

Operator's Manual

SPEEDSTAR

Propane Burnisher with Vacuum

Failure to read and understand this manual before operating this machine or performing service on this machine may result in injury to the operator or nearby personnel or result in damage to the machine or nearby property. Each operator must be trained in the operation of this machine before being allowed to use it. Contact Amano Pioneer Eclipse Customer Service at 1-800-367-3550 or 1-336-372-8080 or an authorized Amano Pioneer Eclipse Distributor to inquire about training or to request a replacement manual.

La falta de leer y de entender este manual antes de usar esta máquina o de realizar servicio en esta máquina puede dar lugar a lesión al operador o al personal próximo o a resultado en daño a la máquina o propiedad próxima. Cada operador debe ser entrenado en la operación de esta máquina antes de ser permitido utilizarla. Ponerse en contacto con el servicio de Amano Pioneer Eclipse 1-800-367-3550 o 1-336-372-8080 o un distribuidor autorizado por Amano Pioneer Eclipse para investigar sobre el entrenamiento o para solicitar un manual.

Manquer de lire et de comprendre ce manuel d'utilisation avant l'utilisation de cette machine ou avant faire de maintenance sur la machine peut être résulter en blessure à l'opérateur ou au personnel proche ou peut endommagé la machine ou la propriété proche. Chaque utilisateur doit être entraîné dans l'opération de cette polisseuse avant l'utilisation. Veuillez contacter le service après-vente de Amano Pioneer Eclipse à 1-800-367-3550 ou 1-336-372-8080 et/ou un distributeur de Amano Pioneer Eclipse pour vous renseigner concernant l'entraînement ou pour obtenir un autre manuel d'utilisation.

For Models:

**ST21KWA
ST21KWAE
ST24KWA
ST24KWAE
ST28KWA
ST28KWAE**



Pioneer Eclipse®



FOR YOUR SAFETY

IF YOU SMELL GAS:

1. Open window.
2. Don't touch electrical switches.
3. Extinguish any open flame.
4. Immediately call your gas supplier.

FOR YOUR SAFETY

Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

Record This Important Information

Date of Purchase _____

Purchased From _____

Address _____

City _____ State _____ Zip _____

Phone _____ Contact _____

Machine Model _____

Machine Serial Number _____

Engine Type _____

Engine Serial Number _____

Important Phone Numbers

Medical Emergency _____

Police _____

Fire Department _____

Safe Operating Practices

- Allow only qualified and trained personnel to operate equipment.
- Follow maintenance and operating instructions.
- Keep accurate records of maintenance and service in the provided log book.
- Remember, routine maintenance NOW will prevent a breakdown LATER.
- Check oil level before starting.
- Keep nuts and bolts tightened and hose connections snug.
- Refer to engine manufacturer's service manual or contact Amano Pioneer Eclipse for engine repairs or adjustments not listed in this manual.
- Never alter or reconstruct the fuel system. To do so may be dangerous and will void the factory warranty.
- Use UL, CTC/DOT listed Safe-Fill™ cylinders supplied by Amano Pioneer Eclipse.
- Be careful not to cross thread the Rego coupling on the fuel cylinder.
- Store the fuel cylinder outside away from heat and direct sunlight.
- Check pad holder for cracks each time the pad is changed.
- Have the machine serviced by a certified technician, including an emission check, every three (3) months.
- Before attempting any service on the machine, turn the ignition switch "OFF" and remove the key to avoid accidental start-up.

WARNING: Operate in a well ventilated area. (Catalytic mufflers need to warm up before they are effective. Failure to do so may cause nausea or carbon monoxide poisoning.)

WARNING: Keep hands and feet clear of rotating pad! Inspect pad holders regularly. (A fractured pad holder may result in pad holder fragments causing injury.)

WARNING: Failure to follow the instructions and warnings appearing in this operating manual or on machine labels may result in serious injury to the person using the machine and possibly to other persons and property.

NOTE: This machine is manufactured for commercial use only.

Propane powered floor burnishers are designed and manufactured for ultra high speed commercial floor burnishing only. These machines are designed to burnish most modern types of floors including composition tile, stone, marble, terrazzo, and resilient floor covering using floor coatings designed for ultra high speed burnishing.

Even though NFPA 58 8-4.5 says ..."these machines shall be permitted to be used in buildings frequented by the public, including the times when such buildings are occupied by the public," Amano Pioneer Eclipse suggests usage when occupancy of a given work area is minimal.

These machines should not be used:

- in nursing homes, hospitals, day-care centers, etc.
- by unqualified or untrained personnel.
- unless properly maintained and adjusted.
- on areas with obstructions such as thresholds, floor outlet boxes, etc.
- in areas where loose tile or other objects are present.
- in rooms without proper ventilation.

These machines should not be left running unattended.

CAUTION: Do not allow the burnisher to operate without moving the machine. It may burn the floor and damage the floor covering.

PROPOSITION 65 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. Wash hands after handling.

Specifications

ST21KWA(E)

Pad Size	21" (53,3 cm)
Pad Speed	2000 RPM
Width	23.5" (59,7 cm)
Length (handle up)	48" (122 cm)
Engine	Kawasaki 17 HP
Starting	12 V Battery
Weight	215 lbs. (97,5 kg)
Handle	Bent Tube with Bail
Deck	Cast Aluminum
Vibration	Less than 2.5 m/s
Sound Level	87 dB(A)

ST28KWA(E)

Pad Size	28" (71,1 cm)
Pad Speed	1700 RPM
Width	30" (76,2 cm)
Length	54" (137 cm)
Engine	Kawasaki 17 HP
Starting	12 V Battery
Weight	225 lbs. (157 kg)
Handle	Bent Tube with Bail
Deck	Cast Aluminum
Vibration	Less than 2.5 m/s
Sound Level	87 dB(A)

ST24KWA(E)

Pad Size	24" (61 cm)
Pad Speed	1800 RPM
Width	26.25" (66,7 cm)
Length	51" (130 cm)
Engine	Kawasaki 17 HP
Starting	12 V Battery
Weight	220 lbs. (100 kg)
Handle	Bent Tube with Bail
Deck	Cast Aluminum
Vibration	Less than 2.5 m/s
Sound Level	87 dB(A)

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Propane Machine Safety

Purpose

The accepted demand for and use of propane powered floor machines underscores the need for responsible manufacturers and users to stress the importance of safety. This manual is designed to provide the information you need to ensure proper and safe use of propane powered floor machines.

In addition, we recommend operators of propane powered floor machines complete a program of training and certification for the safe operation of this equipment.

Refueling and Storage of Fuel Cylinders

Propane cylinders should be filled only by an authorized propane dealer. When not in use, they should always be stored outside in an upright position in a secure, tamper-proof, steel mesh storage cabinet. This cabinet may be located next to the building but with at least five feet (1.5 m) of space between the cabinet and the nearest building opening (door or window).

The National Fire Protection Association (NFPA) Standard for Storage and Handling of LP Gas is the appropriate authority for safe propane use. A copy of this publication is available through the National Fire Protection Association in Quincy, Massachusetts (1-800-344-3555).

Safety in Engineering

Amano Pioneer Eclipse engineers and manufactures machines utilizing UL (Underwriters Laboratories) and CGA (Canadian Gas Association) approved components where possible. When a tag or tags bearing the CE and/or CGA insignia is/are affixed to the machine, it indicates that the entire machine has been researched, tested, and is listed by one or both organizations as having met all of their safety criteria.

In some cases, the tag will be affixed to a particular component. This means that only the component is listed. Component recognition for the following parts is important: fuel cylinders, couplings, regulators, and fuel lines. We strongly recommend that you use only machines meeting the above minimum requirements.

Even though propane powered floor machines manufactured by Amano Pioneer Eclipse meet the OSHA Time Weighted Average (TWA) standard for

noise, we strongly recommend that hearing protection be worn by the operator.

Use and Care

All machines manufactured by Amano Pioneer Eclipse come with a detailed Operator's Manual. Safety dictates that before using any new equipment, it is important to read and understand the Operator's Manual. We strongly recommend this practice.

Canadian Safety Regulations

1. A sign indicating "NO SMOKING" shall be permanently displayed at the storage area. The sign shall be in accordance with the sign required in Clause 10.12.3 of CAN/CGA-B149.2-M91, Propane Installation Code.
2. When the cylinder is attached to the floor maintenance machine for use, the operator shall not leave the unit unattended except for short periods of time such as rest stops, washroom or meal stops.
3. The requirements of 1.10.1 (e) and (g) do not apply in industrial buildings.
4. A floor maintenance machine shall only be used in buildings:
 - a) provided with continuous mechanical ventilation that removes the products of combustion to the outdoors of not less than 300 CFM for each 10,000 Btu-hr input or fraction thereof.
 - b) provided with natural ventilation of not less than 300 CFM for each 10,000 Btu-hr input or fraction thereof, based on a maximum of one quarter air exchange per hour for the net building volume.
5. The owner of a floor maintenance machine shall ensure that the operator has participated in a course authorized by the manufacturer of the unit on the safe handling of propane and the safe operation of the machine.
6. The owner of a floor maintenance machine shall ensure that the unit is maintained in accordance with the manufacturer's recommended maintenance procedures in a safe operating condition and the owner shall maintain a record of the maintenance for a period of two years.
7. Before transporting a floor maintenance machine, the cylinder shall be securely fastened with the system valve closed, and the cylinder shall be located in a well ventilated space.

Propane Machine Safety

Test for Operator-Ear Sound Pressure Level

Amano Pioneer Eclipse measures and rates the operator-ear sound pressure level for hand-guided floor treatment and floor cleaning machines for industrial use. All tests are performed in accordance with European Machinery Directive (98/37/EC).

- Outdoor test area consists of a flat open space free from effects of signboards, buildings or hillsides for at least 15m (50 ft) from the center of the test surface. Indoor tests are conducted in a semi-anechoic or sound deadening room.
- The test surface is a single sheet of floor covering at least 1 m (3.3 ft) wider and longer than the equipment being tested. In order to not affect the sound reading, the observer taking readings is at least 2 m (6.6 ft.) from the equipment being tested, or standing directly behind the operator.
- All machines are tested while stationary and centered on the test surface. With the traction drive in neutral (where applicable) the test is conducted with the machine at maximum engine or motor speed as specified by the manufacturer.
- The operator is located in the normal operating position with the microphone or meter supported independent of the machine, 1,68 m (66 in) above the test surface, 25 cm (10 in) to the right and left centerline of the operator's position, and 20 cm (8 in) to the rearmost point of the handle, with the handle in the most forward position.
- The sound level meter is observed for a minimum of 5 seconds or until a stabilized reading is obtained. The maximum repeatable sound level observed during the test at each microphone position is recorded and documented.

Test for Hand-Arm Vibration at the Grip Surface of Hand-Guided Machinery

Amano Pioneer Eclipse measures and rates the vibration at the machine-hand contact surface of hand-guided machines that are provided with handles in accordance with European Machinery Directive (98/37/EC).

- The Test area consists of a flat open floor area that allows the machine to be operated normally.
- The transducer is mounted firmly at a point halfway along the length of the handle where the handle would normally be held.
- Machines are tested while stationary, with all mechanisms necessary for the equipment to perform its intended functions engaged and the traction drive in neutral (if applicable). The machine will be tested at maximum engine or motor speed as specified by the manufacturer of the subject machine.
- The measurements are recorded from the dominant axis.

Machine Preparation

Adding Oil

When the Burnisher is shipped by **overland freight**, the correct amount of oil is in the engine. **Air freight** shipments require the machine to be shipped without oil.

The machine is also shipped with the battery disconnected.

When filling a “dry” burnisher or changing oil, **for the Kawasaki engine add no more than 1.5 quarts (1,4 L) when not changing the oil filter, or 1 3/4 US quarts (1,8 L) when the oil filter is changed**, then check the dip stick in the fill cap. Add oil if necessary but **DO NOT OVERFILL! ALWAYS CHECK OIL BEFORE USING THE MACHINE. Refer to the engine operator’s manual. IMPORTANT:** When checking oil on Kawasaki models, remove oil filler cap and clean dipstick with clean cloth, then insert dipstick into tube without screwing in. Then check oil level. **ALWAYS** make sure the machine is sitting level when checking oil.

Connecting the Battery

1. Remove engine dust filter.
2. Remove battery cover.
3. Connect the **RED** positive battery cable **FIRST**.
4. Connect the **BLACK** negative battery cable **LAST**.
5. Replace battery cover and filter.

Adjusting the Handle and RokBak

The burnisher handle adjusts for comfort and optimum control. Height may be changed to suit the individual operator. The handle may also be adjusted to an upright position to allow the burnisher to be

rocked back for easy pad change. (See page 8.) Rock the burnisher to the vertical position from the front of the unit. The burnisher must be off prior to using the RokBak Tilt System.

Filling the Safe-Fill Fuel Cylinder

Amano Pioneer Eclipse uses the 20 lb. capacity aluminum safe-fill cylinder which meets the D.O.T. 4E240 standards. These cylinders are also listed by U.L. Filling should be done **ONLY** by a qualified propane dealer. **FILL THROUGH THE SERVICE VALVE ONLY.** (See page 11) A properly filled cylinder should not exceed 80% of the rated capacity.

DO NOT attempt Safe-Fill cylinder repair. Return the cylinder to your propane dealer if repair is necessary. Please note that D.O.T. regulations prohibit shipping of cylinders after the cylinder has been filled with propane.

Installing the Safe-Fill Fuel Cylinder

Strap the Safe-Fill cylinder in place. Tighten the adjustable straps securely. Connect the fuel hose coupling to the service valve by turning to the right (clockwise). **HAND TIGHTEN ONLY.** Make sure coupling is not cross threaded and check for leakage by noting any propane odors immediately after cylinder is connected. (It is sometimes easier to install if the connection to the service valve is made before strapping the cylinder in place.)

TO REMOVE THE SAFE-FILL CYLINDER, reverse above procedure. **Always** connect or change cylinders in a well ventilated area.

Operating Instructions

Starting Instructions

1. Check oil and fuel levels
2. Check and clean engine air filter.
NEVER RUN CONTINUOUSLY FOR MORE THAN 1 HOUR WITHOUT CLEANING OR CHANGING ENGINE DUST FILTER. (See “Scheduled Maintenance”)
3. Check carburetor air filter. Change if necessary. (See “Scheduled Maintenance”)
4. Turn propane service valve counterclockwise to open.
NOTE: ALWAYS OPEN SLOWLY TO ALLOW PRESSURE TO EQUALIZE IN HOSES. OPENING QUICKLY MAY CAUSE THE FLOW CHECK VALVE TO ENGAGE, LIMITING FUEL FLOW.
5. Allow machine to tilt backward (pad off floor) leaving the bail throttle at idle.
6. Engage starter by turning the key-switch to the starting position for up to 5 seconds. If the machine fails to start, let the ignition switch return to the run position (Do not turn off). Wait approximately 5 seconds and try again for another 5 seconds. (**NOTE:** Do not engage starter for more than 10 seconds. Allow a 60 second cool-down period for each 10 second start-up cycle.)
7. After engine starts, the YELLOW alert light will flash for a 3 minute warm-up cycle of the SAFE SENSE system. (The machine may be operated during this warm-up period.) After the warm-up cycle, the alert light will go out. None of the SAFE SENSE lights will be illuminated as long as the machine is running safely.

Operation

After engine has started, pull the bail throttle to operating speed. The clutch will engage automatically at a preset speed.

Lower the burnishing head to the floor while moving the machine forward slowly.

CAUTION! DO NOT RUN THE BURNISHER WITHOUT MOVING THE MACHINE. IF THE MACHINE IS ALLOWED TO RUN IN ONE SPOT DAMAGE TO THE FLOOR MAY OCCUR.

To stop burnishing, push down on handle to raise the burnishing head off the floor and release the bail handle.

NOTE: This burnisher is equipped with the SAFE SENSE emission monitoring system and catalytic muffler.

Upon starting the engine, the YELLOW SAFE SENSE LED light will flash for 3 minutes during a warm-up period. After that, it will be off unless a warning is being signaled. If the carbon monoxide in the exhaust is approaching an elevated level the YELLOW alert light will flash, indicating service is needed. The machine will continue to operate safely in this mode, but should be serviced as soon as possible. If the carbon monoxide levels exceed a pre-set service level, the RED LED service light will start flashing. The machine will shut down after the RED light has flashed continuously for one minute.

WARNING! Catalytic mufflers require a few minutes to warm up before effectively removing harmful emissions. Make sure of proper ventilation during this warm-up period!

It is recommended to start burnishing on the right side of the aisle, turn and come back down the aisle in the opposite direction, overlapping the previous path slightly. Continue this pattern until the floor area to be burnished has been covered with the last pass being on the right side of the machine. The forward speed is generally at normal walking speed.

Idling and Stopping the Machine

If for any reason the machine needs to idle for a short period of time (less than 3 minutes), simply raise the burnishing head and release the bail handle.

The SAFE SENSE system will not allow the engine to idle unnecessarily. After 4 minutes the Tilt/Idle LED will start flashing. After another minute, the engine will shut down.

To stop the engine, close the service valve on the fuel cylinder by turning it clockwise (the engine will stop when the fuel in the lines is used up) or turn the key switch to “OFF”.

Installing/Changing Burnishing Pad

1. With engine OFF and in the operating position, tilt the machine to the vertical position (See page 8).
2. Remove centering device (if used) and carefully pull old pad off the velcro pad holding material.
3. **CAREFULLY INSPECT THE PAD HOLDER FOR CRACKS OR DAMAGE!** Replace if necessary.

Operating Instructions

NOTE: A damaged pad holder rotating at high speeds may be an extreme hazard if it should come apart.

4. Pull center from new pad, center pad on pad holder and secure with centering device.
5. Press pad onto velcro.
6. Return machine to upright position.

Emptying the Dust Bag

1. Grasp the dust bag cover at each end and lift up to disengage the cover from the retaining clips.
2. Pull dust bag downward off dust tube by holding at the front and pulling down and to the rear to remove.
3. Empty bag by rubbing or gently tapping on sides, in a downward motion, to loosen soil trapped on sides of bag. For heavy soil, turn bag inside out to clean.
4. Reinstall bag in pontoon by hooking elastic edge onto back of dust tube lip, and fitting elastic around dust tube.
5. Slip the back end of dust bag over the bag retainer bar (the bar that crosses the bottom rear edge of the bag cover). Align the cover retaining slots with the retaining clips and push the cover down to secure in place.

Storage

Only authorized, trained personnel should have access to propane cylinders and machines.

1. **Remove propane fuel cylinder when not in use and store it outside in a storage cage in accordance with NFPA Section 5 or Subsection 9.5.2 of CAN/CGA B149.2. Do not release or bleed propane inside the building.**

Please consult your local Fire Marshal to ensure that you are in compliance with local fire codes.

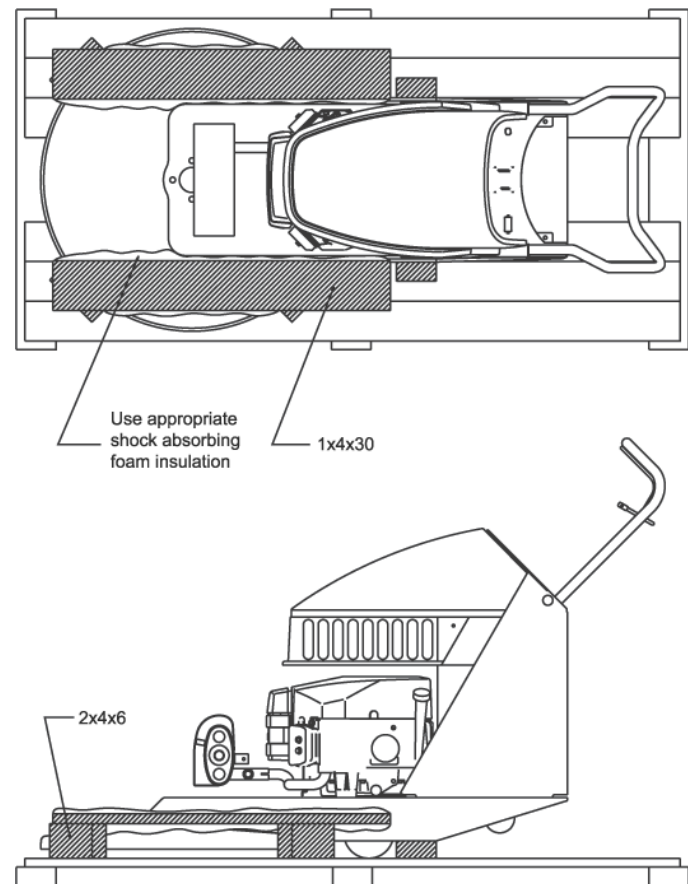
2. Store machine away from objects that may fall and damage it.
3. Never store burnisher or fuel cylinders near an open flame or heat producing device.
4. Make sure burnisher is cleaned properly before storing.
5. Never store burnisher with cylinders installed, or store spare cylinders in an enclosed van or trailer.

Repacking

1. Use shipping and package information attached to packing slip to repack machine.
2. Store machine in a dry location. Temperature not to exceed 50°C.

Transportation

When transporting a propane powered floor burnisher with the fuel cylinder installed, the cylinder should be securely fastened with the service valve closed and the burnisher should be secured in the vehicle. Any propane fuel cylinders not installed should be securely fastened to avoid movement and damage. The service valves should be closed. Never store burnishers with cylinders installed, or store spare cylinders in an enclosed van or trailer. It is a good practice to check propane cylinders for overfilling before transporting them. If overfilled, correct before loading them in the vehicle by venting the excess propane outside in a safe area using the fixed liquid level gauge.



Scheduled Maintenance

Following proper scheduled maintenance procedures will provide years of uninterrupted service.

Kawasaki Engine		Regular Service Period					
		Item or Type of Service	Break in 8 hrs.	Each Use	25 hrs.	50 hrs.	100 hrs.
Engine Oil	Check Level		2				
	Change	2,4,5			2,4,5		
Oil Filter	Change					4,5	
Engine Dust Filter	Inspect		1				
	Clean/Change		1,2				
Carburetor Air Cleaner	Inspect		2				
	Clean/Change Element				2,4,5		
	Clean Pre-Foam Element			2			
Belt	Inspect	2	2				
	Adjust/Replace	As Required (5)					
Fuel Hose & Connections	Inspect	2	2				
	Replace	If signs of wear are present (3)					
Cooling Fins	Clean				2		
Burnishing Head Asm.	Inspect				6		
Pad Holder	Inspect	When changing pad					
	Replace	If cracks appear (2)					
Bolts & Connections	Inspect				6		
	Tighten				6		
Spark Plug	Clean/Replace				5,6	4,5	
Battery & Battery Cables	Inspect				2		
Exhaust Emissions	Check						3,5
Check & Adjust Valve Clearance Retorque Heads							5,6,7

1. Perform daily or after each use.
2. Refer to "General Maintenance Procedures."
3. These items should be serviced by an authorized Amano Pioneer Eclipse Service Center.
4. Refer to Engine Manufacturer's Owner's Manual for recommended replacement.
5. Always enter maintenance performed in Service Log Book.
6. Routine Maintenance
7. Refer to Engine Service Manual.

General Maintenance Procedures

Fuel System

The fuel system works from vacuum created by the engine running. Turning the fuel cylinder service valve ON pressurizes the system for flow to the carburetor once the engine starts to crank.

Adjusting the Regulator

NOTE: The regulator and carburetor have been factory preset and should not require any modification. Only Amano Pioneer Eclipse authorized personnel, trained and certified in propane systems, should modify or adjust the system or its setting.

N.F.P.A. 58 8-1.4 states, "In the interest of safety, each person engaged in installing, repairing, filling, or otherwise servicing an LP-Gas engine fuel system shall be properly trained in the necessary procedures."

Engine Dust Filter

The engine dust filter should be cleaned each hour and after each use by shaking out the dust and then rinsing with mild detergent. Squeeze out the excess water (do not wring). Allow the filter to air dry. **Failure to maintain a clean engine filter will cause the engine to overheat. Also, it may cause the exhaust emissions to elevate to harmful levels.**

Carburetor Air Filter

- a. Loosen toggle clamps on each side of the air cleaner cover.
- b. Remove foam pre-cleaner and paper filter element.
- c. Clean foam pre-cleaner.
- d. Clean filter seal, making sure no dust is allowed in the carburetor inlet.
- e. Inspect paper element. Replace if dirty, bent or damaged.
- f. Install the clean paper element, pre-cleaner, air filter cover and reclamp.

NOTE: Failure to service the carburetor air cleaner may produce excessive carbon monoxide emissions and cause the SAFE SENSE system to shut the engine down.

Fuel Hose and Connections

- a. Inspection
 - 1) Inspect hoses for abrasions and other signs of wear; replace all worn or damaged hoses.
 - 2) Check for gas leaks by spreading soapy water

solution around all the connections while the service valve is turned ON and the fuel system is pressurized.

- b. Fixing Leaking Joints
 - 1) Uncouple bad joint and clean it. Then apply pipe sealing compound (Loc-Tite Pipe Sealant with Teflon or equivalent) to the clean joint.
 - 2) Recouple the joint finger tight plus 1/2 turn.
 - 3) **Recheck for leaks using soapy water solution. Watch for bubbles at the joint with the fuel cylinder service valve turned on and the fuel system pressurized.**

Engine Maintenance

Cooling Fin Maintenance

- a. Remove the blower housing and other cooling shrouds.
- b. Clean the cooling fins as necessary using compressed air or pressure washer.
- c. Reinstall all housings and shrouds.

Head Bolt Maintenance

Refer to Engine Manufacturer's Service Manual.

Changing Oil

- a. Run engine for 5 minutes to warm oil, then stop the engine by closing the fuel service valve, allowing the engine to stop by itself. Turn the key OFF. **NOTE: Must be running above 2150 RPM or SAFE SENSE will shut the engine down.**
- b. The machine should be in an upright, level position. If necessary, place a block under the back of machine or apply weight to the front of the deck to maintain an upright, level position.
- c. Remove the propane cylinder to access oil drain hose.
- d. Remove the oil drain hose from the retaining clip, and remove the plug from the end of the hose.
- e. Place drain pan at back of machine and direct oil drain hose into pan.
- f. Locate oil drain valve on left side of machine, and turn counterclockwise to open valve.
- g. Allow oil to drain completely.
- h. If changing oil filter, place an absorbent material under the filter to catch spillage. Remove filter by turning counterclockwise. Discard old oil filter according to local regulations. Clean any oil spillage from machine, apply a small amount of clean oil to new oil filter seal, install new filter turning clockwise and hand tighten.

General Maintenance Procedures

- i. Once oil has completely drained from machine, turn oil drain valve clockwise to close.
- j. Remove blocks or weights if present and allow machine to tilt back. Drain remainder of oil from oil drain hose and reinstall plug into end of hose.
- k. Secure hose with retaining clamp.
- l. Return machine to upright, level position, reinstalling block or weights if needed.

Always make sure that machine is upright and level before checking, filling, or changing oil.

- m. Remove oil fill cap. Slowly add no more than 1.6 US quarts (1,5 L) of motor oil when not changing the oil filter, or 1.8 US quarts (1,7 L) when the oil filter is changed. Refer to engine Owner's Manual for recommended oil.
- n. Check oil level with dip stick in oil fill cap. Add additional oil if necessary.
- o. Replace fill cap. Hand tighten only.
DO NOT OVERFILL AND NEVER RUN ENGINE LOW ON OIL!

IMPORTANT: ALWAYS MAKE SURE THE MACHINE IS SITTING LEVEL WHEN CHECKING OIL.

Belt Maintenance

To inspect the belt it is necessary to put the machine in the RokBak position. If the belt is badly cracked or worn it should be replaced.

To check for the proper tightness squeeze the belt together. The belt should depress between 1/4" (0,6 cm) and 1/2" (1,3 cm). Always use the recommended belt size.

Removing the old belt:

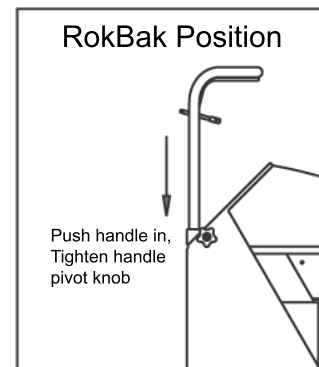
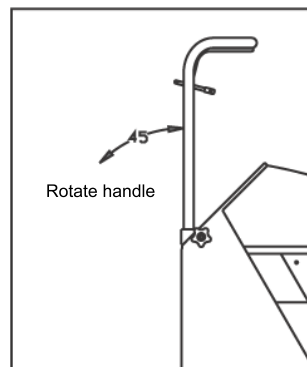
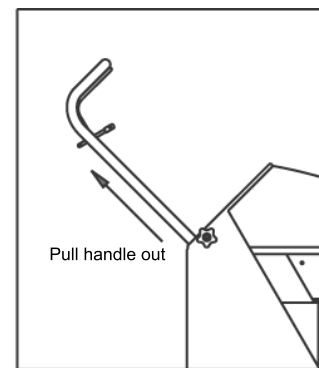
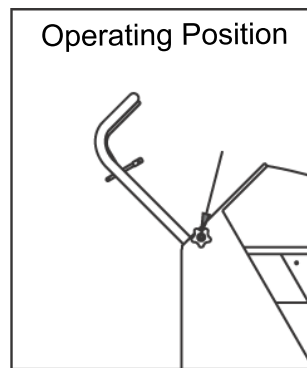
1. In order to access the pad driver pulley, the pulley cover must be removed. Be sure to note the orientation of the cover because the bolt pattern aligns only in one position.
2. Remove the belt by turning the spindle with a 3/4" wrench on the spindle wrench flats above the deck and working the belt out of the spindle pulley groove with a flat screwdriver as it turns.
3. Back the 3/8" bolt that fastens the tensioner to the deck 3/8" to 1/2" and drop the tensioner down to disengage the 1/4" pin. Pivot the tensioner on the 3/8" bolt 180°.
4. Move the belt between the tensioner and the liner dome and remove the belt from the machine.

Reinstalling the belt:

1. Reverse steps 2 - 4 above. Make sure that belt is properly set in all pulleys.
2. Reinstall the pulley cover. If bolt patterns do not align, turn the cover clockwise 90° up to three times until bolt patterns align.

Adjusting the Handle and RokBak

To place the machine in RokBak, adjust the handle as shown below and lift up on the front of the deck until the machine rocks back into a stable position.



General Maintenance Procedures

Battery Maintenance and Replacement

The battery supplied with this machine is a sealed, gelled electrolyte, maintenance free type. It never should need servicing.

When battery replacement becomes necessary, the replacement should have the same specifications as the original. If in doubt, contact Amano Pioneer Eclipse Customer Service at 1-800-367-3550 or 1-336-372-8080. To replace:

1. Remove the propane fuel cylinder from the machine.
2. Raise battery cover to expose battery.
3. Disconnect battery cables from terminals. Always disconnect the **BLACK** cable first.
4. Remove battery hold-down clamp.
5. Lift old battery out and replace with new battery.
6. Reinstall hold-down clamp.
7. Connect the **RED** positive battery cable first. Connect the **BLACK** negative battery cable last. Dispose of old battery in the proper manner. Most auto parts stores accept used batteries for recycling.

Installing & Removing the Dust Skirt

1. With machine in RokBak position, place skirt around deck edge with hoop on outer edge.
2. Position skirt clamp and seam at extreme back of deck.
3. Position skirt into groove in bumper.
4. Adjust excess fabric to front half of deck. Excess fabric should be distributed evenly across front half of deck; fabric on back half of deck should fit tightly.
5. Tighten clamp until skirt is secure.
6. Pull hoop of skirt forward, extending fabric. Test movement of band over fabric. Band should move freely over skirt fabric.
7. Hand-tighten clamp.

Adjusting the Wheel Brackets

The buffer is equipped with wheel brackets that allow the wheels to be moved forward or backward. To reduce weight on the pad, the wheels can be moved forward or to add weight, moved to the rear.

This feature aids the operator in adjusting the machine for different types of floor finish. It can also help in balancing the machine if a steel tank is used in place of an aluminum cylinder. NOTE: Aluminum cylinders with safety devices for overfill prevention are recommended.

SAFETY INSTRUCTIONS RECHARGEABLE BATTERY

! DANGER !

ALL BATTERIES CONTAIN CORROSIVE ACIDS AND PRODUCE EXPLOSIVE GASES DURING RECHARGING

GAS EXPLOSION
CAN CAUSE
BLINDNESS OR INJURY
SHIELD EYES

BATTERY ACID
CAN CAUSE
BLINDNESS OR
SEVERE BURNS

Do not make direct contact between battery terminals as this can cause an explosion or fire.

Batteries should not be stored in a discharged state.

Keep charger away from children. Only adults should recharge batteries.

Use only the charger provided by the equipment manufacturer.

Do not recharge batteries upside down.

Charging produces explosive gasses. Charge battery in a well ventilated area away from sparks, flames and smoking.

Disconnect charger from battery after 24 hours.

INTERNAL
TAKE MILK, EGG WHITES, AND
WATER.
DO NOT INDUCE VOMITING.

EXTERNAL
FLUSH IMMEDIATELY FOR
15 MINUTES IF ACID GETS
IN EYES OR ON SKIN.

CALL PHYSICIAN IMMEDIATELY

PROPOSITION 65 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.
- Batteries also contain other chemicals known to the State of California to cause cancer.
- Wash hands after handling.

Troubleshooting Guide

Symptom

Possible Causes

1. *Hard to start*

Opening propane cylinder too quickly (OPEN SLOWLY)
Low oil
Insufficient vacuum
Coil, air gap needs adjusting
Spark plug or head bolts loose
Blown head gasket

2. *Will not start*

No fuel
Low oil
Wires broken or disconnected
Fuse blown in Safe Sense
Incorrect spark plug gap (Gap should be .025)
Insufficient vacuum
Defective spark plug
Defective coil
Blown head gasket

3. *Engine lacks power*

Insufficient vacuum
Dirty air filters
Governor needs adjusting
Leaking head gasket
No compression - worn rings

4. *Smell of burned rubber*

Belt out of adjustment - check automatic tensioner

5. *Machine vibrates*

Loose nuts
Pad not centered

6. *Machine "Bogs Down" when in use*

Operator bearing down too hard
Dirty air filters

7. *Machine pulls to one side*

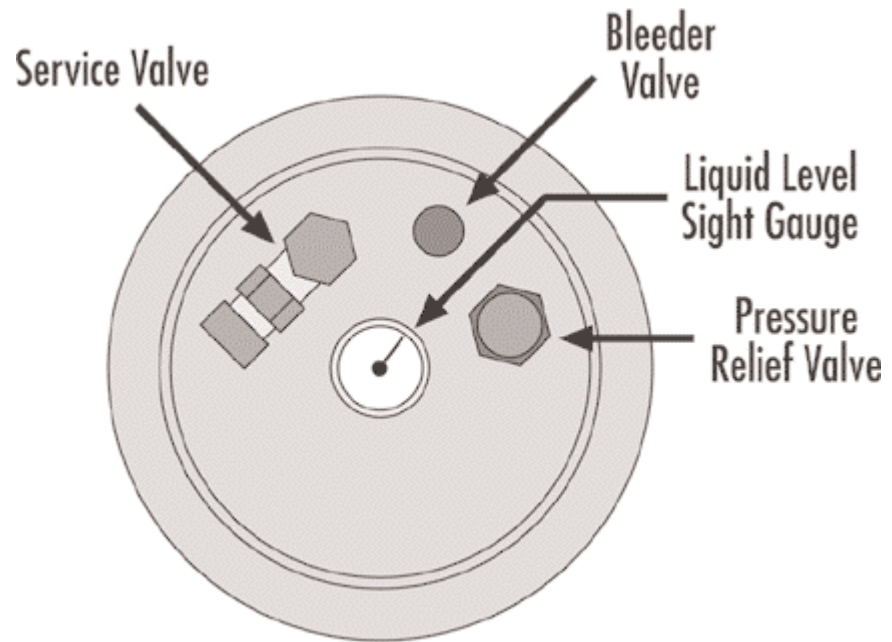
Bent wheel bracket or worn wheel
Adjust wheels forward

8. *Engine stops running*

Out of fuel
Low oil
High exhaust emissions
Dirty air filter

Machine Drawings and Parts Lists

Safe Fill Cylinder Head Layout



Dash Panel: SpeedStar

NOTE: After engine starts, the **YELLOW** alert light will flash for a 3 minute warm-up cycle of the **SAFE SENSE** system. (The machine may be operated during this warm-up period.) After the warm-up cycle, the alert light will go out. None of the **SAFE SENSE** lights will be illuminated as long as the machine is running safely.

OIL: Light comes on when there is low oil pressure. If the engine loses oil pressure, the engine shuts down until the condition is corrected. The light comes on each time the engine is stopped.

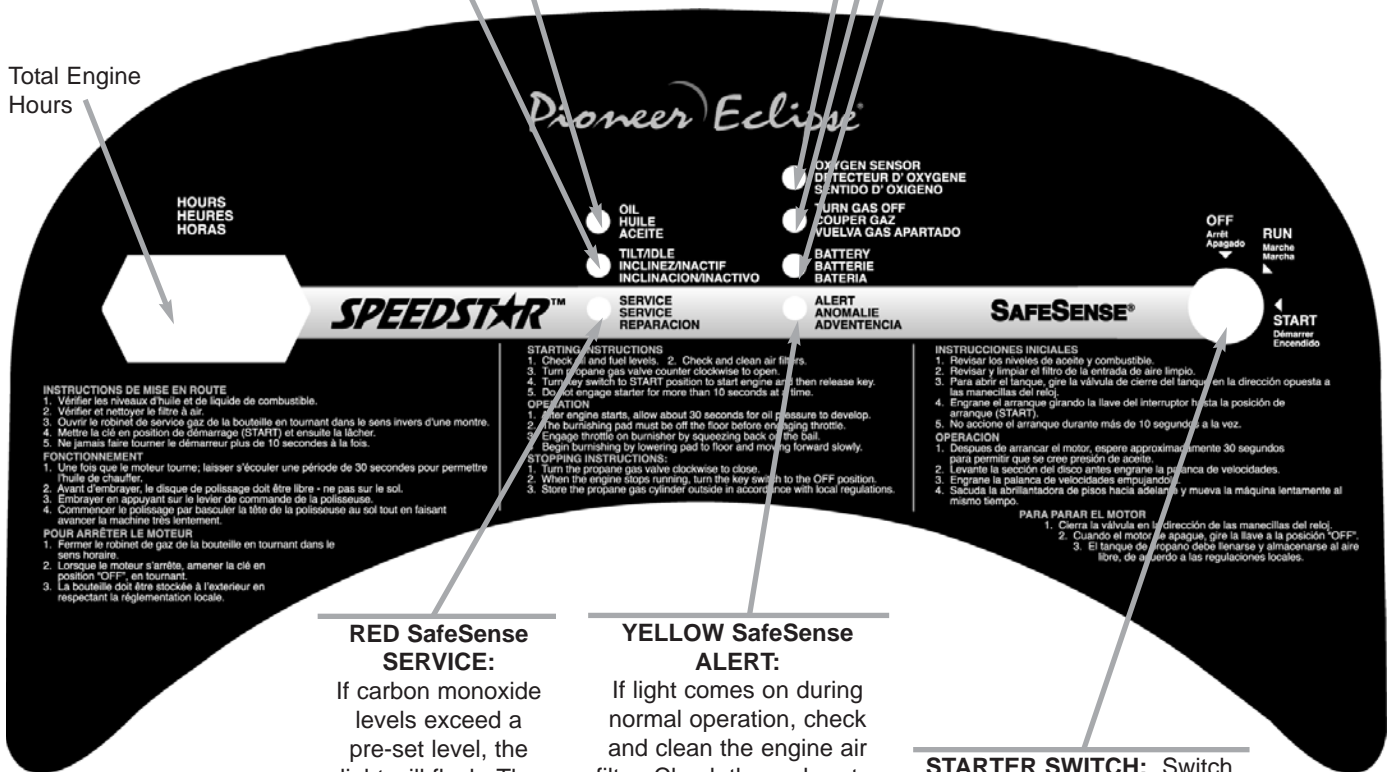
TILT/IDLE: Light comes on when the machine is tilted to the pad change position and the engine shuts down. If the machine is allowed to idle for more than 4 minutes, the light flashes for 1 minute then the engine shuts down.

OXYGEN SENSOR: If light comes on during normal operation, check the oxygen sensor wire for a snug fit into the harness and for a snug fit of the harness into the SafeSense board. If the light still remains on, the machine must be serviced by a qualified technician.

TURN GAS OFF: Light comes on to remind the operator to turn off the gas after the engine shuts down.

BATTERY: Light comes on when the battery voltage is low indicating the need to service charging system.

Total Engine Hours



RED SafeSense SERVICE:
If carbon monoxide levels exceed a pre-set level, the light will flash. The machine will shut down after the light flashes continuously for one minute. If the machine does not operate normally after the engine air filter is checked and cleaned, it must be serviced by a qualified technician.

YELLOW SafeSense ALERT:
If light comes on during normal operation, check and clean the engine air filter. Check the carburetor air filter for holes, tears, or punctures and replace if damaged. If the light still remains on, the machine must be serviced by a qualified technician.

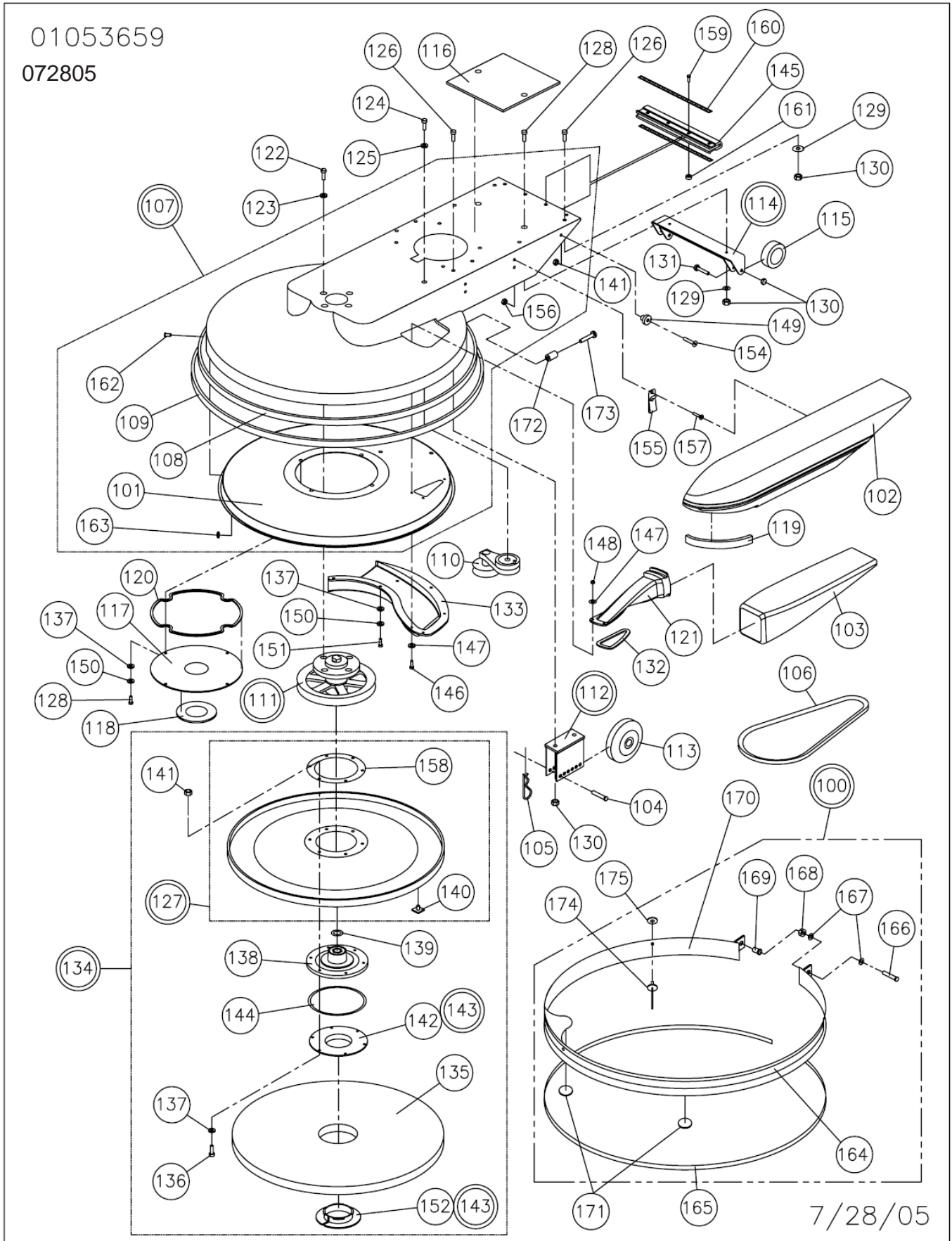
STARTER SWITCH: Switch is used to start the engine. To shut the engine down, turn off the gas. When the engine stops, turn the switch to "OFF".

NOTE: Any light that is on when the engine stops will remain illuminated for 20 seconds to indicate the reason for machine shut down.

Deck Sub-Assembly: SpeedStar

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Deck Sub-Assembly: SpeedStar

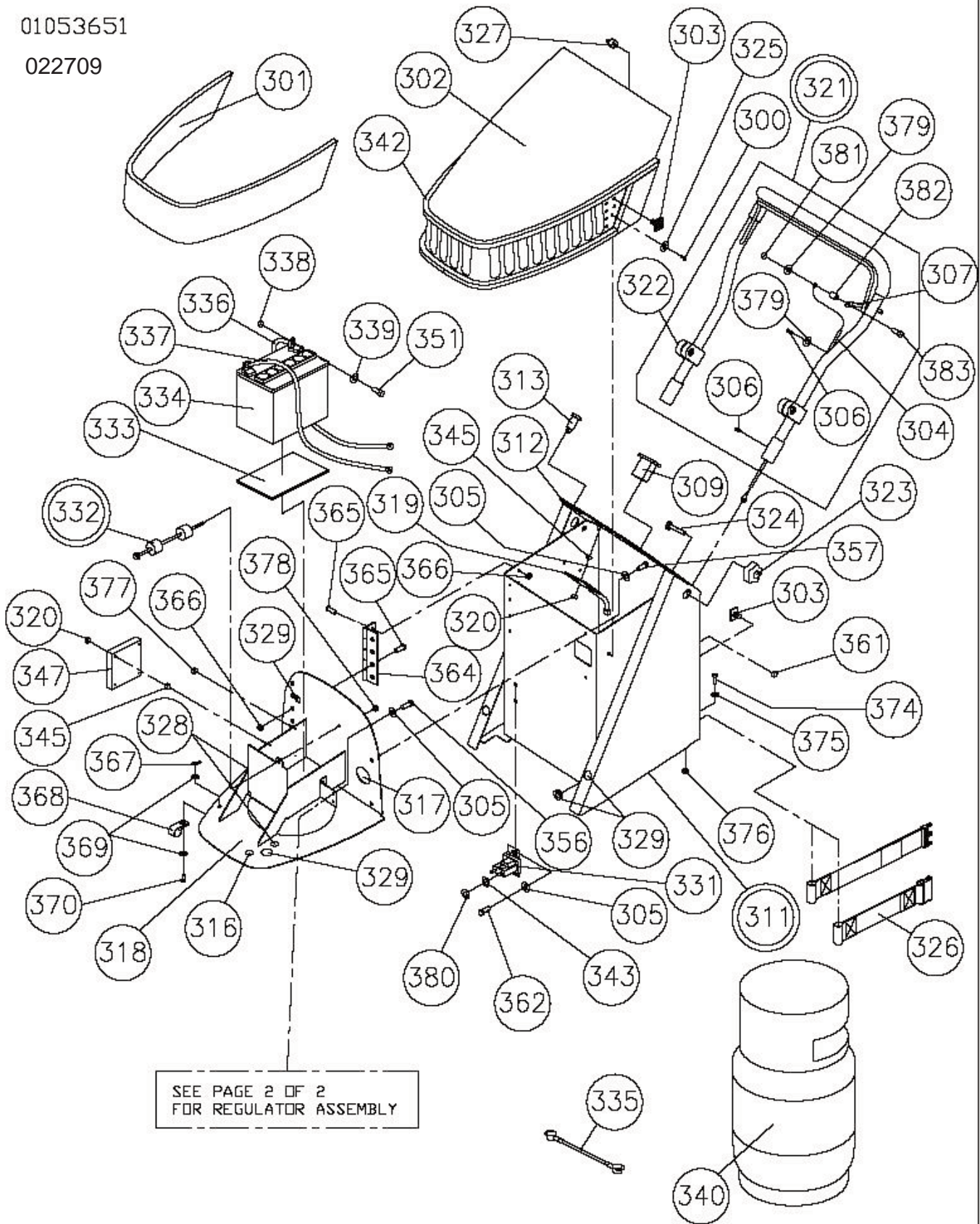
REF	PART#	DESCRIPTION	QTY	REF	PART#	DESCRIPTION	QTY
100	MP139200	Skirt, Steel, 21", Assy	1	135	PD006021	Pad, 21", Blue Blend	1
	MP139300	Skirt, Steel, 24", Assy	1		PD006024	Pad, 24", Blue Blend	1
	MP139400	Skirt, Steel, 28", Assy	1		PD006028	Pad, 28", Blue Blend	1
101	MP125200	Liner, Shroud, 21" ST, Machined	1	136	NB9319	Screw, Cap, BH, 1/4-20 x 1 1/4	6
	MP073300	Liner, Shroud, 24" ST, Machined	1	137	NB3350	Washer, Flat, 1/4"	14
	MP066801	Liner, Shroud, 28" ST, Machined	1	138	TB1012	Flexi Disc, w/Lip (21")	1
102	MP067400	Cover, Bag, Vacuum, ST	1		MP195800	Flexi Disc, w/out Lip (24" & 28")	1
103	MP065300	Bag, Vacuum, ST	1	139	NB5700	Washer, .755 x 1.005 x .060, S.S.	1
104	MP038100	Pin, Clevis, 3/8 x 2-1/8	2	140	MP8310	Velcro Stud (Padholder)	76
105	LX2105	Clip, Hitch, Pin	2		MP8310	Velcro Stud (Hood)	12
106	MP8070	Belt, BX-46 (21")	1	141	NB3275	Nut, Lock, 1/4	7
	MP8049	Belt, BX-49 (24")	1	142	MP073100	Retainer, Pad, Center-Lok II, Top (24" & 28" only)	1
	MP041000	Belt, BX-56 (28")	1		MP027400	Base, Pad Grab III (21" only)	1
107	MP034101	Deck, ST21KWA, Painted, Comp.	1	143	MP012700	Retainer, Pad, Center-Lok II (Screw-In) (24" & 28" only)	1
	MP067200	Deck, ST24KWA, vacuum	1		MP8505	Pad Grab III (Snap-In) (21" only)	1
	MP067300	Deck, ST28KWA, w/vac, Pntd., Comp.	1	144	MP066300	Ring, Spacer, Center-Lok II (24" & 28" only)	1
108	MP8300	Velcro, Hook, 1" w/Adh, 21"	2.1 yd	145	MP084700	Molding, Bumper, RokBak	1
		24"	2.3 yd	146	MX1025	Screw, Pan HD, 10-24 x 3/4	3
		28"	2.4 yd	147	NB9645	Washer, Flat, #10	6
109	MP139600	Felt, Polyester, 29 oz Black, 21"	6.25'	148	NB9735	Nut, Lock, 10-24, Nylon	3
		24"	7'	149	MP079800	Stud, Support, Cover, Bag, Dust	1
		28"	8'	150	NB6110	Washer, Lock, 1/4"	7
110	MP071800	Tensioner, Belt, w/4" Pulley	1	151	NB6530	Screw, Cap, HH, 1/4 - 20 x 1	3
111	MP107700	Spindle, w/6.75" Pulley, Asm. (21")	1	152	MP073200	Retainer, Pad, Center-Lok II, Bottom (24" & 28" only)	1
	MP7235	Spindle, w/7.25" Pulley, Asm. (24")	1		MP8510	Ring, Retainer, Pad Grab III (21" only)	1
	MP7240	Spindle, w/8.75" Pulley, Asm. (28")	1	154	NB9319	Screw, Cap, BH 1/4-20 x 1 1/4	1
112	MP068300	Bracket, Wheel, ST21, Asm.	2	155	NB017200	Clip, Belt	2
	MP064900	Bracket, Wheel, ST24, Asm.	2	156	NB9710	Nut, Keps, 8-32, Zinc	4
	MP069000	Bracket, Wheel, Extended, 28"	2	157	NB9810	Screw, 0.164-32 x 5/8 Blk, C. Sunk	4
113	MP105300	Wheel, 5", Performa, Flat Tread, Grey	2	158	MP081300	Ring, Relief, Stress, Padholder(21")	1
114	MP042900	Bracket, Wheel, Rear, Asm.	1		MP196300	Ring, Relief, Stress, Large, Padholder (24" & 28")	1
115	MP038700	Wheel, 3", Grey	2	159	NB020700	Screw, Phillips, Pan, 6-32 x 1	4
116	MP038900	Tank Pad	1	160	MP035300	Band, Clamp, Skirt	2
117	MP125300	Cover, Pulley, ST21KWA	1	161	NB020800	Nut, Lock, Nylon, 6-32	4
	MP073400	Cover, Pulley, ST24KWA	1	162	NB038700	Rivet, Pop, 3/16" x 3/8" head x 1/2	10
	MP068600	Cover, Pulley, ST28KWA	1	163	NB9645	Washer, Flat, #10	10
118	MP065000	Seal, Spindle, 1.01"ID x 3.75"OD (21")	1	164	MP139700	Edging, Skirt (Top, 21")	4.08'
	MP065100	Seal, Spindle, 2.415"ID x 4.5"OD (24" & 28")	1			(Top, 24")	5.02'
						(Top, 28")	6.07'
119	MP047800	Seal, Foam, 3/8" T x 3/4" W	1	165	MP139800	Edging, Skirt (Bottom, 21")	6.03'
120	MP075200	Foam, Skinned, 1/2" x 38" x 1/4" T	1			(Bottom, 24")	7.10'
121	MP067600	Tube, Dust, SpeedStar	1			(Bottom, 28")	8.14'
122	NB6864	Bolt, Hex, 1/2 x 1 1/4, NC	4	166	NB05060	Bolt, Hex, Tap, 1/4-20 x 2 1/2"	1
123	NB9269	Washer, Flat, 7/16	4	167	NB3350	Washer, Flat, 1/4	2
124	NB6044	Screw, Cap, 3/8 x 1 1/4	1	168	MX1045	Nut, Hex, 1/4-20	1
125	NB3450	Washer, Flat, 3/8	5	169	NB6501	Insert, 1/4-20, .027-.165 Grip, Comp. Typ.	1
126	NB5282	Screw, BH, 5/16-18 x 1	10	170	MP247300	Skirt, Steel, 21", Tab, Painted	1
127	SA003900	Padholder, 21", w/Studs only	1		MP247400	Skirt, Steel, 24", Tab, Painted	1
	SA007800	Padholder, 24", w/Studs only	1		MP246600	Skirt, Steel, 28", Tab, Painted	1
	SA004000	Padholder, 28", w/Studs only	1	171	MP140000	Felt, Dot	2
128	NB3001	Screw, BH, 1/4-20 x 3/4	4	172	MP139900	Bushing, Skirt, Steel	1
129	NB9267	Washer, Flat, 5/16	6	173	NB038800	Screw, Socket HD, 1/4-20 x 1 1/4 w/ Loctite	1
130	NB3265	Nut, Lock, 5/16	12	174	NB043900	Rivet, 3/16 x 1/2 x 5/8 HD Black	4
131	NB000100	Screw, HH, 5/16-18 x 1 3/4	2	175	NB044000	Washer, Flat, 3/16, Black	4
132	MP065200	Seal, Tube, Dust	1				
133	MP064600	Scoop, Vacuum, SpeedStar, 21"	1				
	MP064700	Scoop, Vacuum, SpeedStar, 24"	1				
	MP064800	Scoop, Vacuum, SpeedStar, 28"	1				
134	MP095200	Padholder, 21", Complete Asm.	1				
	MP047500	Padholder, 24", Complete Asm.	1				
	MP032500	Padholder, 28", Complete Asm.	1				

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Bulkhead Sub-Assembly: SpeedStar

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022709



SEE PAGE 2 OF 2
FOR REGULATOR ASSEMBLY

022009

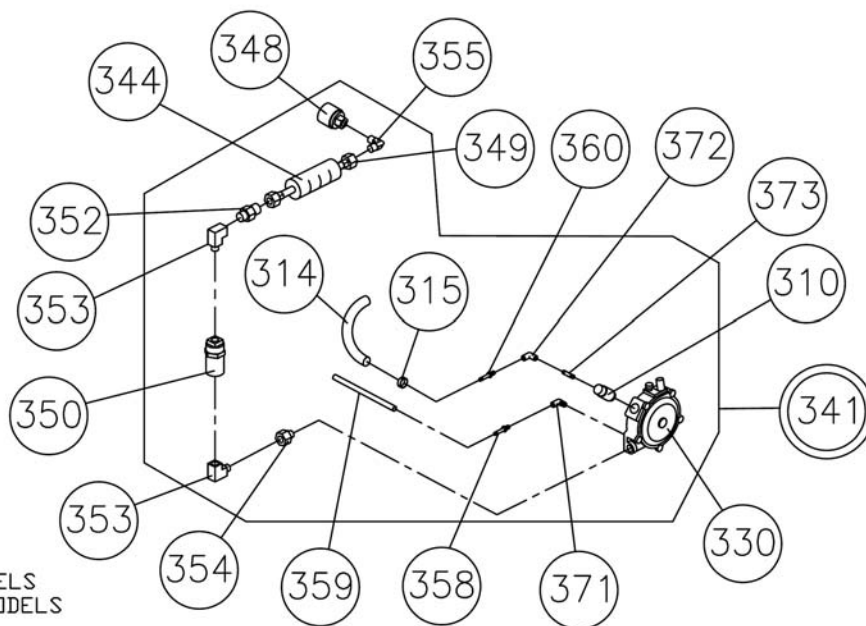
Bulkhead Sub-Assembly: SpeedStar

REF	PART#	DESCRIPTION	QTY	REF	PART#	DESCRIPTION	QTY
300	NB061100	Screw, Phillips, 1/4-20 x 1/2	2	342	MP038300	Battery Cover Molding	1
301	MP042500	Filter, Foam, Air, Intake	1	343	NB6110	1/4" Lock Washer	4
302	MP063300	Hood, Battery, SpeedStar, Black	1	344	MP045500	Pipe Insulation, 1/2 I.D., 3/8 Wall	1
303	MP8310	Velcro Hook Studs	12	345	MP026300	#8 x .25 Spacer	8
304	MP106500	Cable, Throttle, Control	1	346	SS3505	Foam Seal	2
305	MX1115	Washer, 1/4" Star Lock	2	347	SA008600	SafeSense Module Kit	1
306	NB4382	Screw, Kwik Drill, 8 x 18 x 1/2	1	348	MP4500	Quick Rego Female Coupler	1
307	SA008200	Bail	1	349	MP4340	12" Regulator Hose	1
308	NB2643	Rivet, Pop, 1/8 x 1/4	4		MP4300	Hose, 18", Regulator (E Models)	1
309	MP280800	Hour Meter	1	350	MP4712	12V Fuelock	1
310	MP017900	Fuel Adjustment Assembly	1	351	NB9745	5/16"-18 x 3/4" Cap Screw	2
311	ST002200	Bulkhead Asm.	1	352	MP4320	48 x 6 Reg to Fuelock Fitting	1
312	IN1015	Trim, Battery Tray	1	353	MP027200	Fitting, 90 Deg. Elbow, 1/4 x 1/4 NPT	2
313	KC2509904	Switch, Starter	1	354	MP4325	3325 x 4 Reg to Fuelock Fitting	1
314	NB2470	3/8 Fuel Line	1	355	MP4331	54 x 6 Reg to Fuelock Fitting	1
315	NB7282	Hose, Clamp, No. 38	2	356	NB003200	1/4"-20 x 5/8" HH Bolt	2
316	MP044700	Plug, 3/4, Nylon, Black	1	357	NB3001	1/4"-20 x 3/4" BH Screw	2
317	NB6514	Grommet, 1-1/2 I.D. x 3/8 W x 1-3/4 O.D.	1	358	MP019500	1/8" NPT 1/4" Hose Barb	1
318	SA017900	Tray, Battery, Swing-out, w/inserts	1	359	NB2460	5/32" Vacuum Hose	1
	Not Shown:	NB024700 - Plug, Hole, Large	1	360	MP018900	1/8" NPT 3/8" Hose Barb	1
	Not Shown	NB024800 - Plug, Hole, Small	2	361	NB9845	Nut, Keps, 1/4-20	2
319	MP042800	Display Board	1	362	NB52816	Screw, BH, 1/4-20 x 1/2	2
320	NB010300	Nut, Nylon, 6-32	8	363	N/A	N/A	-
321	MP041800	Handle Assembly	1	364	MP093000	Hinge, Tray, Battery	1
322	MP042100	Block, Slide, Handle, Pivot	2	365	NB023700	Stud, 8-32 x 1/2	8
323	RV005100	Handle Knob	2	366	NB9710	Nut, Keps, 8-32, Zinc	8
324	NB010100	3/8-16 x 2 Carriage Bolt	2	367	NB8175	Pin, Presto, 3/32 x 1 5/8	1
325	NB3350	Washer, Flat, 1/4	2	368	NB8130	Clamp, 3/4" I.D., Retainer	1
326	MP041100	Tank Strap	1	369	NB3350	Washer, Flat, 1/4	2
327	IN3510	Mount, Type S, 1/4-20	2	370	NB024600	Pin, Clevis, 1/4 x 5/8	1
328	NB009800	3/8 I.D. x 1/8" Groove Grommet	3	371	MP098900	Fitting, 1/8" MPT x 1/8" FPT, 90°	1
329	NB009900	5/8 I.D. A 1/8 Groove Grommet	5	372	MP099000	Fitting, 1/8" FPT x 1/8" FTP, 90°	1
330	MP037900	Regulator, Nolf	1	373	MP099100	Fitting, 1/8 x 1/8 Nipple	1
331	MP6431	12V Solenoid	1	374	NB5282	Screw, BH 5/16 - 18 x 1	4
332	MP040400	Battery Retainer Assembly	1	375	NB9267	Washer, Flat, 5/16	4
333	SS1212	Battery Pad	1	376	NB3265	Nut, Lock, 5/16 - 18 NC	4
334	SS0012	Battery	1	377	NB013000	Caplug, 0.125" x 0.375"	1
335	MP043200	Starter Cable, 6"	1	378	NB3275	Nut, Lock, 1/4"	1
336	MP2011	Positive Battery Cable	1	379	NB9645	Washer, Flat, #10	1
337	MP2012	Negative Battery Cable	1	380	MX1045	Nut, Hex, 1/4 - 20	2
338	NB3260	5/16-18 Nut	2	381	NB9735	Nut, Lock, #10-24	1
339	NB6111	5/16 Lock Washer	2	382	NB028300	Bushing, Cable, Bail	1
340	MP021703	Painted Cylinder w/Decal	1	383	NB033300	Screw, BH #10-24 x 7/8	1
341	MP099700	Regulator Assembly	1				
	MP099701	Regulator Assembly (E Models)	1				

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Regulator Sub-Assembly: SpeedStar

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REGULATOR ASSEMBLY FOR
MP099700 KWA AND KWC 17HP MODELS
MP099701 KWAE AND KWCE 17HP MODELS

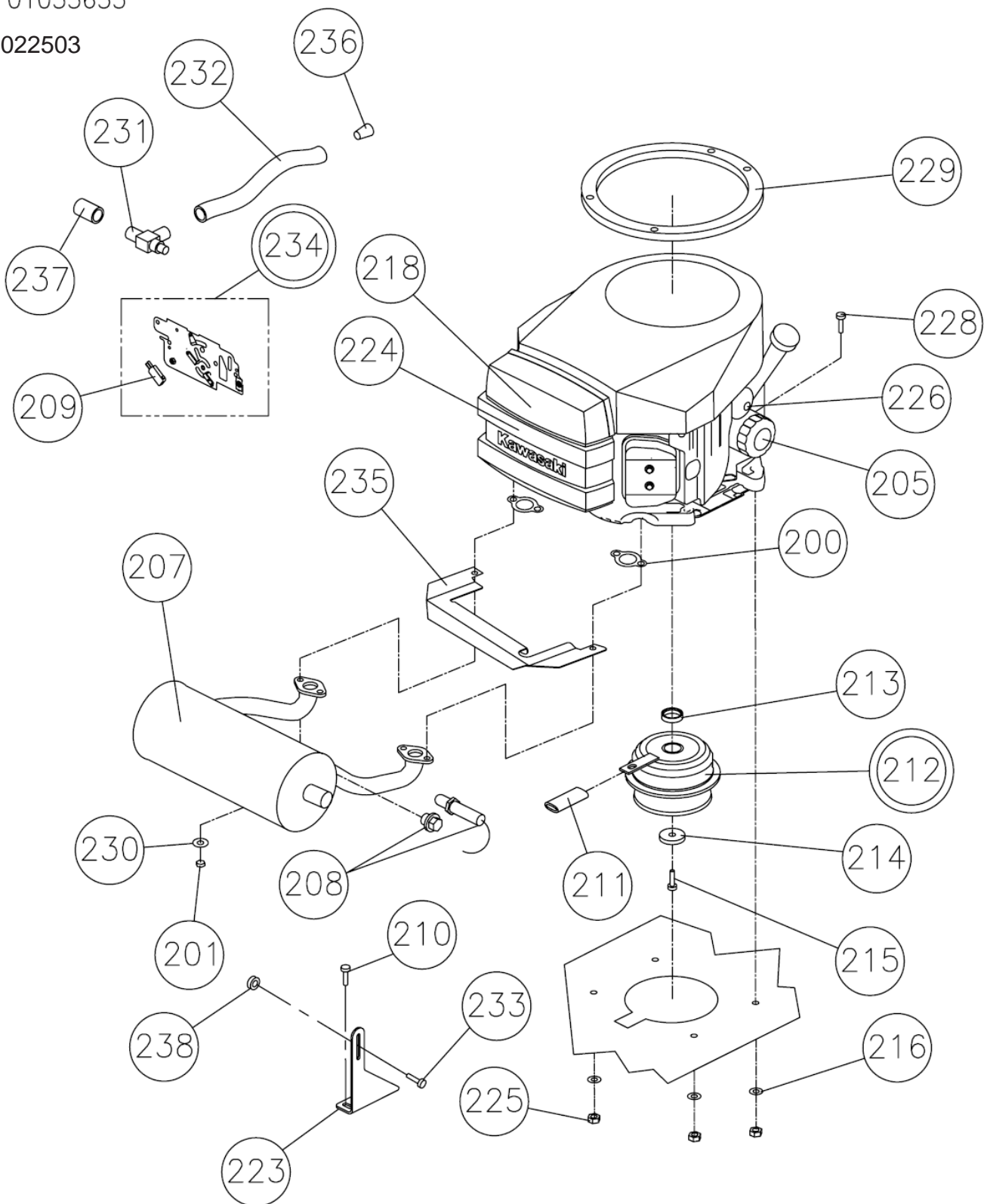
Regulator Sub-Assembly: SpeedStar

REF	PART#	DESCRIPTION	QTY
310	MP017900	Fuel Adjustment Assembly	1
314	NB2470	3/8 Fuel Line	1
315	NB7282	Hose, Clamp, No. 38	2
330	MP037900	Regulator, Nolff	1
341	MP099700	Regulator Assembly (17 HP)	1
	MP099701	Regulator Assembly (17 HP E Models)	1
344	MP045500	Pipe Insulation, 1/2 I.D., 3/8 Wall	1
348	MP4500	Quick Rego Female Coupler	1
349	MP4340	12" Regulator Hose	1
	MP4300	Hose, 18", Regulator (E Models)	1
350	MP317500	Fuelock, 12V, Asm.	1
352	MP4320	48 x 6 Reg to Fuelock Fitting	1
353	MP027200	Fitting, 90 Deg. Elbow, 1/4 x 1/4 NPT	2
354	MP027100	Fitting, Extension, 1/4 x 1/4 NPT	1
355	MP4330	54 x 6 Reg to Fuelock Fitting	1
358	MP019500	1/8" NPT 1/4" Hose Barb	1
359	NB2460	5/32" Vacuum Hose	1
360	MP018900	1/8" NPT 3/8" Hose Barb	1
371	MP098900	Fitting, 1/8" MPT x 1/8" FPT, 90°	1
372	MP099000	Fitting, 1/8" FPT x 1/8" FTP, 90°	1
373	MP099100	Fitting, 1/8 x 1/8 Nipple	1

Engine Sub-Assembly: SpeedStar

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02-25-03

Engine Sub-Assembly: SpeedStar

REF	PART#	DESCRIPTION	QTY
200	KA110607006	Gasket	2
201	KA317R0800	Nut, 8mm	4
205	KA490652078	Oil Filter	1
207	MP107300	Muffler, Catalytic (17 HP)	1
208	MP018000	Oxygen Sensor (KWA models)	1
	MP015200	Oxygen Sensor Plug (KWC models)	1
209	MP036200	Switch, Micro, 12V, 15A	1
210	NB5282	Bolt, BH, 5/16-18 X 1	2
211	MP4790	Norprene Tubing	1
212	MP4787	Clutch, Model 5215-63	1
213	MP4800	Spacer, Clutch Top	1
214	MP4805	Spacer, Bottom Clutch	1
215	NB005800	Screw, HH, 7/16-20 x 1 1/2"	1
216	NB9267	Washer, Flat 5/16	4
218	KA110137001	Air Precleaner	1
223	MP120500	Muffler Bracket	1
224	KA110137006	Air Filter Element, Kawasaki, UL	1
225	NB3265	Nut, Lock, 5/16-18	3
226	MP019200	Oil Pressure Switch	1
228	NB000100	Screw, HH, 5/16-18 X 1 3/4"	4
229	MP043100	Engine Air Intake Seal	1
230	KA461F0800	Lock Washer	4
231	MP072300	Valve, Drain, Oil	1
232	MP4515	Tubing, Drain, Oil	25"
233	NB52816	Screw, BH, 1/4 - 20 x 1/2"	1
234	SA007900	Plate, Throttle, Repl. Bail Style Kit	1
235	MP043400	Manifold Heat Shield	1
236	NB1621	Caplug, K8, Red	1
237	KA590717004	Oil Drain Adapter	1
238	NB9545	Nut, Spinlock, 1/4 - 20	1
239	KA920707003	Plug, Spark (RCJ8Y) (Not Shown)	2

032207



Pioneer Eclipse
Limited Warranty

Burnishers - Scrubbing Machines - Stripping Machines

To Qualify for this warranty:

1. Machine must be registered at the time of purchase on a form provided by Amano Pioneer Eclipse® Corporation. Your Amano Pioneer Eclipse Distributor is responsible for the registration of your machine. Please cooperate with your Distributor in supplying necessary information on the card.
- 2) The machine must have been purchased from Amano Pioneer Eclipse or an authorized Amano Pioneer Eclipse Distributor.
- 3) This warranty extends to the original purchaser only and is not transferable to subsequent owners.

TIME PERIODS

TWO (2) YEAR WARRANTY - For the following models PE1700, Laser X, Magna 2000. Warranted to be free from defects in material and workmanship for a period of two (2) years from the date of purchase by the original owners. (See Exclusions.)

ONE (1) YEAR WARRANTY - For the following models SP, ST, BA, and the StarStrip 2400. Warranted to be free from defects in material and workmanship for a period of one (1) year from the date of purchase by the original owners. (See Exclusions.)

EXCLUSIONS (Not Covered by Warranty)

- 1) Parts that fail through normal wear by reason of their characteristics (cords, pads, bushes, belts, bumpers, body molding, skirting, squeegees or other consumable parts).
- 2) This warranty does not extend to parts affected by misuse, neglect, abuse or improper maintenance. All defective parts must be returned to the Distributor for credit.
- 3) Batteries warranted by battery manufacturer for (1) year.
- 4) Propane Engine warranted by engine manufacturer for *2 years (*Note: The engine warranty period can be extended to a four (4) years providing the customer uses only approved Kawasaki oil. Contact your Amano Pioneer Eclipse distributor for more information regarding this optional extended warranty program.)
- 5) Valve train warranted by Amano Pioneer Eclipse for (1) year.
- 6) Electric motors warranted by motor manufacturer.
- 7) Deck Frame warranted by Amano Pioneer Eclipse for (5) years.

THE OBLIGATION OF AMANO PIONEER ECLIPSE CORPORATION

- 1) The obligation of Amano Pioneer Eclipse under this warranty is limited to repairing or replacing, at its option, any part which is proven to be defective in material or workmanship under normal use for the applicable period stated above.
- 2) Warranty repairs will be made by your Amano Pioneer Eclipse Distributor without charge for parts and labor.
- 3) Parts repaired or replaced under this warranty are warranted only during the balance of the original warranty period. All defective parts replaced under these warranties become the property of Amano Pioneer Eclipse.

WARRANTY SERVICE

To obtain warranty service, take your machine and proof of purchase to any authorized Amano Pioneer Eclipse Distributor. Amano Pioneer Eclipse will not reimburse expenses for service calls or travel. For the Distributor in your area, call Amano Pioneer Eclipse Customer Service Department at 800-367-3550 or 1-336-372-8080. If you are dissatisfied with the service that you receive, call or write Amano Pioneer Eclipse Customer Service Department for further assistance.

DISCLAIMER OF CONSEQUENTIAL

AMANO PIONEER ECLIPSE DISCLAIMS ANY RESPONSIBILITY FOR LOSS OF USER TIME OF THE AMANO PIONEER ECLIPSE MACHINE OR ANY OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGE EXCEPT AS STATED IN THE WARRANTY APPLICABLE TO EACH MACHINE. EXCEPT AS STATED IN SUCH WARRANTIES, THE COMPANY DOES NOT OTHERWISE WARRANT ANY MACHINE AND NO WARRANTY, EXPRESS, IMPLIED OR STATUTORY IS MADE BY THE COMPANY.

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P.O. Box 909

Sparta, NC 28675

1-336-372-8080

1-800-367-3550

www.pioneer-eclipse.com

Article #: _____

Serial #: _____

DOM: _____

Built in NC, USA

**CE Certification applies only to machines for export with SafeSense®
as indicated by KWAE extension on part number.
Machine Directive 98/37/EC as amended by Directive 89/392/EEC,
Directive 91/368/EEC, Directive 93/44/EEC, and by Directive 93/68/EEC.**