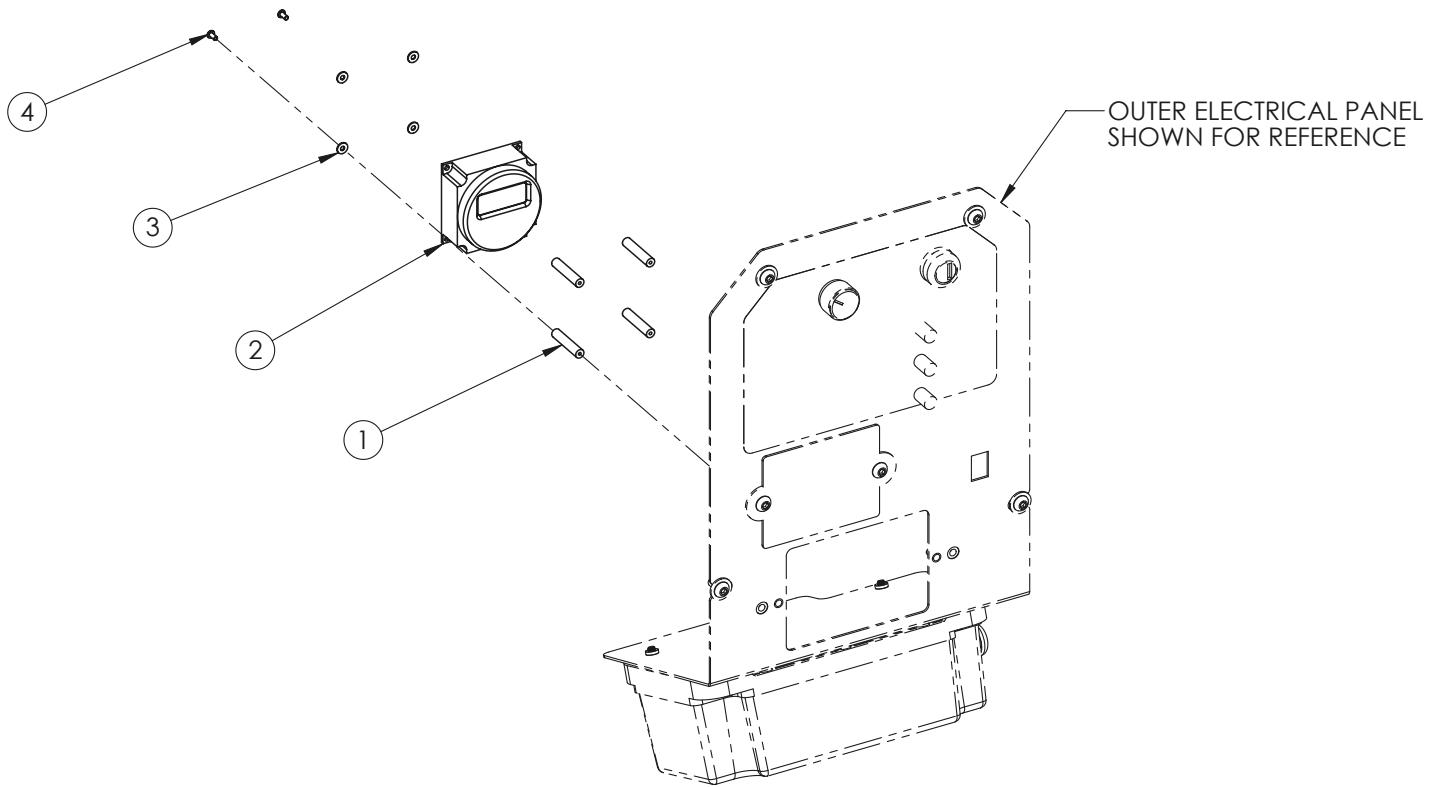


Item#	Part #	Description	Qty.
1	E29375	STANDOFF, #10-32, 0.250 OD, 1.250 LG	2
2	E28965	ARMOR BATTERY PROTECTION DEVICE	1

Item#	Part #	Description	Qty.
3	E29580	WASHER, FLAT, 0.210 ID x 0.500 OD, 0.050 THK	2
4	E29367	SCREW, BUTTON HD HEX, #10-32 x 0.500 LG, ZP	2

LOCK-OUT TIMER OPTION DIAGRAM AND PARTS LISTING

Only applies to machines with Lock-Out Timer Option

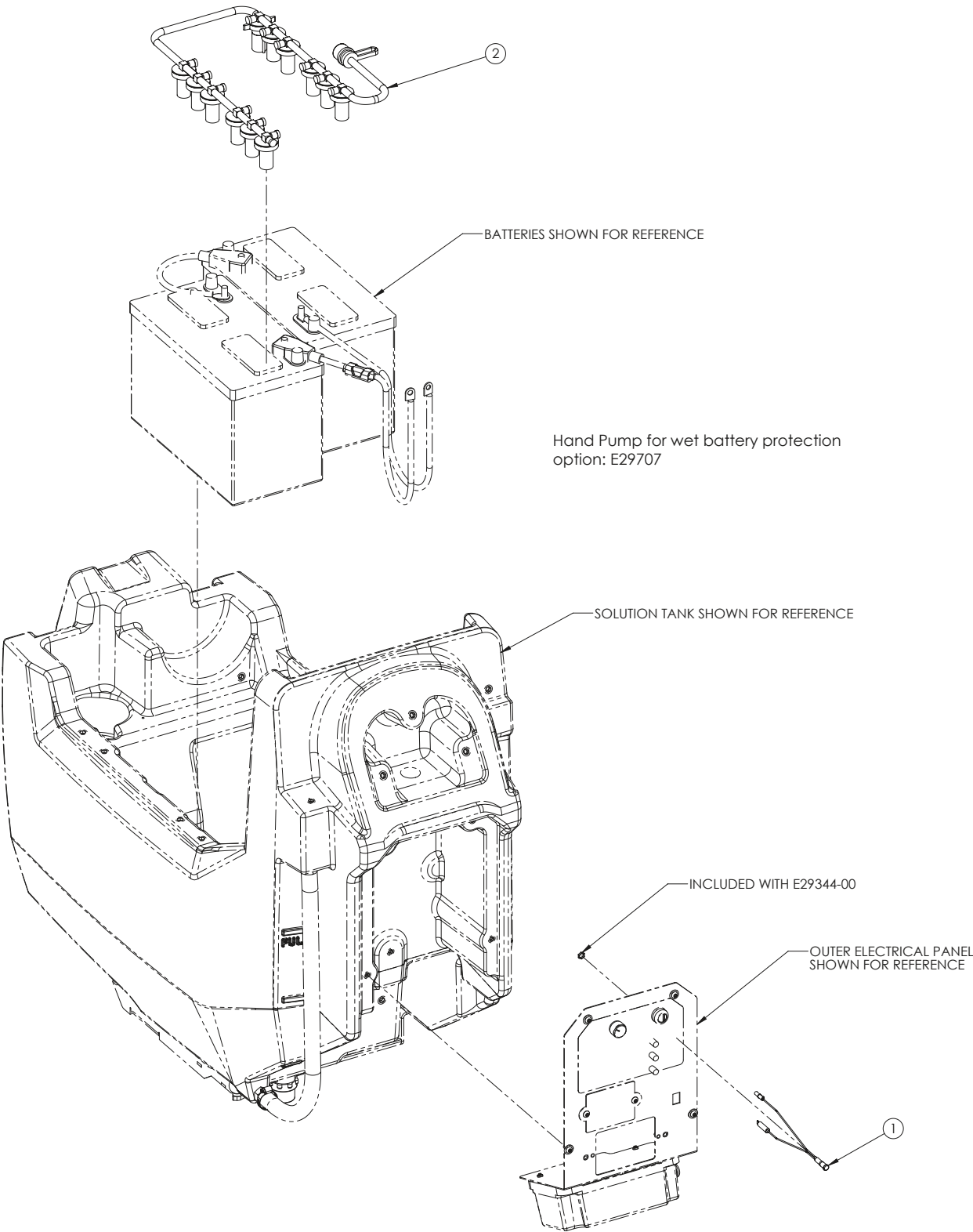


Item#	Part #	Description	Qty.
1	E29374	STANDOFF, #4-40, 0.250 OD, 1.250 LG	4
2	E28966	MACHINE TIMER	1

Item#	Part #	Description	Qty.
3	E29368	WASHER, FLAT, 0.125 ID x 0.312 OD, 0.030 THK	4
4	E29369	SCREW, BUTTON HD HEX, #4-40 x 0.250 LG, ZP	4

WET BATTERY PROTECTION OPTION DIAGRAM AND PARTS LISTING

Only applies to machines with Wet Battery Protection Option

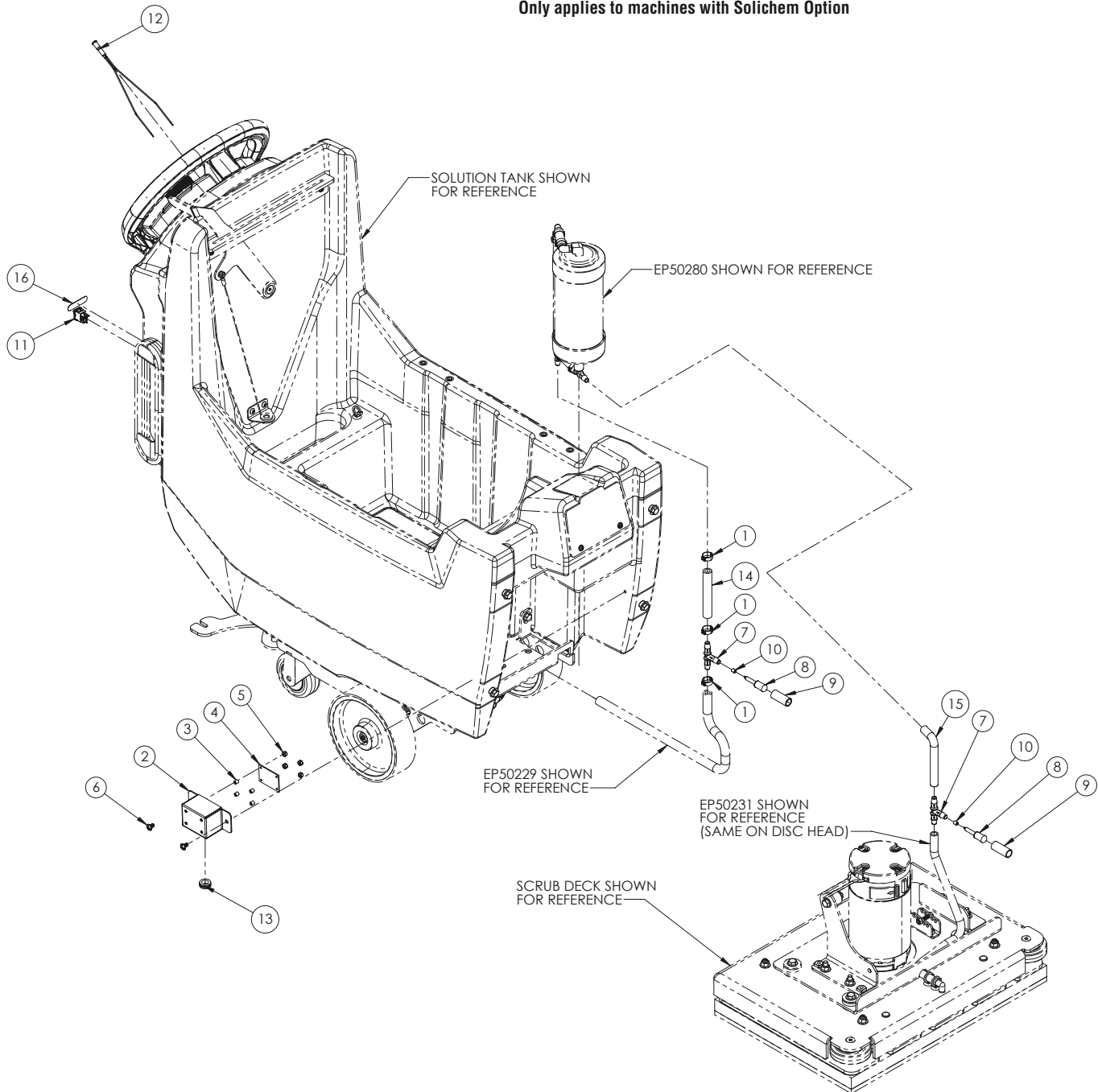


Item#	Part #	Description	Qty.
1	E29344	ASSEMBLY, LED INDICATOR	1

Item#	Part #	Description	Qty.
2	E29004	KIT, WET BATTERY PROTECTION, G20	1

SOLICHEM OPTION DIAGRAM AND PARTS LISTING

Only applies to machines with Solichem Option

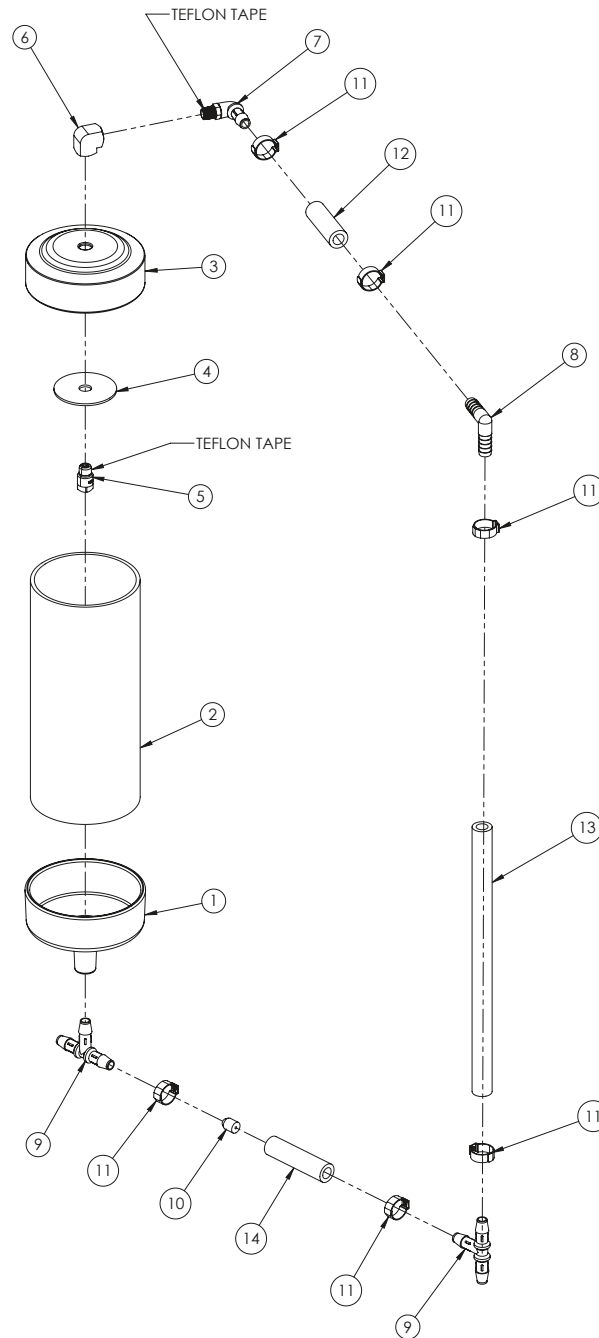


Item#	Part #	Description	Qty.
1	E28773	CLAMP, HOSE, SINGLE PINCH	3
2	E28778	BRACKET, TDS SHEILD	1
3	E29373	SPACER, 0.140 ID x 0.250 OD, 0.250 LG	4
4	E28784	PCB, TDS SENSOR	1
5	E29381	NUT, HEX, #6-32, NYLOC, ZP	4
6	E29018	SCREW, ROUND HD PHIL, 1/4-10 TF x 0.375 LG, ZP	2
7	E29315	FITTING, TEE, 3/8 BARB, PLASTIC	2
8	E28774	SENSOR, CONDUCTIVITY 1/4" PROBE DIA	2

Item#	Part #	Description	Qty.
9	EP50426	HEAT SHRINK, 0.500 ID, 1.50 LG, BLACK	2
10	EP50425	TUBING, 0.156 ID x 0.250 OD, 0.250 LG, LATEX RUBBER, BLACK	2
11	E28781	SWITCH, ROCKER, BLACK	1
12	E29344	ASSEMBLY, LED INDICATOR	1
13	E88708	GROMMET, EPDM 60 DURO	1
14	EP50424	HOSE, 3/8 ID, REINFORCED CLEAR PVC, 6.00 LG	1
15	EP50442	TUBE, 3/8 ID, CLEAR PVC, 6.00LG	1
16	E29006	DECAL, SOLICHEM ON/OFF	1

SOLICHEM CANISTER DIAGRAM AND PARTS LISTING

Only applies to machines with Solichem Option

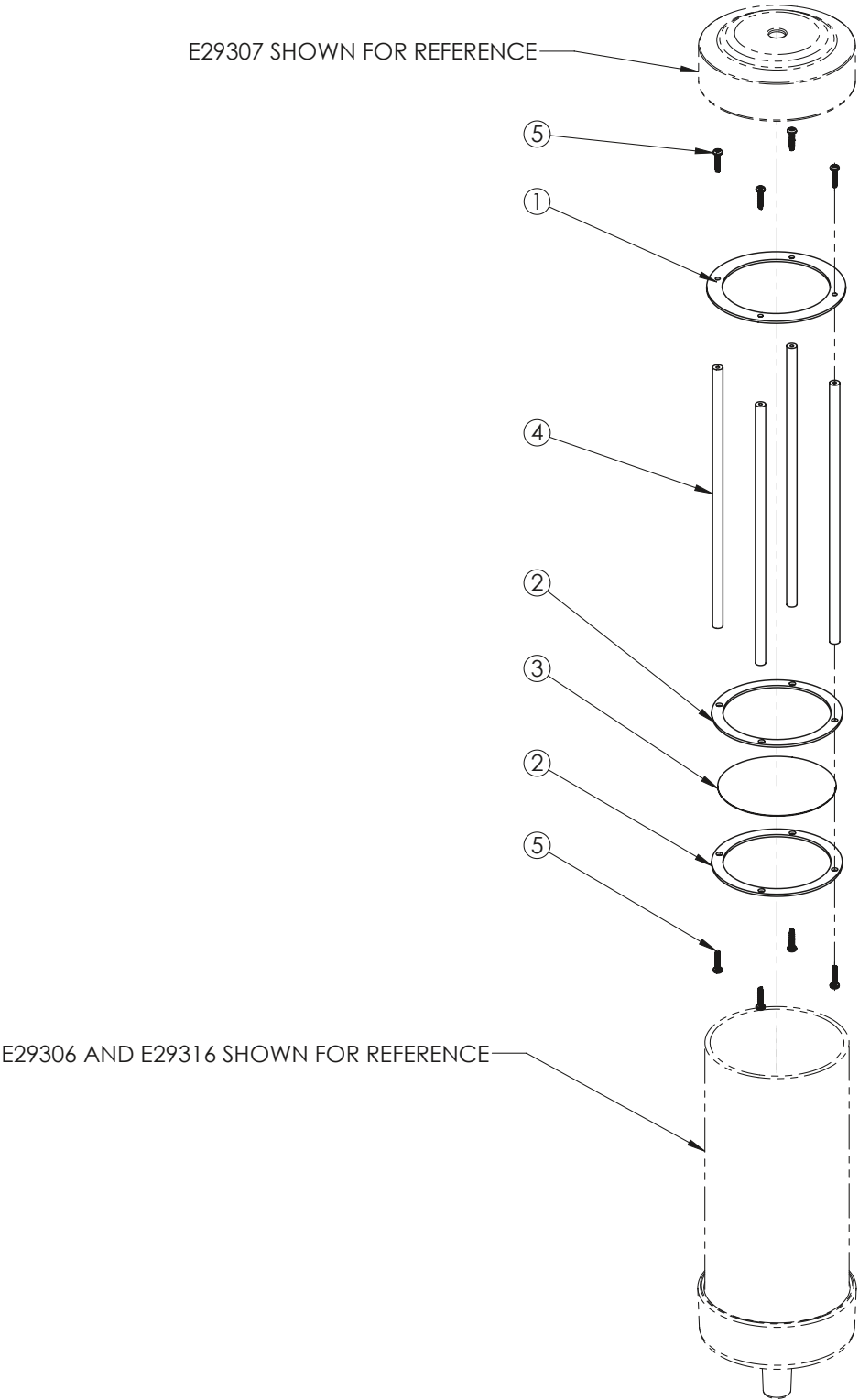


Item#	Part #	Description	Qty.
1	E29316	CAP, CHEM TUBE END, BOTTOM	1
2	E29306	TUBE, 3.500 OD X 3.250 ID, CLEAR PC	1
3	E29307	CAP, CHEM TUBE END, TOP	1
4	E28767	WASHER, FENDER, 0.406 ID x 1.250 OD, 0.069 THK	1
5	E29313	FITTING, NOZZLE, BRASS	1
6	E29320	FITTING, ELBOW 90, 1/4 NPT, BRASS	1
7	E28786	FITTING, ELBOW 90, 3/8 BARB x 1/4 NPT	1

Item#	Part #	Description	Qty.
8	E28536	FITTING, ELBOW 90, 3/8 BARB x 3/8 BARB, PLASTIC	1
9	E29315	FITTING, TEE, 3/8 BARB, PLASTIC	2
10	E29345	FITTING, RESTRICTION PLUG	1
11	E28773	CLAMP, HOSE, SINGLE PINCH	6
12	EP50224	HOSE, 3/8 ID, REINFORCED CLEAR PVC, 2.00 LG	1
13	EP50422	HOSE, 3/8 ID, REINFORCED CLEAR PVC, 9.75 LG	1
14	EP50410	HOSE, 3/8 ID, REINFORCED CLEAR PVC, 2.50 LG	1

SOLICHEM PUCK CAGE DIAGRAM AND PARTS LISTING

Only applies to machines with Solichem Option

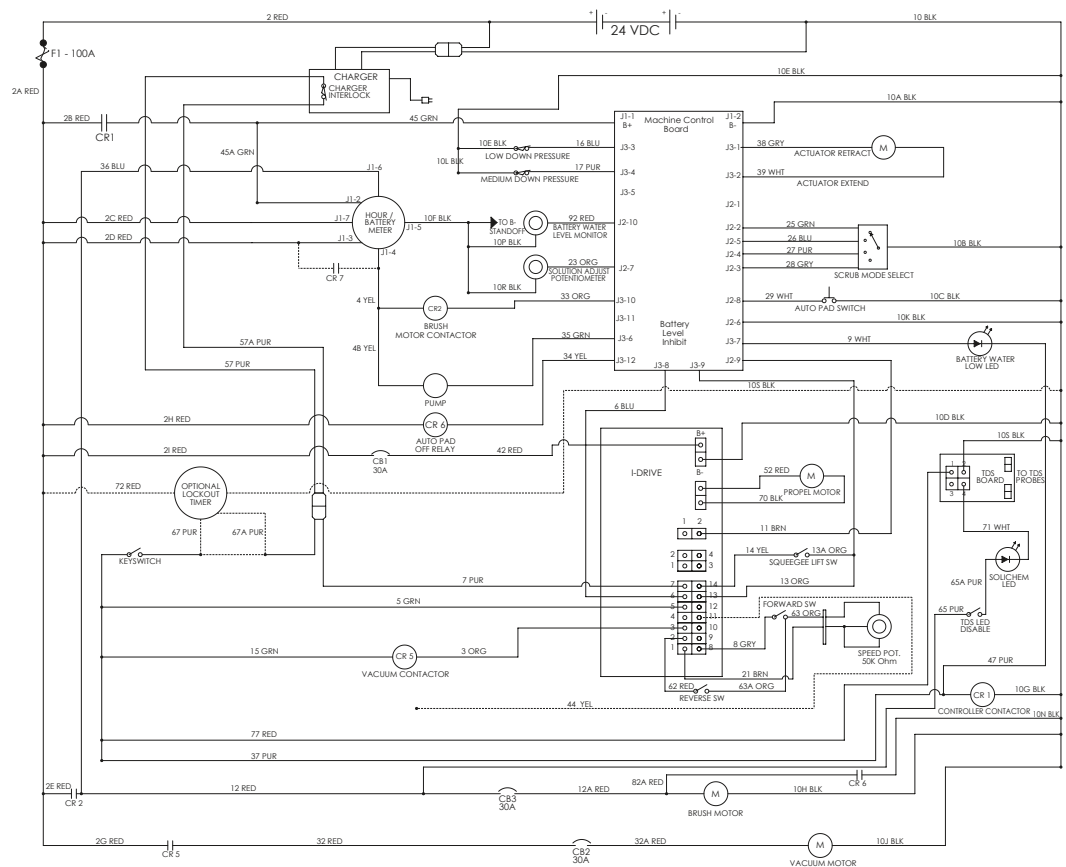


Item#	Part #	Description	Qty.
1	E28757	FLANGE, INNER PUCK CAGE, TOP	1
2	E29308	FLANGE, INNER PUCK CAGE	2
3	E29309	SCREEN, PUCK CAGE, SS	1

Item#	Part #	Description	Qty.
4	EP50421	ROD, 0.25 OD, PVC, GRAY, 7.25" LG	4
5	E29311	SCREW, #4, 1/2" LG., THREAD FORMING, 18-8 TORQ, SS	8

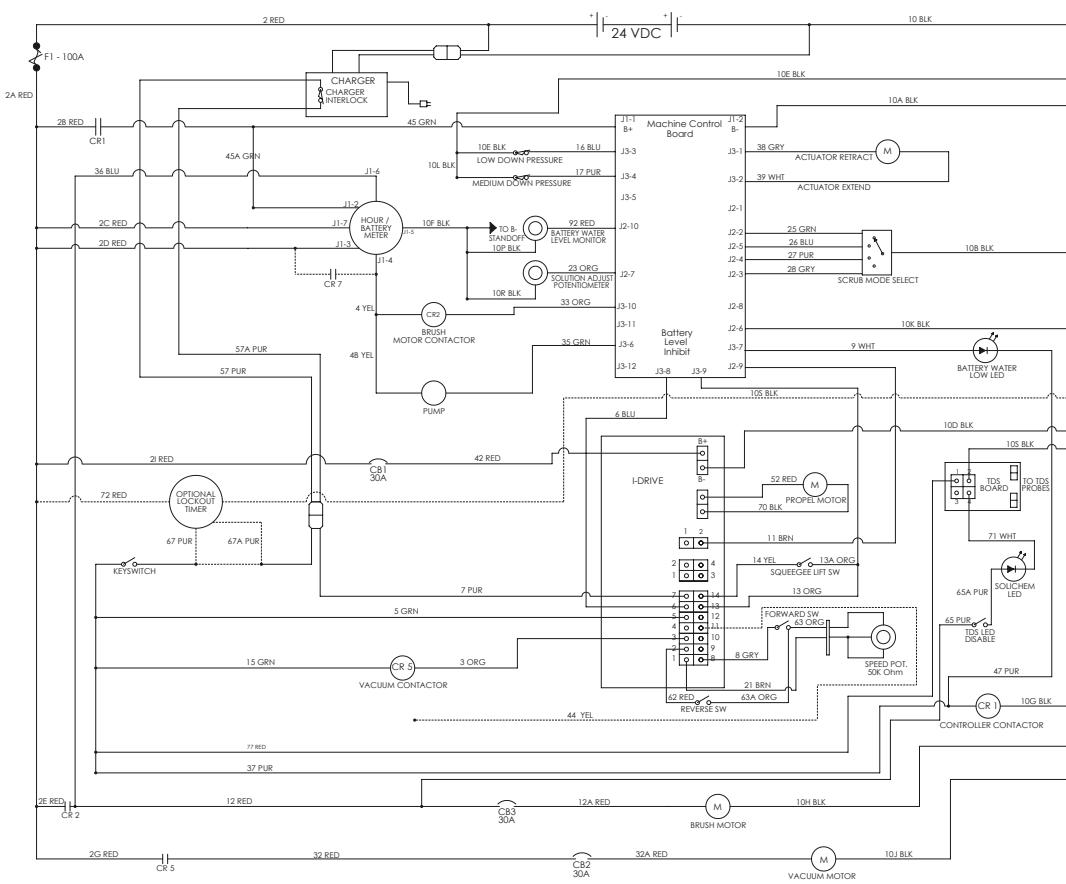
DISC MACHINE ELECTRICAL SCHEMATIC

Only applies to machines with disc heads



ORBITAL MACHINE ELECTRICAL SCHEMATIC

Only applies to machines with orbital heads



GENESYS™ RECOMMENDED SPARE PARTS

PART #	PART NAME	MACHINE SUB-SYSTEM	20D	200RB
E28872	Front Squeegee Blade 30in	Squeegee	X	X
E28873	Rear Squeegee Blade 30in	Squeegee	X	X
E28903	Squeegee Attachment Knob	Squeegee	X	X
E28530	Rubber Isolator Mount 1.563 Tall x 1.25 Dia	Orbital Head		X
E28531	Isolator Bushing 1.25 OD x 0.313 ID	Orbital Head		X
E28858	Pad Driver Assembly	Disk Head	X	
E28994	HEPA Filter	Recovery Tank	X	X
E29563	Ball Float Shut-Off	Recovery Tank	X	X
E28998	Hose, Squeegee Vacuum	Recovery Tank	X	X
E28921	Hose, Recovery Tank Drain	Recovery Tank	X	X
E28975	100A Fuse	Electrical	X	X
E28954	30A Breaker	Electrical	X	X
E12629	Key Switch w/ 2 Keys	Electrical	X	X
E28956	80A Relay	Electrical	X	X
E28978	40A Relay	Electrical	X	X
E20704	Head Lift Switch	Head Lift	X	X
E29323	Switch, Rotary	Handle Console	X	X

GENESYS™ RECOMMENDED MAINTENANCE

SYSTEM	REFERENCE SECTION	DAILY	WEEKLY	MONTHLY	SIX MONTHS
CONTROL PANEL					
INSPECT ALL CONTROLS AND HARDWARE FOR SECURITY & SERVICEABILITY	PARTS DIAGRAM	X			
VERIFY PROPER OPERATION OF ALL CONTROLS	ALL	X			
SOLUTION DISTRIBUTION					
VERIFY SOLUTION FLOW AND ADJUSTMENT OPERATION	SOLUTION DISTRIBUTION	X			
CLEAN AND INSPECT INLINE FILTER	SOLUTION DISTRIBUTION		X		
FLUSH TANK WITH FRESH WATER	SOLUTION DISTRIBUTION			X	
SCRUB DECK					
RINSE BRUSHES AND PADS	SCRUB DECK SETUP	X			
RINSE AND DRY SCRUB DECK	SCRUB DECK SETUP	X			
CLEAN MOTOR VENTS	PARTS DIAGRAMS			X	
INSPECT ISOLATORS (ORBITAL ONLY)	PARTS DIAGRAMS				X
INSPECT LIFT LINKAGE AND PIVOTS	SCRUB DECK SETUP				X
RECOVERY SYSTEM					
RINSE OUT AND LET THE RECOVERY TANK AIR DRY	RECOVERY SYSTEM	X			
CLEAN AND INSPECT DEBRIS TRAY	RECOVERY SYSTEM	X			
VERIFY DRAIN HOSE CAP IS SEALED TIGHT WHEN INSTALLED	RECOVERY SYSTEM	X			
INSPECT LID SEAL	RECOVERY SYSTEM		X		
INSPECT/REPLACE DEFOAMER PUCK AS NEEDED	RECOVERY SYSTEM		X		
INSPECT HEPA FILTER	RECOVERY SYSTEM			X	
CLEAN AND SANITIZE RECOVERY TANK	RECOVERY SYSTEM			X	
BATTERIES AND CHARGER					
INSPECT CABLES & TERMINALS FOR CORROSION, SECURITY & DAMAGE	BATTERIES			X	
SERVICE LEAD ACID BATTERIES IF APPLICABLE	BATTERIES		X		
CLEAN ONBOARD CHARGER VENTS IF APPLICABLE	PARTS DIAGRAMS			X	
INSPECT WET BATTERY PROTECTION SYSTEM	BATTERIES				X
SQUEEGEE ASSEMBLY					
CLEAN AND INSPECT THE BLADES AND ENTIRE SQUEEGEE ASSEMBLY	RECOVERY SYSTEM	X			
INSPECT VACUUM HOSE	RECOVERY SYSTEM		X		
FRAME AND CHASSIS COMPONENTS					
CLEAN AND INSPECT WHEELS AND CASTORS	PARTS DIAGRAMS			X	
CLEAN AND INSPECT LINKAGE, CHASSIS AND HARDWARE	PARTS DIAGRAMS			X	
CLEAN AND INSPECT VISIBLE WIRES FOR DAMAGE AND SECURITY	PARTS DIAGRAMS				X

TROUBLESHOOTING GUIDE

SUB-SYSTEM	SYMPTOM	POSSIBLE ROOT CAUSE	HOW TO CHECK	POSSIBLE FIX
Solution System	Poor or No Water Flow	Solution Tank is empty	Check Sight Tube	Fill with water
		Ball Valve is closed	Visual Check of valve	Open Valve
		Debris in line	Visual Check of solution lines	Clear blockages
		Plugged Filter	Unscrew cap and check screen	Clean and re-install
		Kinked line near the deck	Visual Inspection	Re-route or replace hose
		Solution Flow knob turned all the way down	Visual Check of Solution Control Knob	Turn flow up
		Solution Pump not working	Check pump for proper operation	Replace component
Vacuum System	Poor Water Recovery Could result in: • Severe streaking • Water left on floor	Recovery Tank is Full	Visual Inspection	Drain the tank
		Worn or dirty blades	Visual Inspection	Flip to a different edge, clean, or replace
		Hole in Recovery/Squeegee Hose	Visual Inspection	Replace component
		Plugged squeegee or recovery hose	Visual Inspection	Remove Clog
		Debris in squeegee	Visual Inspection	Clear debris
		Squeegee Out of Adjustment	Check for proper blade deflection	Adjust swivel casters
		Stuck Float Ball	Visual Inspection	Dislodge Float ball from tube
		Recovery Tank Lid not sealing properly	Check seal for damage and proper seating	Re-install seal or replace
		Drain Hose Cap not installed	Visual Inspection	Install cap
		Clogged HEPA filter	Visual Inspection	Replace component
		Defective Vac Motor	Vac runs but struggles and can't generate suction	Replace component
		Squeegee hose not attached on one end	Visual Inspection	Properly Install Hose ends
Electrical System	Machine will not turn on No lights on the BDI	Main Machine Fuse Blown	Inspection of 100A fuse	Replace Component
		Faulty Battery Connection	Check Connections at the battery pack and into panel	Fix any bad connections
		Faulty Key Switch	Check Key Switch Continuity	Replace Key Switch
		Charger Interlock not plugged in	Visual Inspection	Connect if disconnected
		Discharged Batteries	Check Battery Voltage	Charge Batteries
Vacuum System	Vacuum will not turn on Vacuum will not turn off	Vac Switch out of adjustment	Switch is not actuated	Adjust switch
		Vac Motor Circuit Breaker Tripped	Visual Inspection	Reset Circuit Breaker
		Defective Vac Motor	Motor doesn't run when 24V is confirmed to be present	Replace Component
		Faulty Vac Relay	Check for proper operation	Replace Component
		Still in the 7 second delay mode	Wait 7 seconds	None. Works as designed
		Vac Switch out of adjustment	Switch is not actuated	Adjust Switch
		Faulty Vac relay	Check for proper operation	Replace Component
Scrub Deck	Deck Motor(s) will not run This assumes the scrub deck is in the down position	Brush Motor Circuit Breaker(s) Needs Reset	Visual Inspection	Reset Circuit Breaker
		Low Voltage Cutoff Engaged	Check BDI to see if Low Voltage Cutoff has kicked in	Charge Machine
		Faulty motor contactor(s)	Check for proper operation	Replace Component
		Defective Motor(s)	Check for proper operation	Replace Component
Transaxle	Machine will not drive	Bail Switches may be faulty or out of adjustment	Verify that the switches engage in forward and reverse	Adjust switches
			Confirm that the switches have continuity and have voltage being supplied to them.	Replace Component
		Speed knob turned all the way down	Turn the knob up to a faster speed	Turn the knob up
		Transaxle circuit breaker tripped	Visual Inspection	Reset Circuit Breaker
		Faulty I-Drive	Confirm proper operation of I-Drive	Replace or re-program
		Defective transaxle	Confirm voltage supplied to the motor	Replace Component

TROUBLESHOOTING GUIDE

SUB-SYSTEM	SYMPTOM	POSSIBLE ROOT CAUSE	HOW TO CHECK	POSSIBLE FIX
Head Lift	Actuator does not move	Loose down pressure knob	Set screw is loose and knob spins without turning the down pressure switch stem	Reposition and tighten set screw. Add loctite to set screw if available
		12.5A Fuse is blown on the control board	Visual check of the fuse	Replace Fuse
		Failed Down Pressure Selector Switch	Check switch for damage and proper operation	Replace Component
		Head lift switch issue	Check switches for proper position and operation	Adjust Cam's if needed to ensure they engage in the appropriate locations
		WBP System Activated	Check for battery watering light to be on	Water batteries
		Failed Actuator	Check for proper supplied voltage and operation	Replace Actuator
Head Lift	Actuator extends fully when a pressure is selected	Cams need adjusted	Verify Cams are in the appropriate location	Adjust Cam location
		Switch Position (Angle) Changed	Verify that the switches are engaging properly as the actuator moves	Adjust the angle to where the Cam will engage
		Defective Head Lift Switches	Fails a continuity check	Replace Switch
Scrub Deck	Pad Auto-Off feature does not work	Machine is not in transport mode	Verify that the down pressure knob is in Transport Mode and the head is up	Turn the knob to the Transport Position
	Disk Machines Only	Defective Auto Off relay	Check relay for proper operation	Replace relay
		Defective Auto Off button	Check switch for proper operation	Replace button
		Pad Drivers are stuck	The brushes turn and function properly when the button is pressed but the pad drivers do not release	Manually will need to remove pad drivers and correct what is making them stick
Electrical System	Machine doesn't charge	Defective Charger	Check for 25A coming from the charger when plugged in	Replace Charger
		Anderson SB50 connector is disconnected	Visual check of connection	Connect it
		Battery Pack is bad	Check for an extremely low pack voltage. The charger may not pickup on it.	Replace batteries or place on another appropriate charger to bump them
		Wiring issue between charger, battery pack, and panel	Visual check of wiring and connections	Repair or replace any defective wiring or connections
		Blown 100A main machine fuse	Check for continuity through the fuse	Replace fuse and try to determine what may have made the fuse blow
Operation	Run Time is too short	Defective Batteries	Load test the batteries	Replace battery if it fails
		Scrub head is in high down pressure	Check down pressure knob setting.	Lower down pressure.
		Batteries are low on water (Wet batteries only)	Remove a cap and do a visual inspection of the water level. Plates should not be exposed	Water batteries per manual instructions
		Charger is not allowed to finish charge cycle	Check the charger status prior to disconnecting	Allow cycle to complete prior to unplugging

BETCO US WARRANTY POLICY

10 Year Coverage

Subject to the conditions stated below, Betco warrants parts and labor on rotationally molded polyethylene tanks/housings and injection molded vacuum head assemblies to be free from defects in materials and workmanship for a period of ten years to the original purchaser.

5 Year Coverage

Subject to the conditions stated below, Betco warrants parts and labor on all lithium-ion batteries for GeneSys scrubbers to be free from defects in materials and workmanship for a period of five years to the original purchaser.

3 Year Coverage

Subject to the conditions stated below, Betco warrants parts and labor on all other Betco components to be free from defects in materials and workmanship for a period of three years to the original purchaser.

- Lithium Ion battery for MotoMop™ is a full 3 years

1 Year Coverage

Subject to the conditions stated below, Betco offers a limited warranty on parts and labor on the following equipment: parts and accessories to be free from defects in materials and workmanship for a period of one year to the original purchaser.

- PowerUp™ 14 Upright Vacuum: #E29990-00
- Bac Pac Lite Vacuum: #85903-00
- FiberPRO® Floor Dryer: #85507-00
- WORKMAN™ Series Vacuums: #85024-00, #85025-00, #83012-00, #85027-00
- All Tools and Accessories
- All Battery Chargers
- Deep cycle batteries are pro-rated for 1 year

Allowable Travel Time Warranty Reimbursement:

Eligible equipment: All battery and propane powered equipment products. Warranty period: 90 days (GeneSys™ Mid-Size Scrubber: 180-days) from date of sale to the original purchaser. A maximum 180 mile round trip at 50 cents per mile will be allowed for warranty consideration.

Propane Machine Warranty:

Kawasaki/Subaru engines are warranted by Kawasaki/Subaru for a period of 2 years against manufacturer defects. All other components (except wear items)* are warranted by Betco for a period of 3 years.

***Wear Items exempt from Warranty consideration include but may not be limited to: power cords, transport wheels, vacuum bags, belts, squeegee blades, pad drivers, clutch plates, handle grips, filters, screens, throttle cables, brushes and carbon brushes.**

Subject to the conditions and exceptions stated in this warranty, Betco warrants the Betco products to be free from defects in material and workmanship, under normal use and service, for the periods listed under the warranty policy to the original purchaser. At any time during the warranty period, Betco will furnish replacement parts for the Betco parts to the original purchaser. Such parts will be furnished and charged including transportation costs, to the original owner through any Betco authorized Service Distributor. If the original part is returned within the warranty policy period from date of delivery for inspection by Betco and is found to be defective the owner will be credited for the cost of replacement parts plus shipping and handling. Replacement parts that have become defective through wear or abuse are not included in this warranty.

This warranty does not apply to damage or defect caused by accident, misuse, negligence, fire, or to any Betco product which has been serviced or repaired by other than an authorized Betco Service Distributor or Betco factory personnel. This warranty is void if unauthorized modifications are made to any Betco products. This warranty is void if products are used for any purpose other than that which was intended. There are no other warranties expressed or implied. In no event shall Betco be liable for incidental or consequential damages or any damage to person or property. (Please note some states do not allow the exclusion or limitations for incidental and consequential damages).

