GEMINI®

GEMINI PLUS®

GEMINI SILVER BULLET®

OPERATING/MAINTENANCE AND PARTS MANUAL

Century
6250 Joyce Drive
Golden, CO 80403

RP-128 May, 96

INDEX

INTRODUCTION

The GEMINI series of machines are total lane maintenance machines designed to perform both the lane stripping and lane conditioning functions. These twin machines are able strip the entire lane and condition the lane simultaneously, thereby insuring consistent lane conditions. The GEMINI machines can also be used to strip the entire lane or the back ends only either as a Stripper or as part of a conditioning/stripping cycle. The GEMINI can also be used as a conditioning machine only and offers multiple conditioning distance setting choices for the operator. The distance chosen can be easily entered by the operator using the digital short run switch or programmed in the GEMINI PLUS® and GEMINI SILVER BULLET® models.

The GEMINI machines wet the surface of the bowling lane by the use of a cleaning pad that is wet with the detergent cleaner mixture selected for use. A detergent cleaner manufactured for use in the bowling industry is recommended. The GEMINI dries the lane by the use of a vacuum head powered by an electrically operated vacuum motor. The lane surface is dry as soon as the vacuum head passes over the lane surface.

The GEMINI conditions the lane surface with lane dressing by the use of a dressing buffer that moves up and down by solenoid action. Forward only, reverse only, as well as double oiling options are offered. In addition to the standard oiling distance a head short run distance is also available. On GEMINI PLUS® and GEMINI SILVER BULLET® machines, 20 program locations are available.

WARRANTY AND SERVICE POLICY

If any defects in material appear during the 12 months after installation, the defective part will be repaired or replaced at Century's option, without charge to the Customer for parts. The customer must assume all other costs in making the repair or replacement. With respect to micro switches, motors or other electrical components the warranty period shall be ninety days after the date of shipment instead of the one year provided for in the first paragraph of this warranty.

NORMAL MAINTENANCE PROCEDURES AND ADJUSTMENTS ARE THE RESPONSIBILITY OF THE CUSTOMER AND ARE NOT COVERED UNDER THE TERMS OF THIS WARRANTY.

Century reserves the right to change the design of any product, but assumes no responsibility to incorporate such design changes on products already sold.

The warranty applies only to new products and extends only to the original purchaser. Warranty shall not apply to any machine repaired or altered outside of our own factory authorized service station and/or distributor in any way or where parts have been installed in the machine other than Century approved parts, or where machine has been subject to misuse, negligence, accident or abuse. Century reserves the right to inspect and make the final decision on any claim under warranty which it deems questionable.

Under no circumstances shall the seller or manufacturer be liable for loss of profits or other direct or indirect costs, expenses, losses or damages arising out of defects in or failure of parts.

During the warranty period, parts which are faulty due to material or workmanship will be repaired or replaced free of charge only if the old part is properly identified and turned in for credit. A Century product trouble report should be completed and the completed form should accompany the returned part. A returned goods number must be obtained from Century International prior to returning any items. Identify the returned part by attaching a tag containing the part name and part number.

The above warranty is exclusive: THERE ARE NO IMPLIED WARRANTIES, INCLUDING MERCHANTABILITY AND FITNESS FOR USE, beyond those expressly made herein.

RECEIVING AND HANDLING

1. Remove all packing material from the unit.

2. Carefully inspect your unit to insure that there has been no damage in shipment. In case of damage, be sure to contact the transporter of your unit Immediately and file a freight damage claim.

3. Install the machine transport handle following the diagram enclosed with the handle assembly.

4. Remove the PVC cleaner tray storage tube supplied with your GEMINI and fill it with the cleaner mixture to be used in the GEMINI. A bowling industry detergent lane cleaner is recommended for use. This cleaner should be diluted according to the manufacturer's instructions but at least by three parts of water to one part of cleaner. The cleaner pad should be immersed in this storage tube.

SPECIFICATIONS

ELECTRICAL	110 Volts 50/60 Hertz
	220 Volts 50/60 Hertz

Note: It is imperative that all GEMINI machines be operated with a dedicated and isolated ground wire connection!

Weight	350 Pounds

GEMINI and GEMINI PLUS® machines

Dimensions	Width 52 1/2 inches Height 11 1/4 inches Depth 36 1/2 inches

GEMINI SILVER BULLET® machines

Dimensions	Width 52 1/2 inches Height 11 1/4 inches Depth 40 1/2 inches
Cleaner Tank Capacity	180 Ounces
Waste Tank Capacity	250 Ounces
Main Power Fuse	20 amp slow blow 110 volt units 10 amp slow blow 220 volt units
Drive Motor Fuse	6 1/4 amp slow blow 110 volt units 4 amp slow blow 220 volt units

MACHINE SAFETY

There are three areas of concern when using lane cleaning or dressing materials in the GEMINI series of machines. These areas are flammability, toxicity and compatibility.

Special care should be taken when filling the cleaner tank with cleaner and the oil tank with oil. The use of a funnel with filtration screen of appropriate size and material for the material being used is the proper way to fill either tank without spilling material into the machine. Special care should be taken to avoid spilling anything into or onto all electrical motors, solenoids, switches and wiring.

Never:

- operate machine with hood assembly open or removed.
- modify wiring.
- use any extension cord in addition to the one provided.
- use flammable materials in the machine.
- use toxic materials in the machine.
- fill the dressing tank on or near the approach area.

It is imperative that all GEMINI series machines be operated with a dedicated and isolated ground wire connection.

When selecting a product for use as a lane cleaner, the manufacturer or his representative should be contacted. They will provide information relative to the use and safety of that product.

Use of common sense and industry experience are key factors which one should utilize whenever operating a Century GEMINI series machine. Training in the operation of this machine is available. Schools in the machine's use and operation are held periodically. It is the responsibility of the attendee to provide his or her own travel, lodging and school expenses. Anyone interested in attending a factory training school should contact their local Century Sales or Service representative or Century International directly to make arrangements.

GEMINI

IDENTIFICATION OF DASH CONTROLS

POWER FUSE	This is the main power fuse. It is a slow blow fuse.
POWER LIGHT	This is the power indicating lamp for the GEMINI.
DRIVE MOTOR FUSE	This is the fuse that protects the drive motor. It is a slow blow fuse.
CLEANING PAD	This counter and switch control the distance from the foul line where the cleaning pad picks up away from the lane surface. This setting should be at least 57.0 but not more than 59.0.
VACUUM HEAD	This counter and switch control the distance from the foul line where the vacuum head and cleaner pad engage against the lane surface during the back strip mode only. This setting should be 2.0 less than the buffer setting.
BUFFER	This counter and switch controls the dressing buffer and distance from the foul line where the dressing buffer will pick up away from the lane.
OIL	This counter and switch control the oil tank engagement against the oil transfer roller. At the distance from the foul line indicated by this counter, oil will stop being transferred from the oil tank. The oil switch controls whether is being applied in both directions (Double) or in one direction (FOR/REV) determined by the oil direction switch.
OIL DIRECTION	This switch controls the direction of oil application when the oil switch is in the FOR/REV position.
SHORT RUN	This switch and counter control the distance from the foul line where the machine will stop and reverse when the short run switch is on. This setting should be at least 0.5 more than the buffer setting.
STRIP MODE	This switch controls what section of the lane is stripped. When full is selected, the complete lane is stripped. When back is selected, stripping begins at the distance from the foul line selected by the vacuum head counter.

VACUUM MOTOR	This switch controls the vacuum motor. It must be on for stripping operations. It can be turned ON START with the START switch or ON/PLUG whenever the GEMINI is plugged into a wall receptacle. It can be turned OFF for oiling only or for making some adjustments.
MANUAL REVERSE	This switch, when depressed momentarily, will reverse the direction of the machine from forward to reverse.

GEMINI PLUS® AND GEMINI SILVER BULLET®

POWER FUSE	This is the main power fuse. It is a slow blow fuse.
POWER LIGHT	This is the power indicating lamp for the GEMINI PLUS® and GEMINI SILVER BULLET®.
DRIVE MOTOR FUSE	This is the fuse that protects the drive motor. It is a slow blow fuse.
MANUAL REVERSE	This switch, when depressed momentarily, will reverse the direction of the machine from forward to reverse. It also disables all machine functions allowing the machine to return to the foul line with only the drive motor engaged.
MANAGER'S KEY	This key, used in conjunction with the LCD and keyboard instructions, allows the machine to enter the MANAGER'S MODE. This is necessary for certain keyboard functions, such as EDIT, STORE, ADJUST FOUL LINE, and SET REAL TIME CLOCK. The key lock is located on the left hand side of the control module.
LCD DISPLAY	This display is a backlit liquid crystal display that is used in conjunction with the keyboard to view the operational modes, programming instructions and settings and real time clock.
KEYBOARD	The keyboard is used to input menu selections and values for programming. It is also used to select previously stored programs as well as selecting the adjustment sequence.

OPERATION

As the name GEMINI implies, the GEMINI series of machines can be used in more than one way.

The GEMINI machines can be used as follows:

A - As a simultaneous lane conditioner and full lane stripper.

The GEMINI can be used to simultaneously condition and strip a bowling lane. To do this with a GEMINI machine, the vacuum motor switch, buffer switch, cleaning pad switch and vacuum head switch must be on. The strip switch should be turned to the **FULL** position. The short run switch must be turned **OFF**. The oil option as desired by the operator should be selected. The distance of applied oil desired by the operator should be selected on the oil counter. The distance of oil buff out should be selected on the buffer counter. The distance where the cleaning pad should pick up away from the lane should be selected on the cleaning pad counter. The vacuum head counter and short run counter settings do not matter because they are not used for this cycle.

For GEMINI PLUS® and GEMINI SILVER BULLET® machines, the programs retrieved should have the 1st and 2nd pass oil options programmed as desired and the stripping functions engaged with FULL lane stripping selected.

B - As a lane conditioner and simultaneous back end stripper.

The GEMINI can be used to simultaneously condition the front end and strip the back end of a bowling lane. To do this with a GEMINI machine. the vacuum motor switch, buffer switch, cleaning pad switch and vacuum head switch must be on. The strip switch must be turned to the **BACK** position. The short run switch must be turned **OFF**. The oil option as desired by the operator should be selected. The distance of oil buff out should be selected on the buffer counter. The distance where the cleaning pad should pick up away from the lane should be selected on the cleaning pad counter. The distance where the vacuum head and cleaning pad should engage against the lane surface for the back end stripping should be set on the vacuum head counter. The short run counter does not matter because the short run is not used for this cycle.

For GEMINI PLUS® and GEMINI SILVER BULLET® machines, the programs retrieved should have the 1st and 2nd pass oil options programmed as desired and the stripping functions engaged with BACK lane stripping and distance selected.

C - As a full lane or back end stripper - with no conditioning.

The GEMINI can be used as a lane stripper only. The GEMINI can be used to strip either the full lane or the back end of the lane. To use the GEMINI as a stripper, turn the vacuum motor switch, cleaning pad switch and vacuum head switch on. The strip switch should be turned to either the full or back position depending upon the strip option desired by the operator. The oil switch, buffer switch and short run switch must be turned off. The distance where the cleaning pad should pick up away from the lane should be selected on the cleaning pad counter. The distance where the cleaning pad and vacuum head should engage against the lane surface for the back end cleaning function should be selected on the vacuum head counter. The short run counter does not matter because the short run is not used during a stripping cycle.

For GEMINI PLUS® and GEMINI SILVER BULLET® machines, the programs retrieved for use should have the oil options turned OFF and the stripping functions programmed ON with STRIP selected as either BACK for back end stripping only or FULL for full lane stripping.

D - As a lane conditioner - with no stripping.

The GEMINI can be used as a lane conditioner only. The GEMINI has two travel run distances built into its controls. Both travel run distances are controlled by the short run switch. The GEMINI will stop either at the tail plank, at the end of the lane, or at a predetermined distance selected by the short run counter. If the short run distance is desired, the short run switch should be turned on. The short run distance desired should be selected on the short run counter. If the short run distance is not desired, the short run switch should be turned off. The oil option as desired by the operator should be selected. The distance of oil application should be selected on the oil counter. The distance of oil buffing should be selected on the buffer counter. If the short run is being used by the operator, the short run counter distance should be greater than the buffer counter and oil counter distance by at least 0.5 feet. This will allow the buffer to pick up away from the lane surface at the end of the buffer counter distance so that no oil line will be left against the lane when the machine stops 0.5 feet later.

For GEMINI PLUS® and GEMINI SILVER BULLET® machines, the programs retrieved, should have the 1st and 2nd pass oil options programmed as desired with the stripping functions programmed OFF. For GEMINI PLUS® and GEMINI SILVER BULLET® machines, the program retrieved will automatically lift the buffer away from the lane at the buffing distance selected. The machine will travel an additional six inches. This eliminates the traditional oil line caused when a dressing buffer remains against the lane when the machine stops its forward travel.

OIL OPTIONS

GEMINI

The GEMINI can apply oil in three ways.

1. To apply oil in both directions (commonly called double oil), the oil switch should be turned to the double position. When oiling in both directions, the position of the oil direction switch does not matter. The distance of applied oil should be selected on the oil counter.

2. To apply oil in the forward direction only, the oil switch should be turned to the FOR/REV position. The oil direction switch should be turned to the forward position. The distance of applied oil should be selected on the oil counter.

3. To apply oil in the reverse direction only, the oil switch should be turned to the FOR/REV position. The oil direction switch should be turned to the reverse position. The distance of applied oil should be selected on the oil counter.

GEMINI PLUS®

The GEMINI PLUS® can apply oil in multiple methods. Two automatic passes of the GEMINI PLUS® are possible. The dressing buffer engagement distance against the lane is variable and programmable for both the forward and reverse directions of travel on both machine passes. The oil tank engagement distances are also variable and programmable for both the forward and reverse directions of travel on both machine passes.

If the second pass dressing buffer is programmed ***ON*** either forward only, reverse only or double, the GEMINI PLUS® will automatically make a second pass. The dressing buffer distances and the oil tank engagement distances are selected during program editing to create the desired program.

GEMINI SILVER BULLET®

The GEMINI SILVER BULLET® can apply oil in multiple methods with multiple oil felts. Two automatic passes of the GEMINI SILVER BULLET® are possible. The dressing buffer engagement distance against the lane is variable and programmable for both the forward and reverse directions of travel on both machine passes. The oil felt engagement distances are also variable and programmable for both the forward and reverse directions of travel on both machine passes. The oil transfer roller speed is also variable and programmable for both the forward and reverse directions of travel on both machine passes.

If the second pass dressing buffer is programmed ***ON*** either forward only, reverse only or double, the GEMINI SILVER BULLET® will automatically make a second pass. The dressing buffer distances and the oil tank engagement distances are selected during program editing to create the desired program.

LANES SHOULD BE DUSTED BEFORE THE GEMINI MACHINE IS USED TO MAINTAIN LANES!

Place the GEMINI machine in the operating position on the first lane to be maintained. See Figure 1.

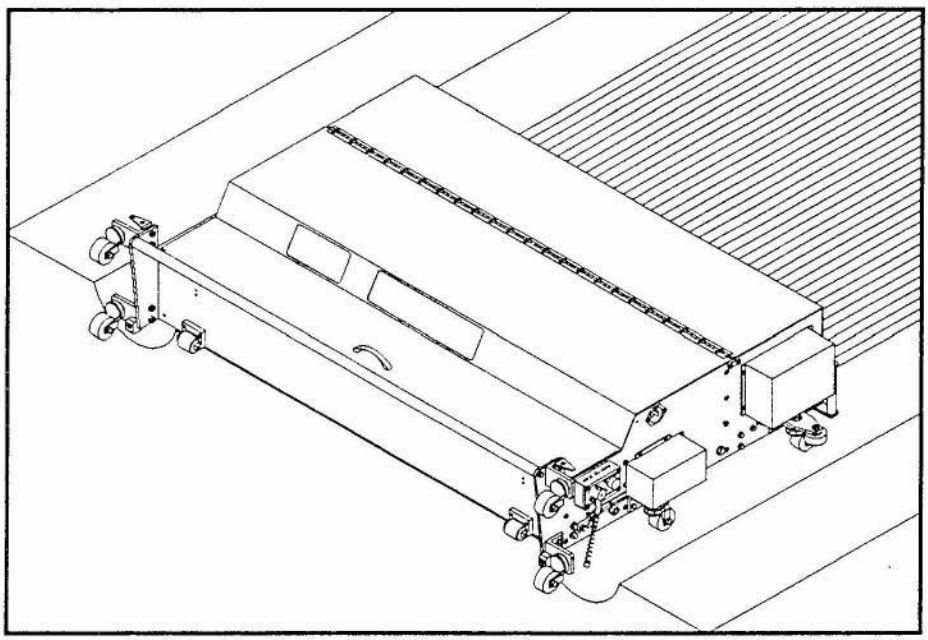


Figure 1

1. Select the operational cycle of the GEMINI as desired by the operator or retrieve the desired program on both the GEMINI PLUS® and GEMINI SILVER BULLET®.

2. If the lane dressing functions of the GEMINI are to be used, follow steps 3 through 5 below.

3. Fill the lane dressing tank with the dressing selected for use. The tank is only filled to the 1/2 inch mark on GEMINI and GEMINI PLUS® machines. For GEMINI SILVER BULLET® machines, fill the tank half way. A dipstick is present in the dressing tank to identify the correct level for each style tank. The dressing tank is never filled on the approach area. Any lane dressing that the operator does spill (including any dressing that the operator does spill in to the machine) must be immediately wiped up and the spilled area properly cleaned.

4. The GEMINI needs to have the dressing buffer or dressing brush saturated before the first lane is run. At the end of each conditioning use of the GEMINI, the buffer assembly should be removed from the GEMINI and thoroughly cleaned using a rag or towel wet with either the lane dressing used to dress lanes or a solvent style lane cleaner. After cleaning, the buffer assembly should be dried. The cavity in the machine that the buffer tube assembly fits in to should be thoroughly cleaned before the buffer assembly is inserted back in to the GEMINI. The purpose of saturating the buffer assembly is to insure that the dressing on the buffer assembly, before the first lane is run, is equivalent to the dressing left on the buffer assembly after any lane is dressed. In this way the dressing pattern will be consistent from lane to lane.

   To saturate the buffer assembly, place the GEMINI in the saturation position on the approach. The GEMINI must be moved far enough back on to the approach so that the drive wheels will not contact the lane or the approach. For GEMINI machines, turn the dressing buffer switch **OFF**. Be sure that the oil option switches are switched to allow the GEMINI to apply dressing from the dressing tank to the dressing transfer roller. Press the start button and the drive shaft will turn the dressing transfer roller which will turn the dressing buffer assembly at a very slow speed. Since the green light is on, dressing will be transferred from the dressing tank felt to the dressing transfer roller to the dressing buffer. In this way the buffer will get an initial supply of dressing. The number of saturation cycles must be determined by the operator. The purpose of the saturation cycle is to get the dressing buffer normally oily so that the lanes can be dressed consistently. Typically two saturation cycles will be most common. In the case of a brand new buffer assembly being used, as many as ten saturation cycles may be necessary.

   For GEMINI PLUS® and GEMINI SILVER BULLET® machines, position the machine in the saturation position on the approach. The machine must be moved far enough back on to the approach that the drive wheels will not touch the approach. Select ***menu function 92*** and follow the LCD instructions.

5. For GEMINI machines, select the lane dressing option desired. Position the switches and counters as necessary. Refer to Sections A, B, D and oil options as the beginning of this ***OPERATION*** section.

   For GEMINI PLUS® and GEMINI SILVER BULLET® machines, retrieve the desired program.

If the lane stripping functions of the GEMINI series machine are to be used, follow steps 6 through 11 below:

LANES SHOULD BE DUSTED BEFORE THE GEMINI MACHINE IS USED TO MAINTAIN LANES!

6. Place the GEMINI in the operating position on the first lane to be maintained. Refer to Figure 1.

7. Remove the cleaner pad from its storage tube and wipe the pad free of excess cleaner. Install the cleaner pad in to the GEMINI. The cleaner pad linkage has locks on it to prevent the cleaner pad from moving vertically except when the solenoids have been engaged. Depress each cleaner pad solenoid slightly by hand to release these locks and allow entry of the cleaner pad into its proper location. The row of holes in the cleaner pad with the most holes should be positioned directly under the cleaner manifolds. The cleaner pad is tapered. The thicker part of the taper should be toward the dash end of the GEMINI and the thinner part of the taper should be toward the pin deck of the end of the GEMINI with the thinner part directly under the cleaner manifolds. See Figures 2, 3, & 4.

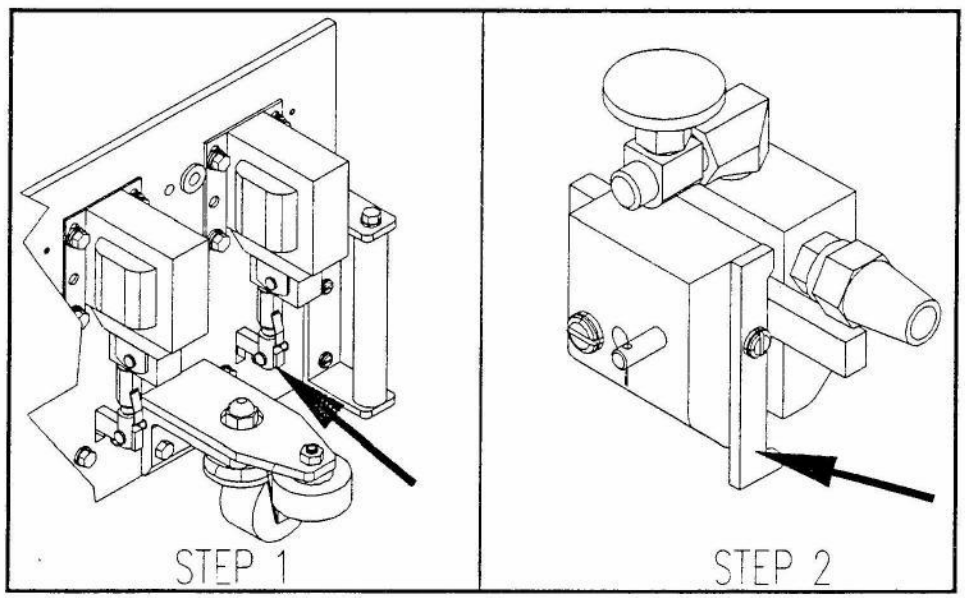


Figure 2

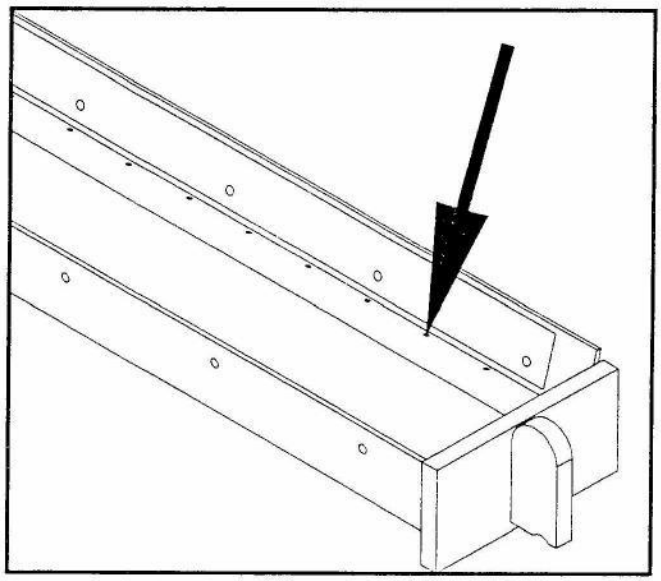


Figure 3

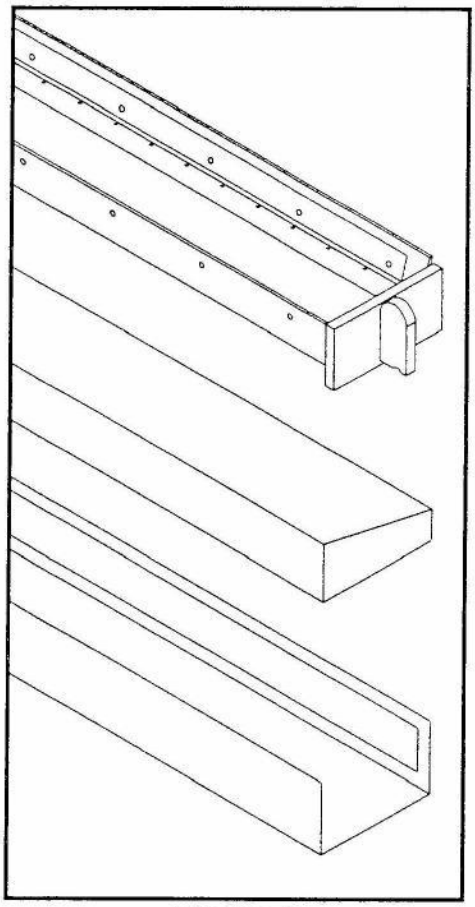


Figure 4

8. Fill the cleaner tank with the cleaner selected for use. See Figure 5.

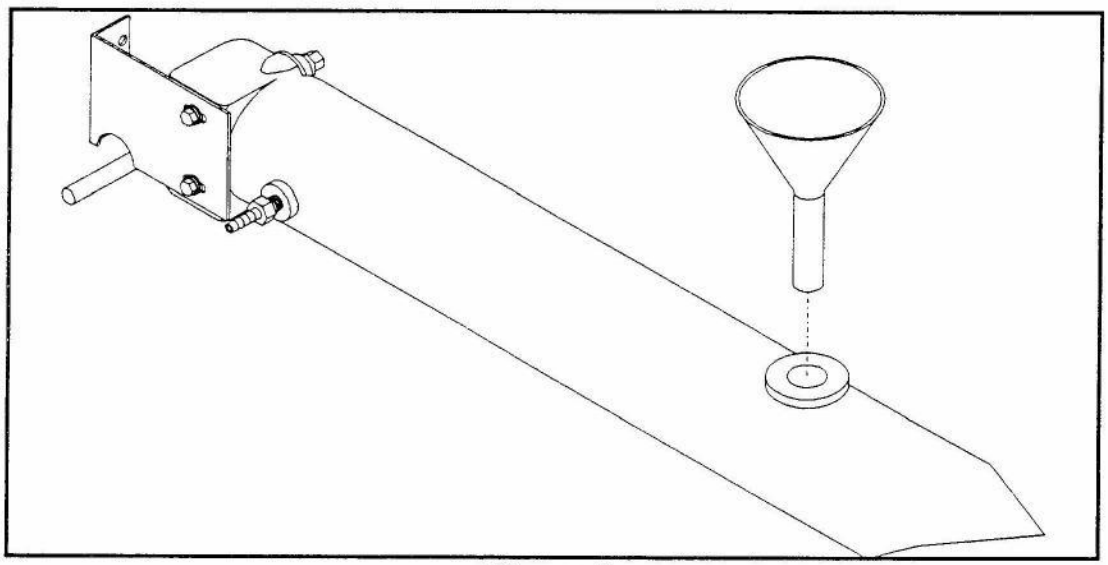


Figure 5

9. For GEMINI machines, select the section of the lane to be stripped. The strip switch should be turned to the full or back position. If the back end only is being stripped, the vacuum head counter must be set to the correct distance from the foul line where the back end stripping should begin. The cleaner pad counter should be set to the correct distance from the foul line where the cleaning pad should be set to the correct distance from the foul line where the cleaning pad should pick up away from the lane surface. This point of cleaner pad pick up is the same point for either full lane or back end stripping. See Figure 6.

   For GEMINI PLUS® and GEMINI SILVER BULLET® machines, the stripping distances and FULL or BACK is selected when the appropriate program is retrieved.

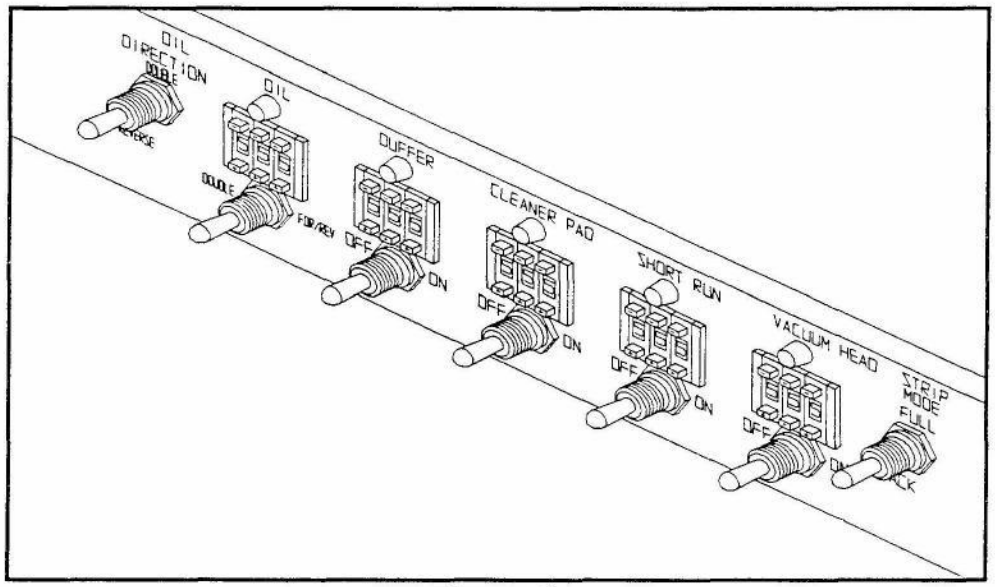


Figure 6

Note: The number of turns on the cleaner control valves for full lane stripping is typically 2 turns. The number of turns open on the cleaner control valves for back end stripping only is typically 1 turn open. Valve openings vary and must be set for your center based on operating specifics of your center. The operator must manually change the number of turns open for the cleaner control valves when changing from full lane stripping to back end only stripping.

For those GEMINI series machines being operated on 50 Hertz electrical power. the number of turns open on the cleaner valves should be reduced from the recommended settings above due to the slower operating speed and therefore increased cleaner volume!

10. For GEMINI machines, turn the cleaning pad switch on, vacuum head switch on and vacuum motor switch on. See Figure 7.

    For GEMINI PLUS® and GEMINI SILVER BULLET® machines, this is automatically done when the desired program is retrieved.

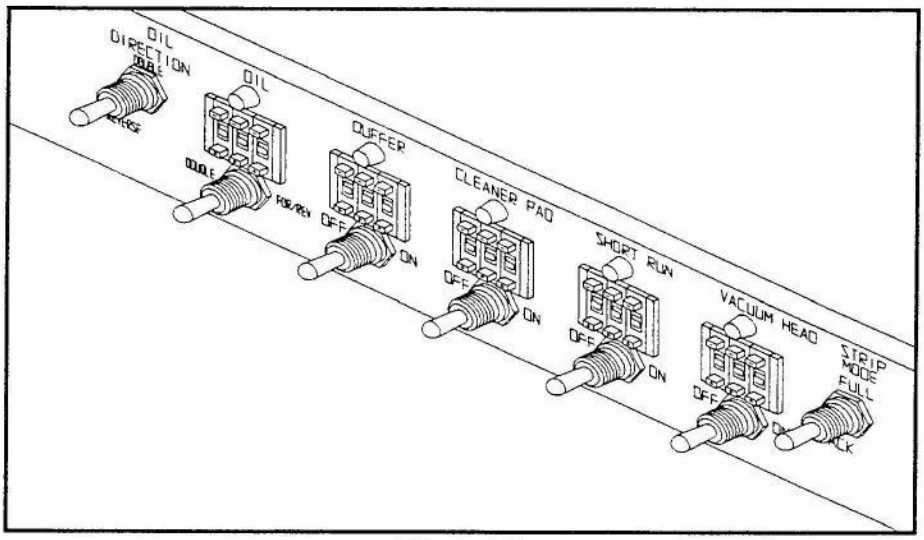


Figure 7

11. Press the start button while pushing the GEMINI away from the foul line. See figure 8.

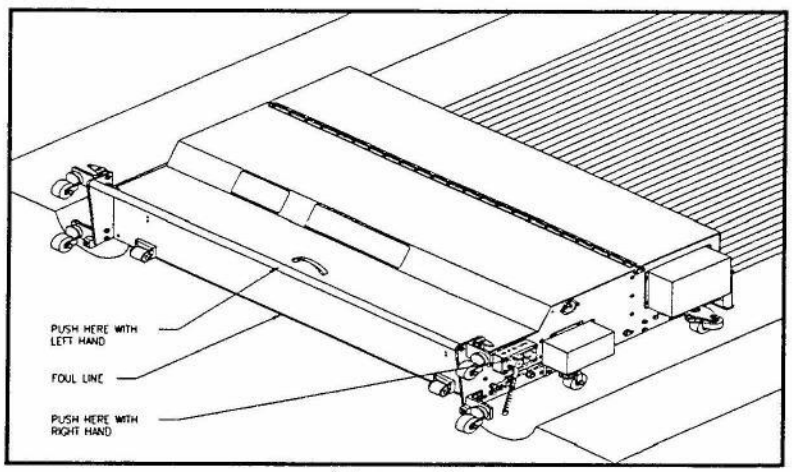


Figure 8

MAINTENANCE

LANE CONDITIONING SYSTEM

1. The dressing tank is the supply reservoir for the lane oil. It should be filled to a depth of 1/2 inch for GEMINI® and GEMINI PLUS® machines and filled to the level indicated by the dressing tank dipstick for GEMINI SILVER BULLET® machines. This depth should be checked periodically during use but at least after each machine use.

2. The lane dressing is removed from the dressing tank by the dressing tank felt. For GEMINI® and GEMINI PLUS® machines, the dressing tank felt comes in three different sizes with three corresponding dressing tank bodies. This is due to the variety of lane dressings and lane dressing patterns used in the bowling industry today. For GEMINI SILVER BULLET® machines, a single dressing felt with five upper sections is used. The width of these five upper felt sections and their relative positions is selectable by the customer. GEMINI SILVER BULLET 95 machines utilize six separate dressing tanks and felts. Due to the design of the GEMINI SILVER BULLET® dressing system, the compensation for different types of lane dressing is done by the variable speed oil transfer roller.

3. The dressing is removed from the dressing tank felt by the oil transfer roller. This roller rotates with the drive wheel system. When the green light is on, the dressing tank and felt are engaged against the oil transfer roller. On GEMINI SILVER BULLET® machines, the speed of the oil transfer roller is variable and programmable for each direction of machine travel on each run of the machine.

4. For GEMINI® and GEMINI PLUS® machines, the shape of the dressing tank body, the shape of the dressing tank felt as well as tank felt variations combined with the shape of the oil transfer roller form the system of the GEMINI that is "calibrated". Calibration is the last part of the dressing system to be set by the operator. It will be discussed in detail at the end of this section. For GEMINI SILVER BULLET® machines, calibration of the pattern is done by varying the speed of the oil transfer roller, the distance of oil felt engagement, the width and position of the dressing tank felt and the distance engagement of the dressing buffer.

5. The dressing buffer receives the dressing from the dressing transfer roller. The dressing buffer must be set against the lane with the proper pressure. The correct pressure is "C" as measured with the pressure gauge supplied with the GEMINI. This adjustment must be done before calibrating the dressing tank system. For GEMINI® machines, to adjust the dressing buffer pressure, run the GEMINI down the lane to between the "dots" and "arrows". Shut the machine OFF. Remove the drive motor fuse. Press the start button and turn the dressing buffer switch ON. Put the pressure gauge under the

dressing buffer at both ends of the dressing buffer and withdraw it. The pressure reading should be "C". If it is not, turn the adjusting linkage as necessary to increase or decrease the pressure. See Figure 9. Shut the machine OFF. Insert the previously removed drive motor fuse. Start the machine and depress the manual reverse button to return the GEMINI to the foul line.

For GEMINI PLUS® and GEMINI SILVER BULLET® machines, use ***menu function 94*** and then follow the instructions on the keyboard display and in the above paragraph.

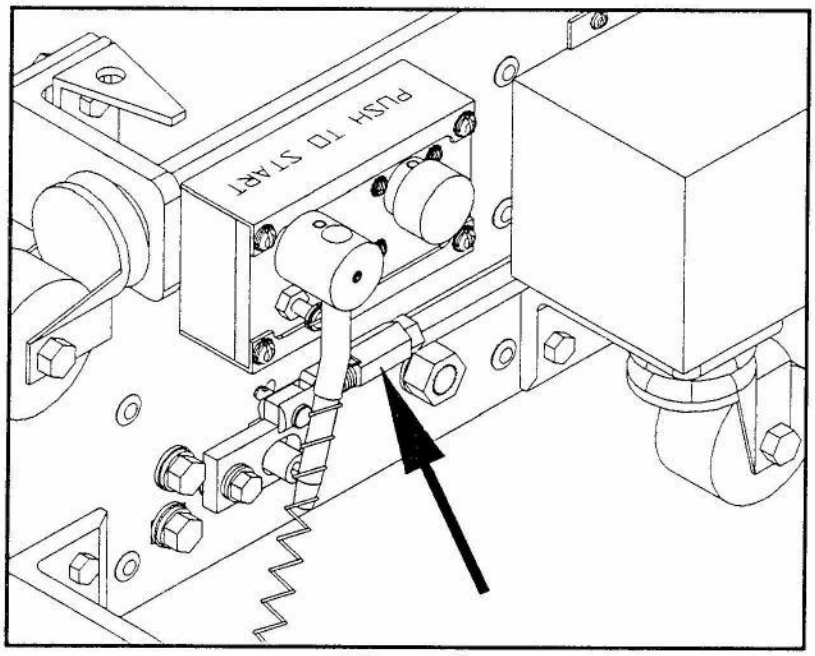


Figure 9

6. The dressing tank must be "kicked away" from the oil transfer roller when the green oil light is OFF. Excessive calibration or worn linkage can cause this not to happen. Do not over calibrate the GEMINI® or GEMINI PLUS®. Periodically inspect the linkage for the dressing tank and solenoid and replace parts as necessary.

7. The dressing tank must be aligned in the GEMINI® and GEMINI PLUS® for proper application of lane dressing. The dressing tank should not be tilted toward the left or the right. This adjustment must be done before calibration of the dressing tank. Place the GEMINI® or GEMINI PLUS® at the foul line in the saturation position. The drive motor fuse should be removed. The dressing buffer switch should be on and the dressing tank should be engaged against the oil transfer roller by moving the oil switch to the double position. Using the dressing tank pressure gauge supplied with the GEMINI, measure the pressure at each end of the dressing tank. The pressure should be equal. If the right side pressure is increased, the left side pressure will be automatically decreased. If the left side pressure is increased - the right side pressure will be automatically decreased. Moving one side affects the other side. To adjust the dressing tank alignment, loosen the tighter side by loosening the locking bolts on only the tighter side of the machine. See Figure 10. Turn the Allen head adjusting screw as necessary to back off the tighter side. This Allen head adjusting screw is located on the dash end firewall of the GEMINI. See Figure 11. Measure the pressure between the dressing tank felt and the oil transfer roller when the dressing tank is engaged against the oil transfer roller. This pressure should be measured by pulling the gauge out from between the dressing tank felt and the oil transfer roller and recording the gauge reading. See Figure 12. Adjust the dressing tank sideways tilt as necessary. Tighten the locking bolts loosened above and shown in Figure 10.

   For GEMINI PLUS® machines, select ***menu function 93*** and follow the LCD instructions and the steps above.

   For GEMINI SILVER BULLET® machines, the solenoids should be centered in their respective felt sections or dressing tanks to allow for even left to right engagement pressure.

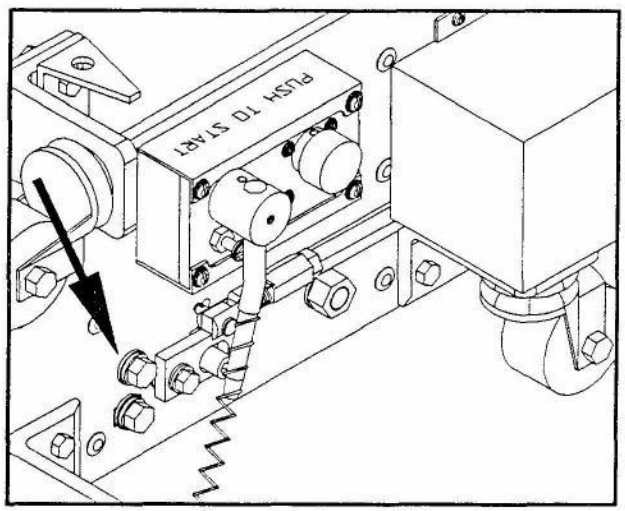


Figure 10

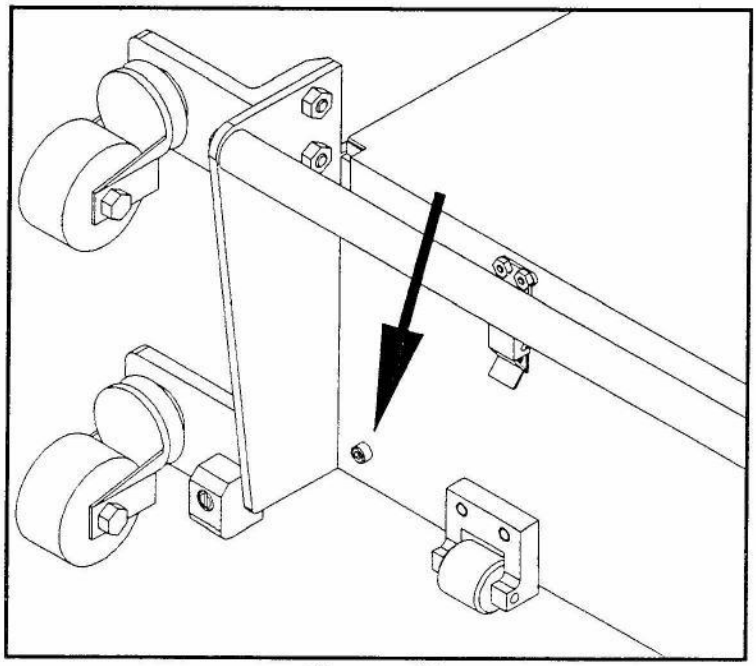


Figure 11

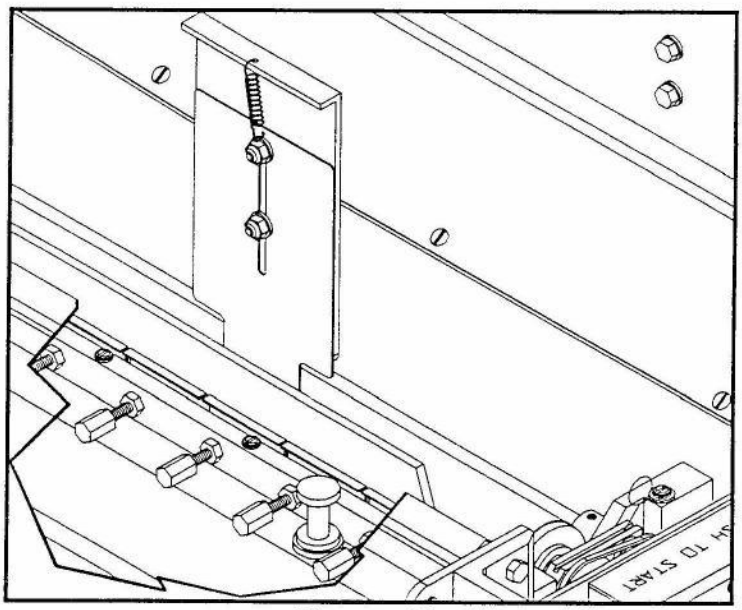


Figure 12

DRESSING TANK CALIBRATION

GEMINI® AND GEMINI PLUS® MACHINES

In order to conform with the conditioning principles of the ABC, WIBC and FIQ, Century has developed methods for adjusting the oil distribution to meet the ABC, WIBC and FIQ rules given all the variables each different bowling center has.

The lane conditioner pattern that appears on the lane surface is a combination of the remaining conditioner left on the lane and the new conditioner added by the current machine application. Therefore, when stripping the entire lane all old conditioner and dust must be removed and the lane left squeaky clean. ***BEFORE CALIBRATING YOUR DRESSING TANK ASSEMBLY, YOUR LANES MUST HAVE BEEN STRIPPED SQUEAKY CLEAN.***

Dressing is transferred from the dressing tank felt to the dressing transfer roller assembly on to the dressing buffer and then on to the lane surface. Before calibrating a dressing tank, the dressing buffer must be adjusted correctly against the lane surface according to the pressure gauge supplied with the GEMINI.

The first step is calibrating the GEMINI® or GEMINI PLUS® dressing tank is to adjust the dressing buffer pressure against the lane surface. The adjustment should be made with the lane surface normally oily and the dressing buffer normally oily. If a new buffer tube cover is being used, make the adjustment and dress approximately ten lanes. Then, recheck the adjustment. The next day after using a new buffer tube cover, check the buffer pressure again and adjust as necessary. Refer to section 5 of the lane conditioning system maintenance section of this manual for adjustment specifics.

The second step in the tank calibration process is to align the dressing tank in the GEMINI® or GEMINI PLUS® machine. This adjustment should be made with the oil tank felt calibration screws threaded out so that they are not providing pressure against the dressing tank felt. The dressing tank felt should be normally wet with lane dressing. Refer to section 7 of the lane conditioning system maintenance section of this manual for adjustment specifics.

The third step of the GEMINI® or GEMINI PLUS® tank calibration process is to initially calibrate the dressing tank to achieve the degree of crosswise blend desired by the bowling center management. This is done by using the dressing tank pressure gauge supplied with the GEMINI to "rough" calibrate the dressing tank felt against the oil transfer roller. The higher the pressure reading between the dressing tank felt and oil transfer roller, the more dressing will be transferred between the dressing tank felt and the oil transfer roller. The threading on the dressing tank calibration screws allows for an increase of .005 inches for each flat sided turn of the calibration screw. A maximum of .060 inches or twelve flat side turns or two full turns of the calibration screw is the maximum number of turns to be used on each calibration screw. Additional turns beyond the recommended amount will simply serve to decrease the amount of oil transferred between the dressing tank felt and the oil transfer roller. See Figure 13.

There is a tank calibration screw in the center of each sectional dressing tank calibrator. Therefore the dressing tank can be calibrated very precisely. It is impossible for even the trained observer to recognize the changes in lane dressing thickness across the lane surface considering the extremely small film thickness of lane dressing applied to the lane surface.

Therefore, Step 4 requires the use of the Brunswick Lane Monitor™ to actually read the dressing pattern applied by the GEMINI® or GEMINI PLUS®. At least four completely stripped lanes should be dressed and the fourth lane read at two distances from the foul line. One reading should be taken in the "heavy" oiled area of the lane and the second reading should be taken in the "buffed" area of the lane. The readings from the tape should be graphed and the graphs analyzed.

Where additional dressing is needed, the tank calibration screws can be turned in to provide additional pressure. CAUTION: Do not exceed the recommended pressure by threading the tank calibration screws too tightly against the tank calibration strips!! Excessive pressure will actually reduce the amount of lane dressing. Where less dressing is needed, the tank calibration screws can be backed off to provide less pressure. Additional graphs are then taken on completely stripped lanes and the process is repeated until the desired lane dressing pattern is achieved.

The GEMINI dressing tank is now calibrated to provide the desired dressing pattern on a stripped lane. The GEMINI can strip the complete lane while it is dressing the front part of the lane each and every time the machine is used to allow the operator to always have the same dressing pattern without every having to dress over a previously oiled lane.

However, it may sometimes be desired to apply new lane dressing over existing lane dressing. In that case, the lanes should be "read" with the Brunswick Lane Monitor™ at the time or times that the already dressed but bowled on lanes are to be redressed. These graph readings will show the actual pattern of the lane dressing remaining. A second GEMINI tank assembly can be calibrated as per the above procedure to provide the desired lane dressing patter over the existing lane dressing to provide the final dressing pattern desired.

It must be remembered that approximately 1/2 ounce of lane dressing is used per lane dressing application in today's lane maintenance programs. That amount must be spread over the entire surface of the lane from left to right and, if a minimum distance is required, at least that minimum distance down the lane from the foul line. That small volume of oil spread over that relatively large surface area produces a very thin film of lane dressing. Because of the extremely small thickness of lane dressing used, a casual approach to the application of lane dressing will not work. A determined and exact approach to lane dressing must be used by the operator as well as by all bowling center personnel involved in the lane maintenance program.

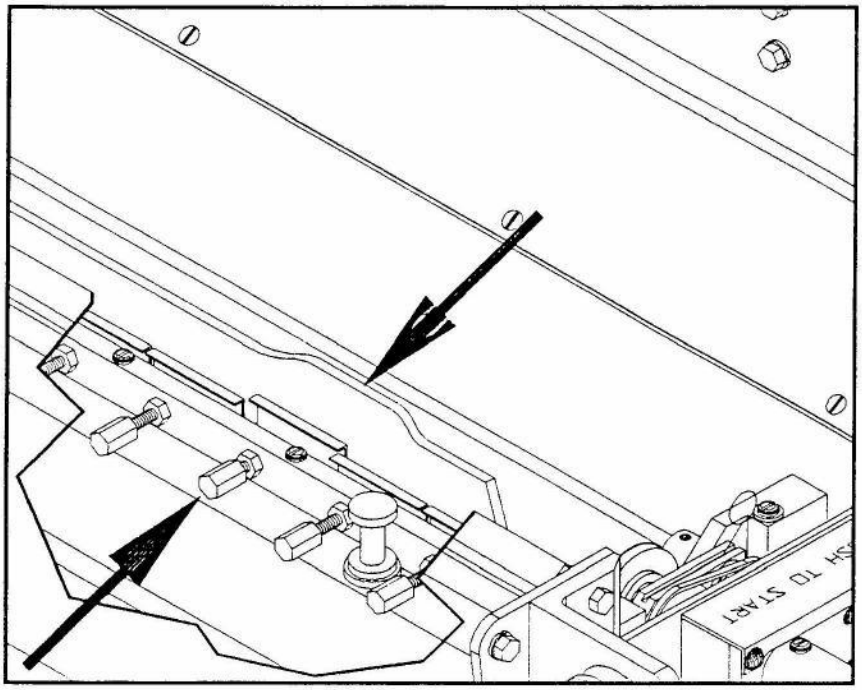


Figure 13

DRESSING TANK CALIBRATION

GEMINI SILVER BULLET® MACHINES

The GEMINI SILVER BULLET® machine employs the V^3 oiling system to achieve the desired dressing distribution.

The first component of the V^3 oiling system is the variable position dressing buffer. Different dressing buffer distances are programmable for the first pass forward, first pass reverse, second pass forward and second pass reverse engagement of the dressing buffer against the lane. The dressing buffer does not have to be in contact with the lane unless that is desired. If the dressing buffer does not contact the lane or only contacts part of the lane that it travels on, it cannot affect the dressing distribution on that section of the lane. By programming the dressing buffer distances as per the above, the desired degree of lengthwise taper can be built.

The second component of the V^3 oiling system is the variable speed oil transfer roller speed. This oil transfer roller speed is programmable for the first pass forward, first pass reverse, second pass forward and second pass reverse travel of the machine. The greater the oil transfer roller speed, the more oil is applied on that pass of the machine. The greater the transfer roller speed, the higher the number of ***units*** of oil applied. The slower the oil transfer roller speed, the lower the number of ***units*** of oil applied. This allows you to control the number of ***units*** of oil applied on each directional pass of the GEMINI SILVER BULLET®.

The third component of the V^3 oiling system is the variable position oil tank felt or the six separate dressing tanks and felts. The widths of the dressing tank felts are selectable when your machine is ordered or they can be replaced at a later date. This allows you to select the board position on the lane where a change in dressing distribution can take place. Five dressing tank felt width tops or six separate oil tank felts and tanks are selectable. They are the RIGHT OUTSIDE, RIGHT TRACK, CENTER or LEFT CENTER & RIGHT CENTER, LEFT TRACK AND LEFT OUTSIDE. A different outside and track width dimension can be selected for the left versus right side of the lane. When these felts are engaged is programmable. Thus the left to right pattern of oil desired can be custom built.

It may sometimes be desired to apply new lane dressing over existing lane dressing. In that case, the lanes should be "read" with the Brunswick Lane Monitor™ at the time or times that the already dressed but bowled on lanes are to be redressed. These graph readings will show the actual pattern of the lane dressing remaining. By creating the necessary program and selecting the correct outside, track and center upper dressing tank felt widths, "fill-in" programs can be accurately created.

DRESSING BUFFER MAINTENANCE

1. The dressing buffer should be removed from the GEMINI after each use and cleaned with a cloth wet with the lane dressing being used to dress lanes or a solvent style lane cleaner. The dressing buffer should be thoroughly dried after it has been cleaned.

2. The dressing buffer will get dirty after each use and will become worn after each use. The dressing buffer pressure should be checked at least weekly and adjusted as necessary.

3. The life of a replaceable dressing buffer is 2000 lanes. After that, the buffer is too worn and too dirty to properly apply dressing to the bowling lane. The life of the dressing buffer brush assembly is approximately 24 months.

4. The dressing buffer transfers oil to the bowling lane. If the pressure is too light between the dressing buffer and the lane, the buffer will still get oil from the oil transfer roller and oil tank but will not be able to apply oil properly. When the green light goes off, no more oil should enter the dressing buffer and therefore the remainder of the lane should receive very little lane dressing. However, if the dressing buffer is not properly adjusted against the surface of the lane, lane dressing will not have been properly removed from the dressing buffer. The degree of lengthwise tapering by the dressing buffer can be maximized by using the dressing buffer brush assembly. This will cause insufficient lane dressing in the head of the lane and extra lane dressing in the transition area of the lane. It is important that the correct lengthwise taper of lane dressing exist on the lane to help retain the natural "twisting or rotational" energy that the bowler has put into the bowling ball. This "twisting or rotational" energy is then saved and allowed to be released when the ball enters the clean and dry back end.

CLEANER FLOW SYSTEM MAINTENANCE

1. Cleaner is poured into the cleaner tank through the funnel with screen supplied with the GEMINI.

2. When the clean or cleaner pad light is on, two electrical solenoid valves are open and cleaner is flowing through these valves. The electrical solenoid valves are either open or closed. these valves do not control the volume of cleaner. See Figure 14.

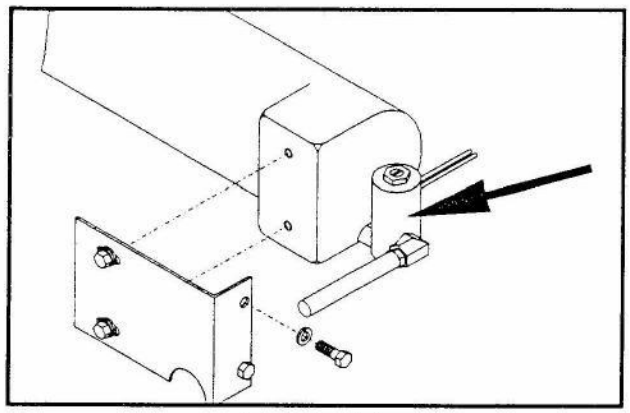


Figure 14

3. The cleaner flows from the electrical solenoid valves to the mechanical thumb knob valves. These valves are adjustable and control the cleaner flow by the operator turning these valves more open or more closed. The recommended setting is ***2*** turns open for full lane stripping and ***1*** turn open for back end stripping. See Figure 15.

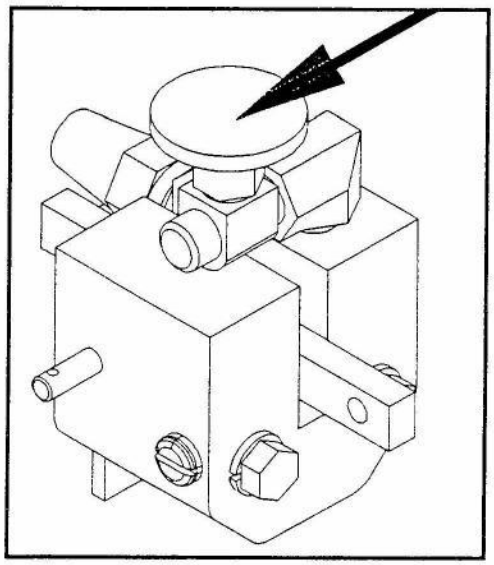


Figure 15

4. The cleaner flows out of the cleaner manifolds into the cleaner tray. The holes in the manifolds should face toward the pin deck at an approximate 45 degree angle downward. The exact angle is somewhat different for different cleaners because of different surface tensions. See Figure 16.

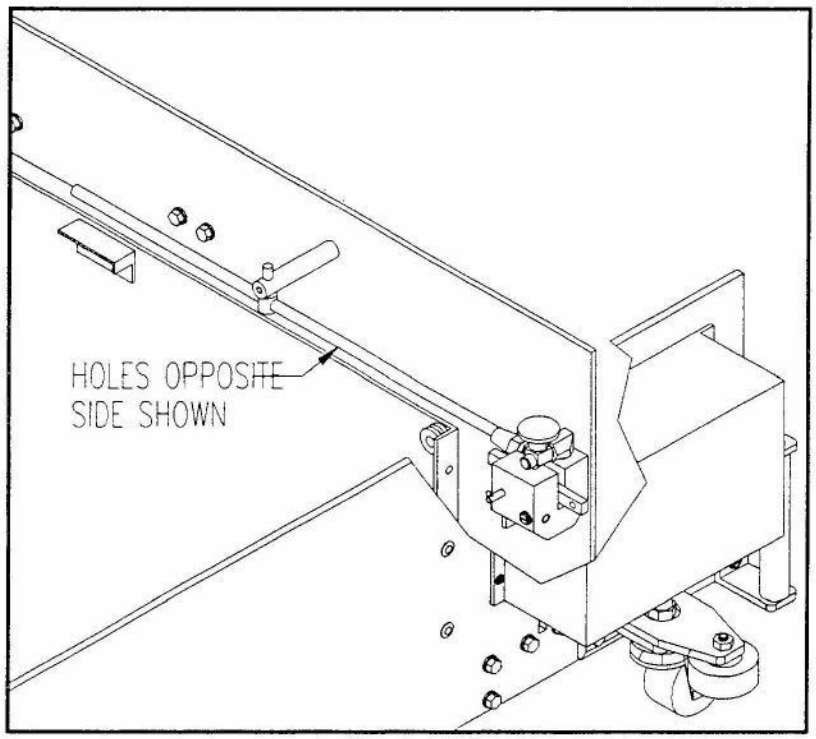


Figure 16

5. The manifolds are adjustable upward or downward to insure an even flow of cleaner from the gutter to the center of the lane. Loosen the set screw and move the manifold up or down while observing the flow of cleaner for at least 60 seconds. Tighten the set screw when the cleaner flow is satisfactory. Repeat for the other manifold. See Figure 17.

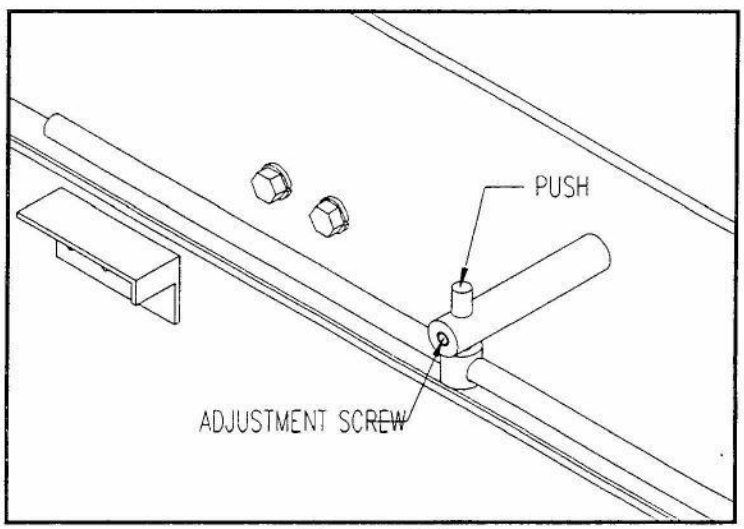


Figure 17

6. The cleaner from the manifold flows into the cleaner tray. The cleaner tray must touch the lane properly to wet the lane. A pressure reading of "C" is necessary. The cleaning pad pressure should be checked while the cleaner pad is normally wet. An excessively wet pad should be wiped free of excess cleaner before it is adjusted against the lane. Pressure is adjusted by simply turning the adjusting nut on the linkage at the solenoid until the correct pressure reading has been obtained. A spring lock is part of the adjusting linkage. This will maintain the adjustment. See Figure 18. For this adjustment to be made, the GEMINI must be turned on with the drive motor fuse removed and be positioned on the lane approximately 30 feet from the foul line. The vacuum head adjustment should have already been made and the vacuum head must be against the lane with the vacuum head squeegee deflected!

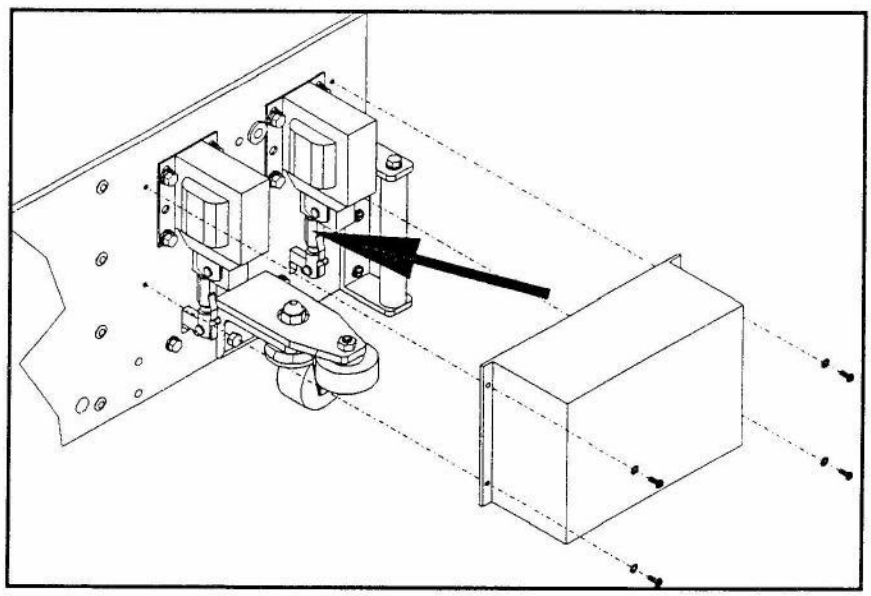


Figure 18

7. The cleaning pad assembly must be stored in the storage tube supplied with the GEMINI. The storage tube should contain the cleaner mixture being used in the GEMINI. The cleaning pad should be wiped free of lint and dirt before being immersed in the storage tube. The cleaner in the storage tube should be changed at least every two months.

CLEANER PAD MAINTENANCE

It is important that the cleaner pad assembly be properly maintained and replaced when necessary.

1. At least every four months replace both the cleaner pad cover and interior or sponge. The part number for the cleaner pad cover assembly is SA-8527. This is the Velcro attached cover. The part number for the cleaner sponge is B-8032. The B-8032 sponge is tapered. The thinner edge the sponge should go directly under the section of the cleaner metal tray with the most holes in it. The thicker end of the sponge should go under the metal cleaner tray where the least number of holes are. The Velcro attached cover should surround the metal and the cleaner tray sponge and the Velcro of the pad should match up with the Velcro of the metal cleaner tray. The shape of the finished assembly should be smooth and consistent. No lumps or tight or loose spots should exist.

2. The wet cleaner tray should be wiped off whenever the lint or dust buildup is excessive and/or cleaner is added. This will typically be every fifteen passes of the GEMINI during normal or full lane stripping operation. The vacuum head should also be wiped at this time.

3. The cleaner tray should be kept immersed in the PVC storage tube supplied with the GEMINI. It should be immersed in the cleaner being used with the cleaner diluted the same way that it is being used to strip lanes.

VACUUM SYSTEM MAINTENANCE

1. The emulsion of cleaner, oil and dirt is removed from the lane surface by the vacuum motor and the vacuum head.

2. The vacuum head is the width of the lane and contacts the lane with two urethane "squeegees". The squeegees are "ribbed" to allow formation of the vacuum yet still allow the liquid emulsion to pass under the squeegee.

3. Excessive vacuum head pressure is to be avoided. The vacuum head pressure against the lane should be the minimum pressure and minimum squeegee deflection that will pick up all of the liquid. Judge the vacuum head pressure by the liquid pick-up ability and squeegee deflection - not by how clean the lane is or is not.

4. To adjust the vacuum head pressure on the GEMINI® run the GEMINI® down the lane to approximately 30 feet from the foul line. The vacuum switch must be on and the vacuum head must be engaged against the lane. Shut the GEMINI® off by moving the shut off arm forward. Remove the drive motor fuse. Start the GEMINI® by pressing the start button. Push the GEMINI® forward at least five to six inches to be sure that the squeegee is deflected against the lane! Observe the deflection of the vacuum head squeegee against the lane. The squeegee must be deflected against the lane by the minimum amount to pick up all the liquid off the lane. If more or less pressure is needed, simply turn the adjusting turnbuckle on the appropriate machine side until the desired deflection and pick up ability is achieved. See Figure 19.

   For GEMINI PLUS® and GEMINI SILVER BULLET® machines, use ***menu function 96*** to adjust the vacuum head against the lane. After selecting ***menu function 96***, follow the instructions of the keyboard display and the instructions in the paragraph above.

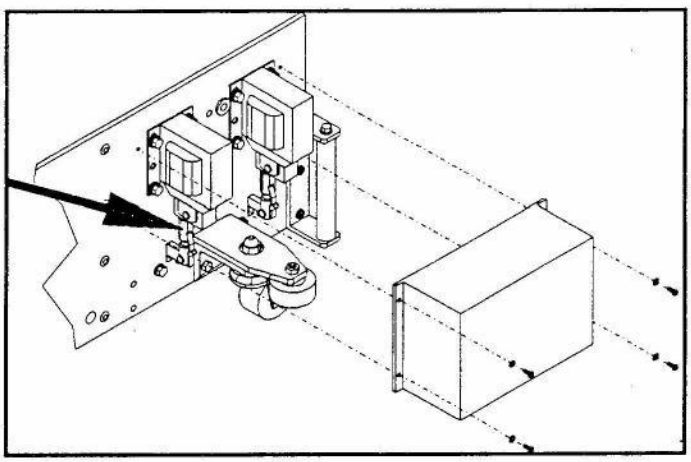


Figure 19

5. The vacuum head has a shape that is adjustable. It is important that the shape of the vacuum head conform to the left to right shape of the lane surface when the vacuum head is engaged against the lane surface. The shape of the vacuum head is factory set and should not require adjustment. However, if the vacuum head does not conform to the left to right shape of the lane surface when the vacuum head is engaged against the lane surface, proceed as follows:

Remember - The vacuum head must be engaged against the lane surface when ***checking*** this adjustment!

For GEMINI PLUS® and GEMINI SILVER BULLET® machines, select menu function 96 and then follow the instructions of the keyboard display and then proceed directly to Step **E**.

For GEMINI® machines, follow steps **A** through **E** below.

A. Press the start button and allow the GEMINI® to move down the lane to a distance of 30 feet from the foul line.

B. Shut the machine off and remove the drive motor fuse.

C. Turn the pad and cleaner switches off. Flip the strip to full, Turn the vacuum motor and vacuum head switch on. Press the start button.

D. Move the GEMINI forward at least six inches and inspect the deflection of the vacuum head squeegee against the lane. The vacuum head pressure should have already been adjusted as per step 4 above. Inspect the degree of squeegee deflection to be sure that it is correct.

E. To increase the degree of curvature of the vacuum head against the lane, shorten the length of the adjusting rods on the vacuum head.

F. To decrease the degree of curvature of the vacuum head against the lane, lengthen the length of the adjusting rods on the vacuum head.

G. See Figure 20.

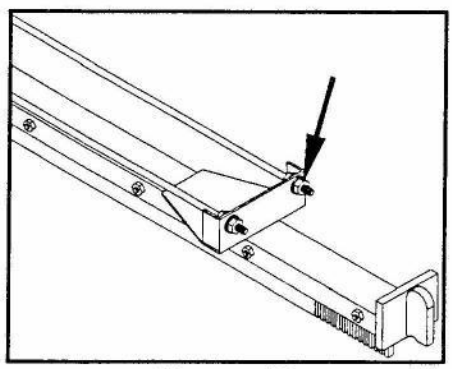


Figure 20

ELECTRICAL

1. The GEMINI® is controlled by two circuit boards. No attempt should be made to repair either of these circuit boards. Any nonfunctional circuit boards should be sent to Century International for repair. Repairs will be performed on an "in warranty" or "out of warranty" basis. In certain cases it is possible that the circuit board will be beyond repair. To remove either of the circuit boards, do the following.

A. Remove the outer circuit board cover by loosening and removing the four nuts that hold the circuit board cover to the circuit board housing. Two groups of wires pass through grommets in the circuit board cover. These groups of wires should be pushed through the grommets to allow the circuit board cover to be moved are enough back to obtain easy access to the boards.

B. Unscrew the wires from the screw terminal connector for the board being removed. The wires are marked with the number of the terminal to which they are attached. In the case of the digital counter connections, the circuit board is imprinted with the same name as the digital control is named on the dash.

Note: Earlier 110 volt GEMINI machines used an 18 pin connector logic board. Later model 110 volt GEMINI machines used a 21 pin connector logic board. When replacing an 18 pin board with a 21 pin board, order part number RP-137. This is an update kit with the necessary instructions and wiring to make the necessary changes when converting from 18 pins to 21 pins.

C. Remove the circuit board from the housing. The board is screwed into the housing and there are spacers beneath the board to keep the board away from the housing.

D. Remove the improperly functioning circuit board and replace it with a new circuit board.

E. Reverse these steps for reinstallation. See Figure 21.

GEMINI PLUS® and GEMINI SILVER BULLET® machines are controlled by a programmable control module. This module is easily replaceable. In the event of failure, a replacement module can be simply and easily installed and the original module sent to the factory or service center for repair. See Figure 22

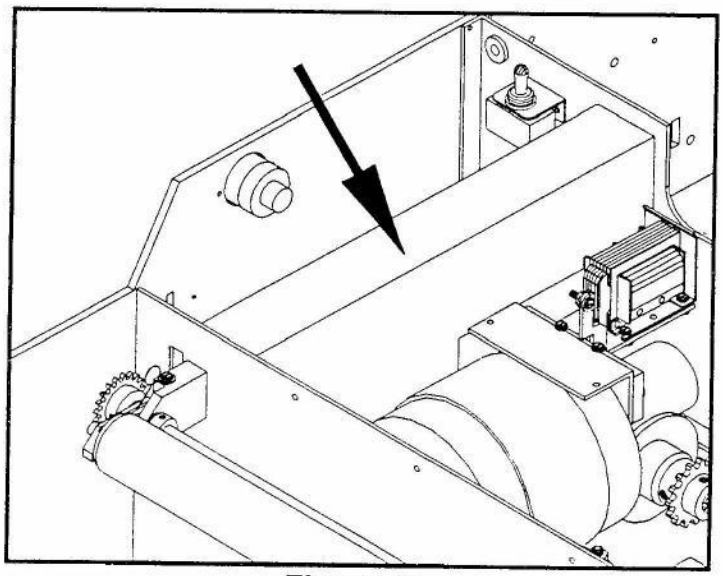


Figure 21

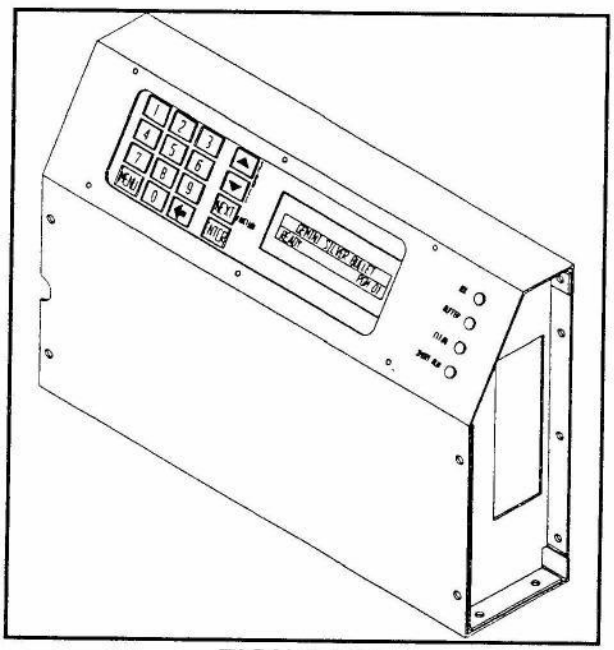


FIGURE 22

2. The reversing trip arm micro switch must be adjusted to allow the GEMINI to start without immediately reversing. The GEMINI can immediately reverse after starting if the trip arm is set too sensitively. If the micro switch needs to be adjusted it is adjusted as follows: See Figure 23.

A. Place the GEMINI on the lane at the foul line as it would be placed for normal operation.

B. To check for proper adjustment, using the front handle, lift the front of the GEMINI approximately 5/16 to 3/8 of an inch without hearing the micro switch click. If this adjustment is not correct or the GEMINI immediately reverses after the 2 second

delay when the start button is pushed, the micro switch leaf arm needs to be adjusted.

C. To adjust the micro switch leaf arm, block the front of the GEMINI up so that the reversing trip arm wheel is free to move up and down and when allowed to drop completely down it will not contact the lane surface. Hold the leaf arm against the micro switch at the center of the leaf arm so that the tail of the leaf arm can be bent. Bend the tail of the micro switch leaf arm up or down slightly. Continue to check Section ***C*** until the correct results occur.

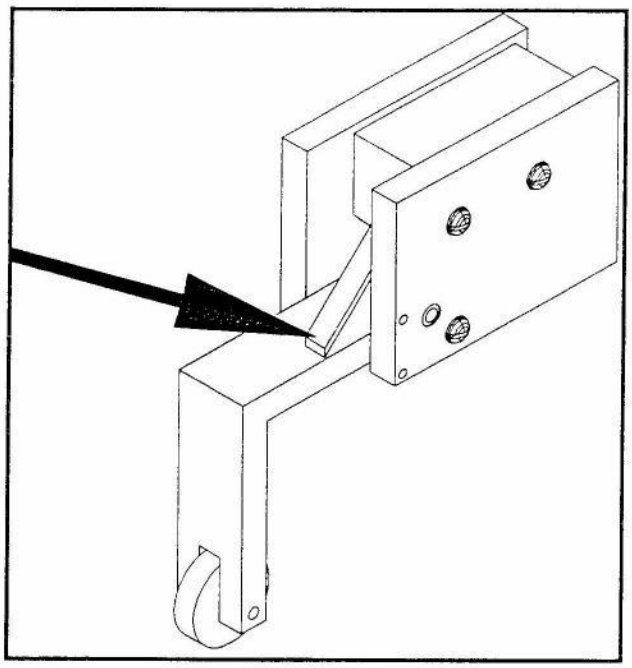


Figure 23

TROUBLESHOOTING

Problem 1 - GEMINI® moves down the lane properly but continues to operate identically all the way down the lane. During the oiling mode, the oil solenoid and buffer will not disengage when they should. During the cleaning mode, the cleaning pad will not pick up away from the lane until the machine reverses at the tail plank.

A. ***GEMINI®:*** The distance for the GEMINI® is controlled by the distance wheel that rides against the lane surface. If this wheel can not turn freely either because of a bind in the movement of the wheel or if it slipping on excess lane dressing, the machine will not count properly and therefore the distance on the lane where specific functions would occur will not occur at all or will occur at a later distance than selected. Remove the bind from the system.

B. ***GEMINI®:*** The counter wheel and/or infrared scanner/receiver is dirty. This will prevent the proper signal from reaching the sensor and therefore the machine will not count or sense distance properly and the machine will not change functions when programmed to do so or will not change functions at all. Wipe the wheel and sensor with a clean cloth. Clear the counter wheel holes of any foreign material. Check for scratches on the sensor lenses.

C. ***GEMINI®:*** The wiring from the infrared scanner/receiver to the circuit boards has come loose or the insulation has been damaged. check this and repair or replace the wiring as necessary. If soldering is necessary, use a low heat soldering pencil.

D. ***GEMINI®:*** The voltage to the machine, ***when the machine is being used***, is too low causing an excessive current draw. This can be due to an improperly rated electrical outlet or to excessive pressure against the lane surface by any of the GEMINI's components. Change outlets to one that is properly rated and check the adjustment pressure against the lane from the vacuum head, cleaning pad or dressing buffer.

E. ***GEMINI®:*** The infrared scanner/receiver has failed and needs to be replaced. When replacing this component, use a low heat soldering pencil. Be sure to center the scanner/receiver so that it straddles the distance counter wheel.

F. ***GEMINI PLUS® or GEMINI SILVER BULLET®:*** The Hewlett Packard optical sensor is not functioning properly. Check the wire connections to the plug for this sensor. Check the set screws that attach the drive sprocket to the optical sensor shaft and the set screws that attach the sprocket to the drive motor adapter/spacer and the adapter/spacer to the drive motor shaft. Make sure they are tightened against the center of the machined flat surface that each set screw contacts.

Note: On GEMINI® machines, when working with the distance counter wheel and infrared scanner/receiver, it is imperative that the distance wheel not contact either side of the scanner/receiver. One side of this scanner/receiver is a sending unit and the other side is a receiver. Contact by a moving distance counter wheel can dull the lenses and make the unit inoperative so that it must be replaced!

Problem 2 - The GEMINI®, GEMINI PLUS® or GEMINI SILVER BULLET® buzzes loudly and may even start slowly as the start button is depressed.

A. A GEMINI series machine is really two lane machines in one. Therefore during the simultaneous oil and stripping mode, two machines are operating at once. The electrical current associated with this is high by necessity. The GEMINI series machine needs to be operated on a 115 volt circuit of 30 amp capacity or 220 volt circuit of 20 amp capacity with a dedicated electrical ground. Depending upon where, relative to the main incoming electrical power, the actual outlet being used is located, the machine may or may not operate properly. If necessary, change outlets being used to one closer to the incoming electrical power provided it is rated properly. Be sure that a 12/3 properly grounded cord is being used for 110 volt GEMINI series machines and a 14/3 properly grounded power cord for 220 volt GEMINI series machines.

Problem 3 -Machine runs into pit.

A. ***GEMINI®, GEMINI PLUS® AND GEMINI SILVER BULLET®:*** Reversing trip arm switch binding. The reversing trip arm switch is loaded downward by its own weight. It is possible that the reversing trip arm is bound in the up position and is not free to move down when the machine reaches the tail plank. Repair or replace the trip arm assembly as necessary.

B. ***GEMINI®, GEMINI PLUS® AND GEMINI SILVER BULLET®:*** Reversing trip arm micro switch not working properly. Replace switch.

C. ***GEMINI®:*** A power board relay is sticking. Replace the GEMINI power board and send the original board to Century's factory for repair.

D. ***GEMINI PLUS® and GEMINI SILVER BULLET®:*** A relay is sticking on the control module high voltage relay board. Replace the control module and send the original control module back to Century for repair.

Problem 4 - Machine keeps track of distances erratically. Functions sometimes occur when they should and others do not occur.

A. Check the power receptacle being used. The receptacle should be rated at 110 volts on a 30 amp circuit or 220 volts on a 20 amp circuit and the circuit must be properly grounded. Check the power cord wiring to make sure that it is properly grounded. Repair or replace as necessary.

B. Check all wire connections to both the GEMINI® power circuit board and the GEMINI® logic board. Check the wire connections from the infrared scanner/receiver both at the scanner/receiver and at the circuit board. Check the wire connections and plug in connections for the ribbon cables. These are the cables that run from the black counter switches on the dash to the GEMINI® logic board. For GEMINI PLUS® or GEMINI SILVER BULLET® machines, check the connectors to the Hewlett Packard optical sensor, 25 pin logic signal connector, main power connector and output power connector. Repair or replace as necessary.

C. The GEMINI® logic board may need to be replaced. For GEMINI PLUS® or GEMINI SILVER BULLET® machines, the control module may need to be repaired. Send the logic board or control module back to Century's factory for repair or replacement either as a warranty or a non warranty repair as appropriate.

D. ***GEMINI®:*** For standard GEMINI machines, the infrared scanner/receiver may be dirty or contaminated with a film of lane oil. Clean both the scanner and receiver sides of this unit, using a clean dry soft cotton swab. Check both the sending and receiving lens for damage and replace as necessary.

E. ***GEMINI®:*** If the erratic problem is confined to only one operation, check the connection for that counter's ribbon cable both at the counter and at the logic board. Inspect the rib bon cable for a poor connection. Repair or replace as necessary.

F. ***GEMINI PLUS® or GEMINI SILVER BULLET®:*** The Hewlett Packard optical sensor is not functioning properly. Check the wire connections to the plug for this sensor. Check the set screws that attach the drive sprocket to the optical sensor shaft and the set screws that attach the sprocket to the drive motor adapter/spacer and the adapter/spacer to the drive motor shaft. Make sure they are tightened against the center of the machined flat surface that each set screw contacts.

Problem 5 - The dressing buffer and/or oil solenoid does not engage during the reverse run when this option is selected.

A. ***GEMINI®:*** Oil or buffer distance counter set higher than short run counter. Short run counter must exceed dressing buffer counter by at least 0.5 feet. Oil counter setting should be equal to or less than dressing buffer counter setting. Change counter settings as necessary.

B. ***GEMINI®:*** Check the ribbon cable connections at both the counter end and logic board end for a damaged connector and/or pin or broken wire.

C. ***GEMINI®, GEMINI PLUS® AND GEMINI SILVER BULLET®:*** Low receptacle voltage and/or current. Receptacle should be rated at 110 volts on a 30 amp rated circuit or 220 volts on a 20 amp rated circuit.

D. ***GEMINI®, GEMINI PLUS® AND GEMINI SILVER BULLET®:*** Faulty ground wire. Check machine power cord ends, receptacle wiring and main electrical power wiring to insure that power line is properly grounded.

Problem 6 - Oil or buffer stays on at reverse point in short run.

A. ***GEMINI®:*** Oil or buffer counter distance set higher than short run counter distance. Short run counter distance should be at least 0.5 feet greater than dressing buffer counter distance. Oil counter distance should be less than or at most equal to dressing buffer counter distance.

B. ***GEMINI®, GEMINI PLUS® AND GEMINI SILVER BULLET®:*** Low receptacle voltage and/or current. Receptacle should be rated at 110 volts on a 30 amp rated circuit or 220 volts on a 20 amp rated circuit.

C. ***GEMINI®, GEMINI PLUS® AND GEMINI SILVER BULLET®:*** Faulty Ground wire. Check machine power cored ends, receptacle wiring and main electrical power wiring to insure that power line is properly grounded.

Problem 7 - Machine does not reverse at short run distance selected.

A. ***GEMINI®:***Infrared scanner/receiver is dirty and should be cleaned with a soft dry cotton swab.

B. ***GEMINI®:***Distance counter wheel is not rotating properly. Check rotation of distance counter wheel to be sure that it is smooth and free and does not contact the micro sensor but is centered and aligned with the micro sensor. Check both the sending and receiving lens on the micro sensor for scratches and/or dulling. Repair or replace parts as necessary.

C. ***GEMINI®, GEMINI PLUS® AND GEMINI SILVER BULLET®:*** Low receptacle voltage and/or current. Receptacle should be rated at 110 volts or a 30 amp rated circuit or 220 volts on a 20 amp rated circuit.

D. ***GEMINI®, GEMINI PLUS® AND GEMINI SILVER BULLET®:*** Faulty ground wire. Check machine power cord ends, receptacle wiring and main electrical power wiring to insure that power line is properly grounded.

E. ***GEMINI PLUS® or GEMINI SILVER BULLET®:*** The Hewlett Packard optical sensor is not functioning properly. Check the wire connections to the plug for this sensor. Check the set screws that attach the drive sprocket to the optical sensor shaft and the set screws that attach the sprocket to the drive motor adapter/spacer and the adapter/spacer to the drive motor shaft. Make sure they are tightened against the center of the machined flat surface that each set screw contacts.

Problem 8 - Vacuum head or cleaner pad momentarily engages against the lane surface on the return movement of the GEMINI usually coinciding with the start up of the dressing buffer motor on the return movement of the GEMINI.

A. ***GEMINI®:*** This is usually a sign of low voltage either within the bowling center or on the electrical line and/or receptacle being used to power the GEMINI. Inspect this and correct as necessary.

B. ***GEMINI®, GEMINI PLUS® AND GEMINI SILVER BULLET®:*** Changing electrical circuits to a different receptacle on a different line can sometimes solve this problem.

Problem 9 - Only one of the five available counter functions does not function correctly. The count of either one of the digits only or the entire function operates erratically.

A. ***GEMINI®:*** If the problem is with one digit only, use the push-button operator to move the count upward through all the possible numbers and then downward through all the possible numbers. If this portion of the switch has foreign matter on it, this cycling of the counter will sometimes clear the problem. If not, replace the counter switch assembly.

B. ***GEMINI®:*** If the problem is with the entire function and not one digit only, check that function's specific ribbon cable and ribbon cable connections at each end of the cable. Replace the ribbon cable and/or counter switch assembly as necessary.

Problem 10 - Cleaner flow is erratic.

A. ***GEMINI®, GEMINI PLUS® AND GEMINI SILVER BULLET®:*** Foreign material may become lodged in the electrical solenoid valves at either end of the cleaner tank assembly. This can cause a blockage and reduced cleaner flow or the foreign material can cause the solenoid valve plunger not to seat properly and this will cause continuous cleaner flow. Remove the valve solenoid coil, disassemble the solenoid valve stem and internal plunger and remove the obstructing foreign matter.

B. ***GEMINI®, GEMINI PLUS® AND GEMINI SILVER BULLET®:*** The cleaner pad tray mount assembly can become clogged with cleaner residue and impurities. This assembly should be disassembled every six months and any accumulation of material removed. The entire assembly should be rinsed with hot water. The assembly should then be reassembled and installed into the GEMINI series machine.

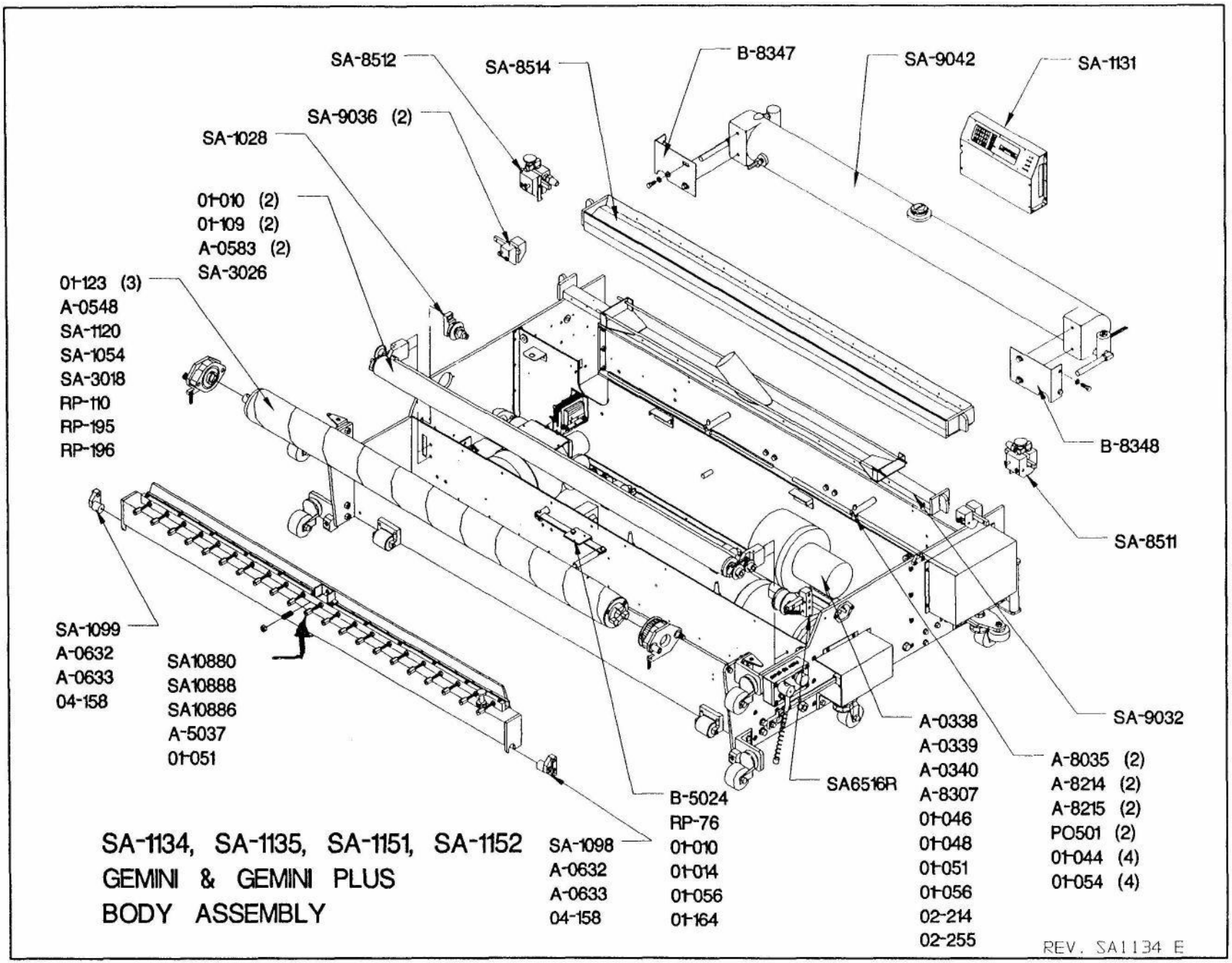
C. ***GEMINI®, GEMINI PLUS® AND GEMINI SILVER BULLET®:*** The cleaner pad cover and sponge or stainless steel cleaner tray itself can become clogged with material. The stainless steel tray can be cleaned. The cleaning pad cover and cleaning pad sponge should be replaced every 4 to 6 months. In large centers or centers with high volume use of the machine, this replacement should occur sooner.

D. ***GEMINI®, GEMINI PLUS® AND GEMINI SILVER BULLET®:*** The duckbill venting valve in the cleaner tank assembly can become fouled with cleaner residue. This duckbill valve can be easily removed and cleaned or replaced as necessary. The duckbill valve should be replaced at least yearly. Later model Silver Bullets use a solenoid valve for venting.

PARTS DIAGRAM INDEX

GEMINI AND GEMINI PLUS BODY ASSEMBLY

PART #	DESCRIPTION
01-010	8-32 X 1/2 INCH PAN HEAD MACHINE SCREW, PLATED
01-014	8-32 NYLON INSERT LOCKNUT, PLATED
01-044	1/4-20 X 5/8 INCH HEX HEAD BOLT, PLATED
01-046	1/4-20 X 3/4 INCH HEX HEAD BOLT, PLATED
01-048	1/4-20 X 1 INCH HEX HEAD BOLT
01-051	1/4-20 NYLON INSERT LOCKNUT
01-052	1/4-20 HEX STEEL MACHINE NUT, PLATED
01-054	1/4 INCH SPLIT LOCKWASHER
01-056	1/4 INCH FLATWASHER
01-109	#8 FLATWASHER
01-123	10-32 X 5/8 FLAT HEAD MACHINE SCREW
01-164	10-32 X 1/2 INCH WING SCREW
02-214	VACUUM MOTOR GEMINI & AVLS, 110V 50/60 HZ
02-255	VACUUM MOTOR GEMINI & AVLS, 220V 50/60 HZ
04-158	RETAINING RING
A-0338	GEMINI UPPER VACUUM MOTOR MOUNT
A-0339	GEMINI LOWER VACUUM MOTOR MOUNT
A-0340	GEMINI VERTICAL VACUUM MOTOR MOUNT
A-0381	ENCODER CHAIN
A-0548	BUFFER COVER RETAINING RING
A-0583	OIL TRANSFER ROLLER SPRING
A-0632	TANK ADJUSTING BOLT
A-0633	TANK ADJUSTING PIVOT ROD
A-5037	OIL TANK LINKAGE SPRING
A-8035	CLEANER MANIFOLD TUBE
A-8307	TANK SEAL
A-8214	CLEANER MANIFOLD ADJUSTER SUPPORT
A-8215	CLEANER MANIFOLD ADJUSTER
B-5024	TANK TILT CONNECTING ROD
B-8347	PLASTIC TANK MOUNTING BRACKET-LEFT
B-8348	PLASTIC TANK MOUNTING BRACKET-RIGHT
PO501	CLEANER MANIFOLD ORIFICE #72 HOLE
RP-76	OIL TANK LINKAGE REPAIR KIT (GEMINI & 300)
RP-110	LDD STYLE BUFFER TUBE COVER
RP-195	10-10 BUFFER TUBE COVER ASSEMBLY
RP-196	10-10 BUFFER TUBE ASSEMBLY
SA-1028	CHAIN IDLER ASSEMBLY
SA-1054	BUFFER TUBE COVER AND CORE ASSEMBLY
SA10880	GEMINI STYLE OIL TANK ASSEMBLY - 20 INCH TONGUE WICK
SA10888	GEMINI STYLE OIL TANK ASSEMBLY - 28 INCH TONGUE WICK
SA10886	GEMINI STYLE OIL TANK ASSEMBLY - 36 INCH TONGUE WICK
SA-1098	TANK SUPPORT ARM ASSEMBLY - RIGHT
SA-1099	TANK SUPPORT ARM ASSEMBLY - LEFT
SA-1120	BUFFER TUBE CORE ASSEMBLY WITHOUT COVER
SA-1131	CONTROL MODULE ASSEMBLY, GEMINI PLUS
SA-1141	ENCODER ASSEMBLY
SA-1182	DRESSING BUFFER BRUSH ASSEMBLY
SA-3018	BUFFER TUBE COVER ASSEMBLY
SA-3026	OIL TRANSFER ROLLER ASSEMBLY
SA-6516R	IDLER ASSEMBLY, RIGHT
SA-8511	CLEANER TRAY MOUNT ASSEMBLY - RIGHT
SA-8512	CLEANER TRAY MOUNT ASSEMBLY - LEFT
SA-8514	CLEANER PAD ASSEMBLY
SA-9032	GEMINI AND AVLS VACUUM HEAD ASSEMBLY
SA-9036	VACUUM HEAD SLIDE BLOCK ASSEMBLY
SA-9042	CLEANER TANK ASSEMBLY - POLYETHYLENE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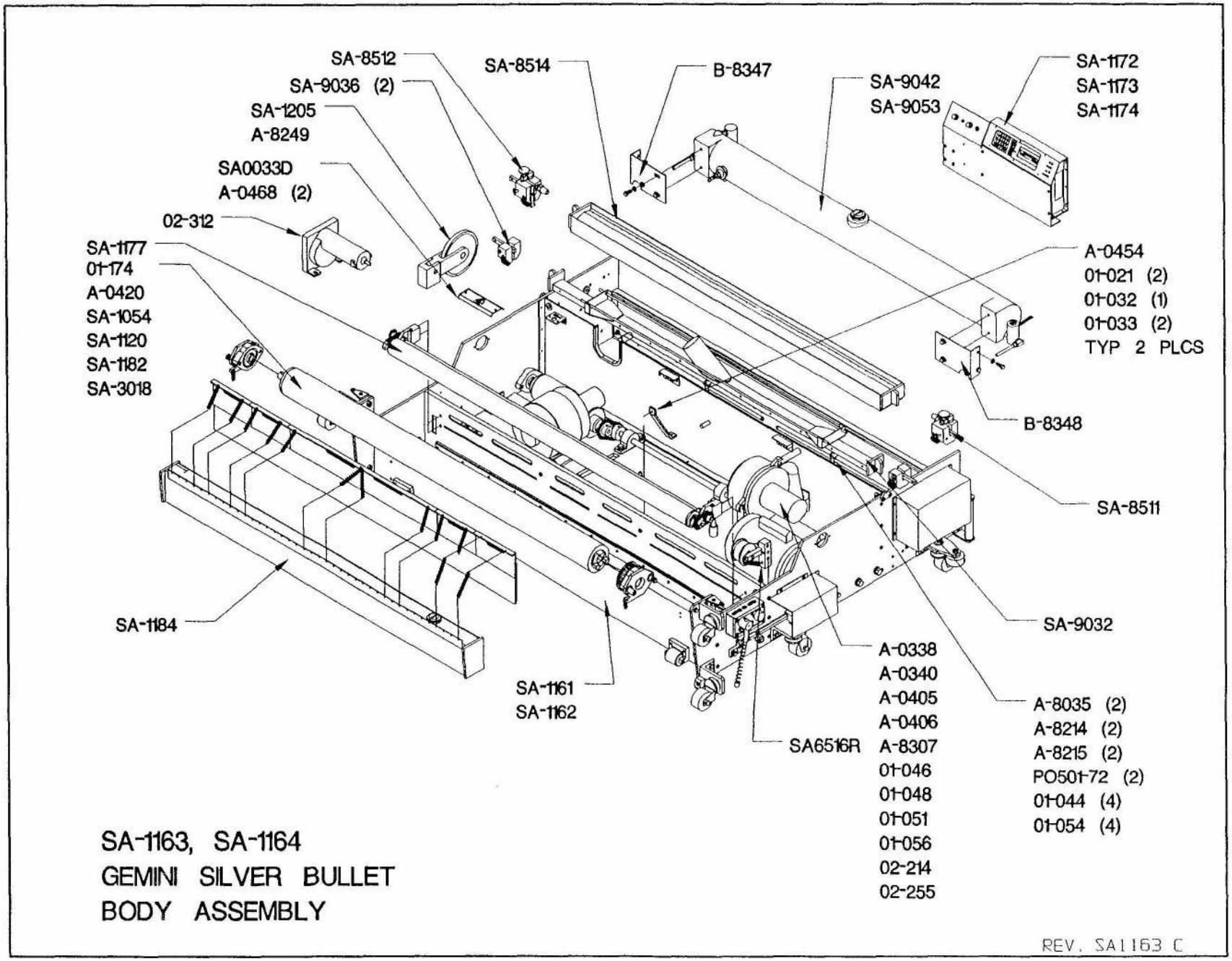
GEMINI & GEMINI PLUS
BODY ASSEMBLY
REV. SA1134 E

GEMINI SILVER BULLET BODY ASSEMBLY WITH SINGLE OIL TANK SYSTEM

PART #	DESCRIPTION
01-010	8-32 X 1/2 INCH PAN HEAD MACHINE SCREW, PLATED
01-014	8-32 NYLON INSERT LOCKNUT, PLATED
01-036	3/16 FLAT WASHER
01-044	1/4-20 X 5/8 INCH HEX HEAD BOLT, PLATED
01-046	1/4-20 X 3/4 INCH HEX HEAD BOLT, PLATED
01-048	1/4-20 X 1 INCH HEX HEAD BOLT
01-051	1/4-20 NYLON INSERT LOCKNUT
01-052	1/4-20 HEX STEEL MACHINE NUT, PLATED
01-054	1/4 INCH SPLIT LOCKWASHER
01-056	1/4 INCH FLATWASHER
01-109	#8 FLATWASHER
01-123	10-32 X 5/8 FLAT HEAD MACHINE SCREW
01-164	10-32 X 1/2 INCH WING SCREW
02-214	VACUUM MOTOR GEMINI & AVLS, 110V 50/60 HZ
02-255	VACUUM MOTOR GEMINI & AVLS, 220V 50/60 HZ
02-312	TRANSFER ROLLER DRIVE MOTOR
03-100	SPROCKET, TRANSFER ROLLER DRIVE MOTOR
A-0338	GEMINI UPPER VACUUM MOTOR MOUNT
A-0340	GEMINI VERTICAL VACUUM MOTOR MOUNT
A-0405	SILVER BULLET LOWER VAC MOUNT
A-0406	SILVER BULLET VACUUM EXHAUST PLATE
A-0468	TERMINAL BLOCK COVER SPACER
A-0548	BUFFER COVER RETAINING RING
A-8035	CLEANER MANIFOLD TUBE
A-8307	TANK SEAL
A-8214	CLEANER MANIFOLD ADJUSTER SUPPORT
A-8215	CLEANER MANIFOLD ADJUSTER
A-8249	SHUT OFF ARM STOP
B-8347	PLASTIC TANK MOUNTING BRACKET, LEFT
B-8348	PLASTIC TANK MOUNTING BRACKET, RIGHT
PO501	CLEANER MANIFOLD ORIFICE #72 HOLE
RP-31	"0" RING (CASTER) (REPLACEMENT ONLY)
RP-110	LDD STYLE BUFFER TUBE COVER
SA-0033D	TERMINAL BLOCK COVER ASSEMBLY
SA-1054	BUFFER TUBE COVER AND CORE ASSEMBLY
SA-1120	BUFFER TUBE CORE ASSEMBLY WITHOUT COVER
SA-1141	ENCODER ASSEMBLY
SA-1161	FRAME ASSEMBLY, 110V
SA-1162	FRAME ASSEMBLY, 220V
SA-1163	BODY ASSEMBLY, 110V
SA-1164	BODY ASSEMBLY, 220V
SA-1172	CONTROL MODULE
SA-1173	DASH ASSEMBLY, 110V
SA-1174	DASH ASSEMBLY, 220V
SA-1177	OIL TRANSFER ROLLER ASSEMBLY-GEMINI SILVER BULLET
SA-1182	DRESSING BUFFER BRUSH ASSEMBLY
SA1184A	GEMINI SILVER BULLET & PC OIL TANK ASSEMBLY 5,5,20,5,5
SA1184B	GEMINI SILVER BULLET & PC OIL TANK ASSEMBLY 8,5,14,5,8
SA1184C	GEMINI SILVER BULLET & PC OIL TANK ASSEMBLY 7,3,20,3,7
SA-1184D	GEMINI SILVER BULLET & PC OIL TANK ASSEMBLY 7,5,16,5,7
SA-1184E	GEMINI SILVER BULLET & PC OIL TANK ASSEMBLY 6,5,17,5,7
SA-1184F	GEMINI SILVER BULLET & PC OIL TANK ASSEMBLY 7,4,18,4,7
SA-1184G	GEMINI SILVER BULLET & PC OIL TANK ASSEMBLY 8,5,17,3,7
SA-1184H	GEMINI SILVER BULLET & PC OIL TANK ASSEMBLY 9,4,17,3,7
SA-1189	DASH ASSEMBLY, 220V
SA-1205	COUNTER WHEEL ASSEMBLY
SA-3018	BUFFER TUBE COVER ASSEMBLY
SA-6516R	IDELR ASSEMBLY, RIGHT
SA-8511	CLEANER TRAY MOUNT ASSEMBLY, RIGHT
SA-8512	CLEANER TRAY MOUNT ASSEMBLY, LEFT
SA-8514	CLEANER PAD ASSEMBLY
SA-9032	GEMINI AND AVLS VACUUM HEAD ASSEMBLY
SA-9036	VACUUM HEAD SLIDE BLOCK ASSEMBLY
SA-9042	CLEANER TANK ASSEMBLY, POLYETHYLENE, 110V
SA-9053	CLEANER TANK ASSEMBLY, POLYETHYLENE, 220V

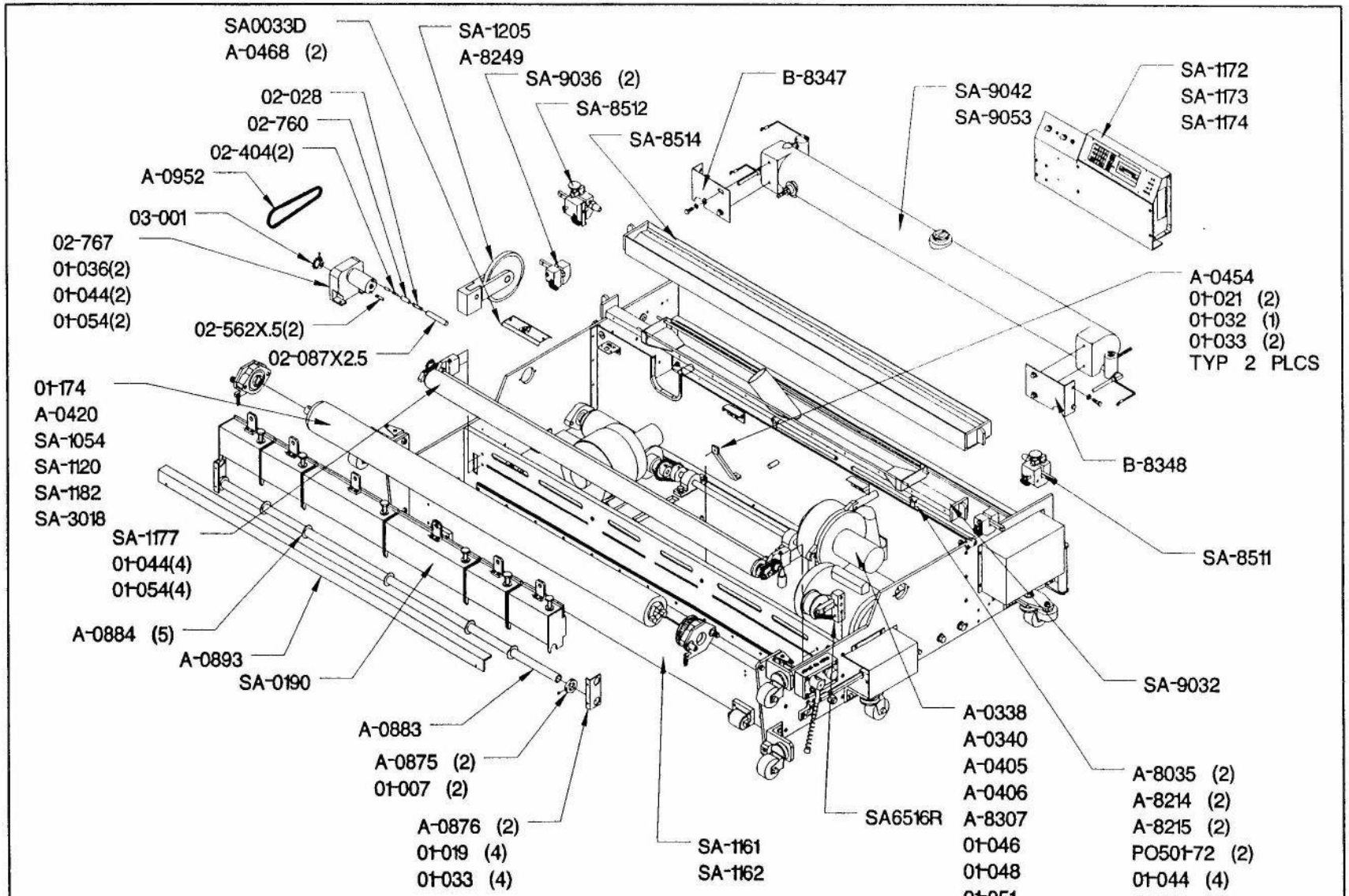


SA-1163, SA-1164
GEMINI SILVER BULLET
BODY ASSEMBLY

REV. SA1163 C

GEMINI SILVER BULLET BODY ASSEMBLY WITH MULTIPLE OIL TANKS SYSTEM

PART #	DESCRIPTION
01-007	8-32 X 1/4 HEX SOCKET HEAD SET SCREW
01-010	8-32 X 1/2 INCH PAN HEAD MACHINE SCREW, PLATED
01-014	8-32 NYLON INSERT LOCKNUT, PLATED
01-019	10-32 X 3/8 SLOTTED PAN HEAD MACHINE SCREW
01-033	#10 EXTERNAL LOCK WASHER
01-036	3/16 FLAT WASHER
01-044	1/4-20 X 5/8 INCH HEX HEAD BOLT, PLATED
01-046	1/4-20 X 3/4 INCH HEX HEAD BOLT, PLATED
01-048	1/4-20 X 1 INCH HEX HEAD BOLT
01-051	1/4-20 NYLON INSERT LOCKNUT
01-052	1/4-20 HEX STEEL MACHINE NUT, PLATED
01-054	1/4 INCH SPLIT LOCKWASHER
01-056	1/4 INCH FLATWASHER
01-109	#8 FLATWASHER
01-123	10-32 X 5/8 FLAT HEAD MACHINE SCREW
01-164	10-32 X 1/2 INCH WING SCREW
02-214	VACUUM MOTOR GEMINI & AVLS, 110V 50/60 HZ
02-255	VACUUM MOTOR GEMINI & AVLS, 220V 50/60 HZ
02-767	TRANSFER ROLLER DRIVE MOTOR
02-760	RESISTOR,1 OHM,5W,SILICON
03-001	SPROCKET, TRANSFER ROLLER DRIVE MOTOR
A-0338	GEMINI UPPER VACUUM MOTOR MOUNT
A-0340	GEMINI VERTICAL VACUUM MOTOR MOUNT
A-0405	SILVER BULLET LOWER VAC MOUNT
A-0406	SILVER BULLET VACUUM EXHAUST PLATE
A-0468	TERMINAL BLOCK COVER SPACER
A-0548	BUFFER COVER RETAINING RING
A-0875	TANK LOCK
A-0876	TANK MOUNTING TUBE BRACKET
A-0883	TANK MOUNTING TUBE
A-0884	TANK SPACER
A-0893	TANK RETAINER
A-0952	CHAIN
A-8035	CLEANER MANIFOLD TUBE
A-8307	TANK SEAL
A-8214	CLEANER MANIFOLD ADJUSTER SUPPORT
A-8215	CLEANER MANIFOLD ADJUSTER
A-8249	SHUT OFF ARM STOP
B-8347	PLASTIC TANK MOUNTING BRACKET, LEFT
B-8348	PLASTIC TANK MOUNTING BRACKET, RIGHT
PO501	CLEANER MANIFOLD ORIFICE #72 HOLE
RP-31	"0" RING (CASTER) (REPLACEMENT ONLY)
RP-110	LDD STYLE BUFFER TUBE COVER
SA-0033D	TERMINAL BLOCK COVER ASSEMBLY
SA-0190	OIL TANK ASSEMBLY CONFIGURATIONS
SA-1054	BUFFER TUBE COVER AND CORE ASSEMBLY
SA-1120	BUFFER TUBE CORE ASSEMBLY WITHOUT COVER
SA-1141	ENCODER ASSEMBLY
SA-1161	FRAME ASSEMBLY, 110V
SA-1162	FRAME ASSEMBLY, 220V
SA-1163	BODY ASSEMBLY, 110V
SA-1164	BODY ASSEMBLY, 220V
SA-1172	CONTROL MODULE
SA-1173	DASH ASSEMBLY, 110V
SA-1174	DASH ASSEMBLY, 220V
SA-1177	OIL TRANSFER ROLLER ASSEMBLY-GEMINI SILVER BULLET
SA-1182	DRESSING BUFFER BRUSH ASSEMBLY
SA-1189	DASH ASSEMBLY, 220V
SA-1205	COUNTER WHEEL ASSEMBLY
SA-3018	BUFFER TUBE COVER ASSEMBLY
SA-6516R	IDELR ASSEMBLY, RIGHT
SA-8511	CLEANER TRAY MOUNT ASSEMBLY, RIGHT
SA-8512	CLEANER TRAY MOUNT ASSEMBLY, LEFT
SA-8514	CLEANER PAD ASSEMBLY
SA-9032	GEMINI AND AVLS VACUUM HEAD ASSEMBLY
SA-9036	VACUUM HEAD SLIDE BLOCK ASSEMBLY
SA-9042	CLEANER TANK ASSEMBLY, POLYETHYLENE, 110V
SA-9053	CLEANER TANK ASSEMBLY, POLYETHYLENE, 220V

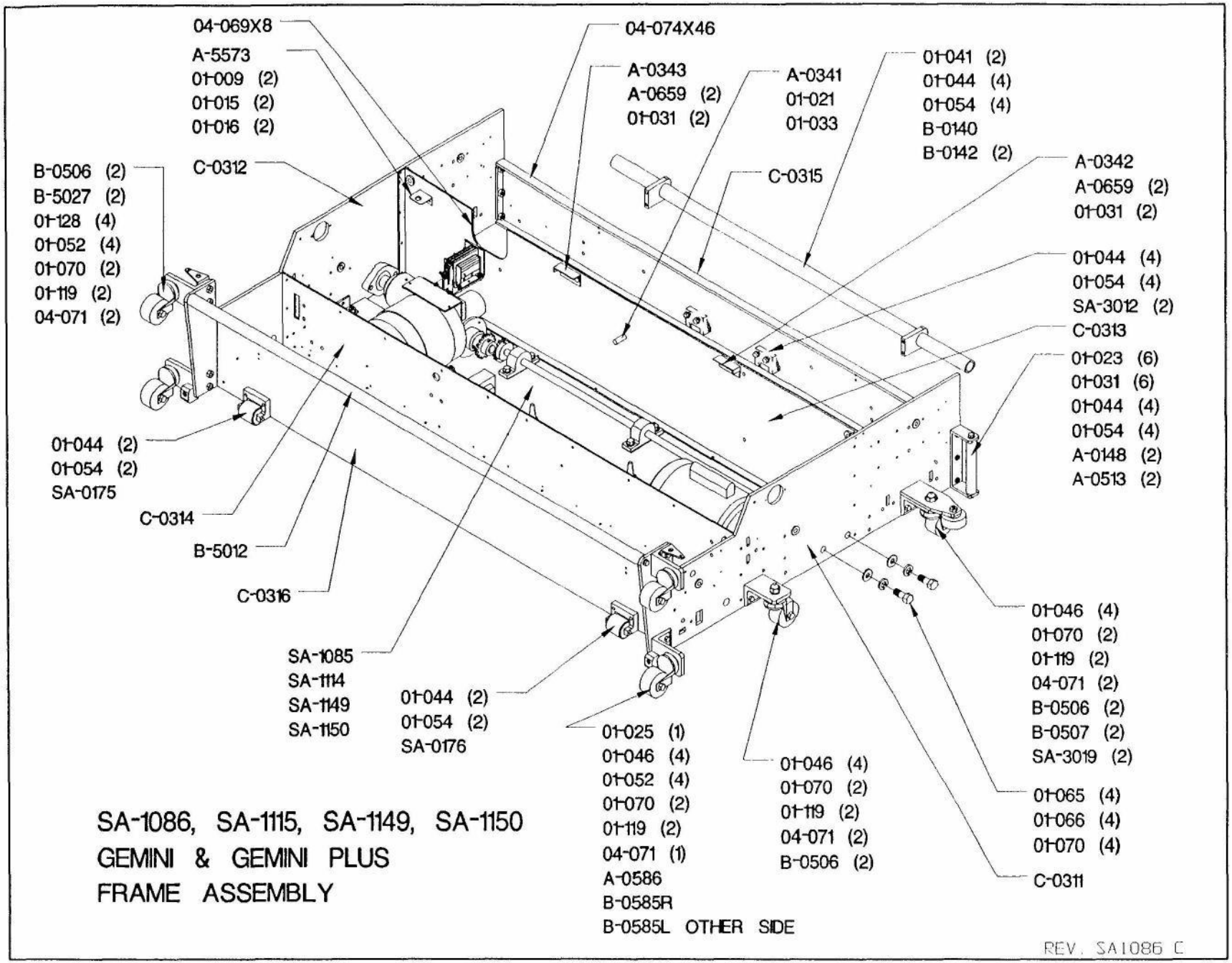


SA-1163, SA-1164
GEMINI SILVER BULLET BODY ASSEMBLY WITH MULTIPLE OIL TANKS SYSTEM

REV. SA1163 F

GEMINI AND GEMINI PLUS FRAME ASSEMBLY

PART #	DESCRIPTION
01-009	8-32 X 3/8 SLOTTED ROUND HEAD MACHINE SCREW, PLATED
01-010	8-32 X 1/2 INCH SLOTTED PAN HEAD MACHINE SCREW, PLATED
01-014	8-32 NYLON INSERT HEX LOCKNUT
01-015	8-32 HEX STEEL MACHINE NUT, PLATED
01-016	#8 EXTERNAL TOOTH LOCKWASHER, PLATED
01-021	10-32 X 1/2 INCH SLOTTED PAN HEAD MACHINE SCREW, PLATED
01-023	10-32 X 3/4 INCH SLOTTED PAN HEAD MACHINE SCREW, PLATED
01-025	10-32 X 1 SLOTTED PAN HEAD MACHINE SCREW, PLATED
01-031	10-32 NYLON INSERT HEX LOCKNUT
01-032	10-32 HEX NUT, PLATED
01-033	#10 EXTERNAL TOOTH LOCKWASHER, PLATED
01-041	1/4-20 X 1/4 HEX SOCKET SET SCREW, CUP POINT
01-044	1/4-20 X 5/8 HEX HEAD SCREW
01-046	1/4-20 X 3/4 HEX HEAD SCREW
01-052	1/4-20 HEX NUT PLATED
01-054	1/4 INCH SPLIT LOCKWASHER, PLATED
01-065	5/16 USS WROUGHT WASHER, TYPE A, PLATED
01-066	3/8-16 X 1 NC HEX SCREW, GRADE 2, PLATED
01-070	3/8 INCH SPLIT LOCKWASHER, PLATED
01-119	3/8-16 ACORN NUT, PLATED
01-122	3/16 DIA X 3/8 STEEL POP RIVET
01-128	1/4-20 X 7/8 HEX HEAD SCREW
04-069X8	8 INCH SECTION 1/8 INCH TRIM LOCK
04-071	CASTER
04-074X46	FOAM, 1/4 X 3/4 SELF ADHESIVE 46 INCH LENGTH
A-0031	OIL DRIP FELT
A-0148	END HANDLE
A-0341	WASTE TANK SUPPORT
A-0342	WASTE TANK LOCK-RIGHT
A-0343	WASTE TANK LOCK-LEFT
A-0405	LOWER VAC MOTOR MOUNT
A-0406	VAC EXHAUST PLATE
A-0513	SIDE HANDLE BRACKET
A-0586	PIVOT CASTER BLOCK
A-0659	WASTE TANK LOCK SHOULDER BOLT
A-5573	POWER CORD LEFT RIGHT SWITCH BRACKET
B-0140	FRONT HANDLE TUBE
B-0142	FRONT HANDLE HOLDER BRACKET
B-0321	VACUUM HEAD SOLENOID COVER
B-0322	OIL SOLENOID COVER - RIGHT
B-0323	OIL SOLENOID COVER - LEFT
B-0505	OIL DRIP FELT RETAINER PLATE
B-0506	CASTER BRACKET
B-0507	CENTERING GUIDE PLATE
B-0585R	PIVOT CASTER BRACKET
B-0585L	PIVOT CASTER BRACKET
B-5012	REAR HANDLE
B-5027	CORD ARM BRACKET
C-0311	RIGHT SIDE PLATE
C-0312	LEFT SIDE PLATE
C-0313	FRONT ELECTRICAL FIREWALL
C-0314	REAR ELECTRICAL FIREWALL
C-0315	FRONT PLATE PANEL
C-0316	REAR PLATE PANEL
RP-31	REPLACEMENT CASTER "O" RING ONLY
RP-106	URETHANE DASH END ROLLER ASSEMBLY
SA-0175	DASH END PLATE ROLLER ASSEMBLY, LEFT
SA-0176	DASH END PLATE ROLLER ASSEMBLY, RIGHT
SA-1085	GEMINI BASE PLATE ASSEMBLY 110V
SA-1086	FRAME ASSEMBLY 110V
SA-1114	GEMINI BASE PLATE ASSEMBLY 220V
SA-1115	FRAME ASSEMBLY 220V
SA-1172	CONTROL BOX
SA-1182	BUFFER ASSEMBLY
SA-1184	OIL TANK ASSEMBLY
SA-3012	DUSTER END PLATE ROLLER ASSEMBLY
SA-3019	CENTERING GUIDE PLATE ASSEMBLY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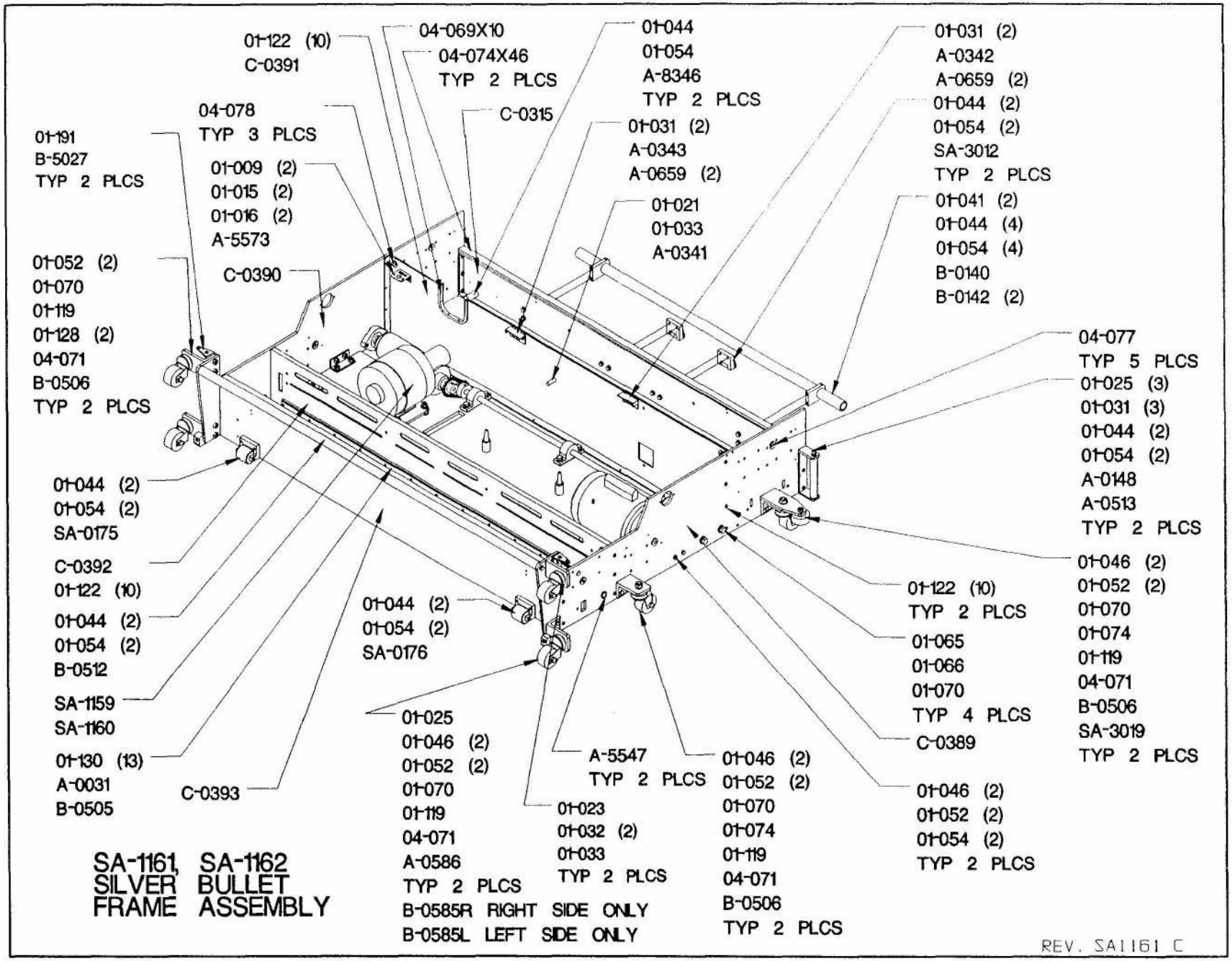
01-054 (2)
SA-0176
01-025 (1)
01-046 (4)
01-052 (4)
01-070 (2)
01-119 (2)
04-071 (1)
A-0586
B-0585R
B-0585L OTHER SIDE
01-046 (4)
01-070 (2)
01-119 (2)
04-071 (2)
B-0506 (2)
01-046 (4)
01-070 (2)
01-119 (2)
04-071 (2)
B-0506 (2)
B-0507 (2)
SA-3019 (2)
01-065 (4)
01-066 (4)
01-070 (4)
C-0311
SA-1086, SA-1115, SA-1149, SA-1150
GEMINI & GEMINI PLUS
FRAME ASSEMBLY
REV. SA1086 C

GEMINI SILVER BULLET FRAME ASSEMBLY

PART #	DESCRIPTION
01-009	8-32 X 3/8 SLOTTED ROUND HEAD MACHINE SCREW, PLATED
01-010	8-32 X 1/2 INCH SLOTTED PAN HEAD MACHINE SCREW, PLATED
01-014	8-32 NYLON INSERT HEX LOCKNUT
01-015	8-32 HEX STEEL MACHINE NUT, PLATED
01-016	#8 EXTERNAL TOOTH LOCKWASHER, PLATED
01-021	10-32 X 1/2 INCH SLOTTED PAN HEAD MACHINE SCREW, PLATED
01-023	10-32 X 3/4 INCH SLOTTED PAN HEAD MACHINE SCREW, PLATED
01-025	10-32 X 1 SLOTTED PAN HEAD MACHINE SCREW, PLATED
01-031	10-32 NYLON INSERT HEX LOCKNUT
01-032	10-32 HEX NUT, PLATED
01-033	#10 EXTERNAL TOOTH LOCKWASHER, PLATED
01-041	1/4-20 X 1/4 HEX SOCKET SET SCREW, CUP POINT
01-044	1/4-20 X 5/8 HEX HEAD SCREW
01-046	1/4-20 X 3/4 HEX HEAD SCREW
01-052	1/4-20 HEX NUT PLATED
01-054	1/4 INCH SPLIT LOCKWASHER, PLATED
01-065	5/16 USS WROUGHT WASHER, TYPE A, PLATED
01-066	3/8-16 X 1 NC HEX SCREW, GRADE 2, PLATED
01-070	3/8 INCH SPLIT LOCKWASHER, PLATED
01-119	3/8-16 ACORN NUT, PLATED
01-122	3/16 DIA X 3/8 STEEL POP RIVET
01-128	1/4-20 X 7/8 HEX HEAD SCREW
04-069X8	8 INCH SECTION 1/8 INCH TRIM LOCK
04-071	CASTER
04-074X46	FOAM, 1/4 X 3/4 SELF ADHESIVE 46 INCH LENGTH
A-0031	OIL DRIP FELT
A-0148	END HANDLE
A-0341	WASTE TANK SUPPORT
A-0342	WASTE TANK LOCK-RIGHT
A-0343	WASTE TANK LOCK-LEFT
A-0513	SIDE HANDLE BRACKET
A-0586	PIVOT CASTER BLOCK
A-0659	WASTE TANK LOCK SHOULDER BOLT
A-5573	POWER CORD SWITCH BRACKET SCREW
B-0140	FRONT HANDLE TUBE
B-0142	FRONT HANDLE HOLDER BRACKET
B-0321	VACUUM HEAD SOLENOID COVER
B-0322	OIL SOLENOID COVER - RIGHT
B-0323	OIL SOLENOID COVER - LEFT
B-0505	OIL DRIP FELT RETAINING PLATE
B-0506	CASTER BRACKET
B-0507	CENTERING GUIDE PLATE
B0585R	PIVOT CASTER BRACKET
B0585L	PIVOT CASTER BRACKET
B-5012	REAR HANDLE
B-5027	CORD ARM BRACKET
RP-31	REPLACEMENT CASTER "O" RING ONLY
RP-106	URETHANE DASH END ROLLER ASSEMBLY
SA-0175	DASH END PLATE ROLLER ASSEMBLY, LEFT
SA-0176	DASH END PLATE ROLLER ASSEMBLY, RIGHT
SA-1159	BASE PLATE ASSEMBLY, 110V
SA-1160	BASE PLATE ASSEMBLY, 220V
SA-3012	DUSTER END PLATE ROLLER ASSEMBLY
SA-3019	CENTERING GUIDE PLATE ASSEMBLY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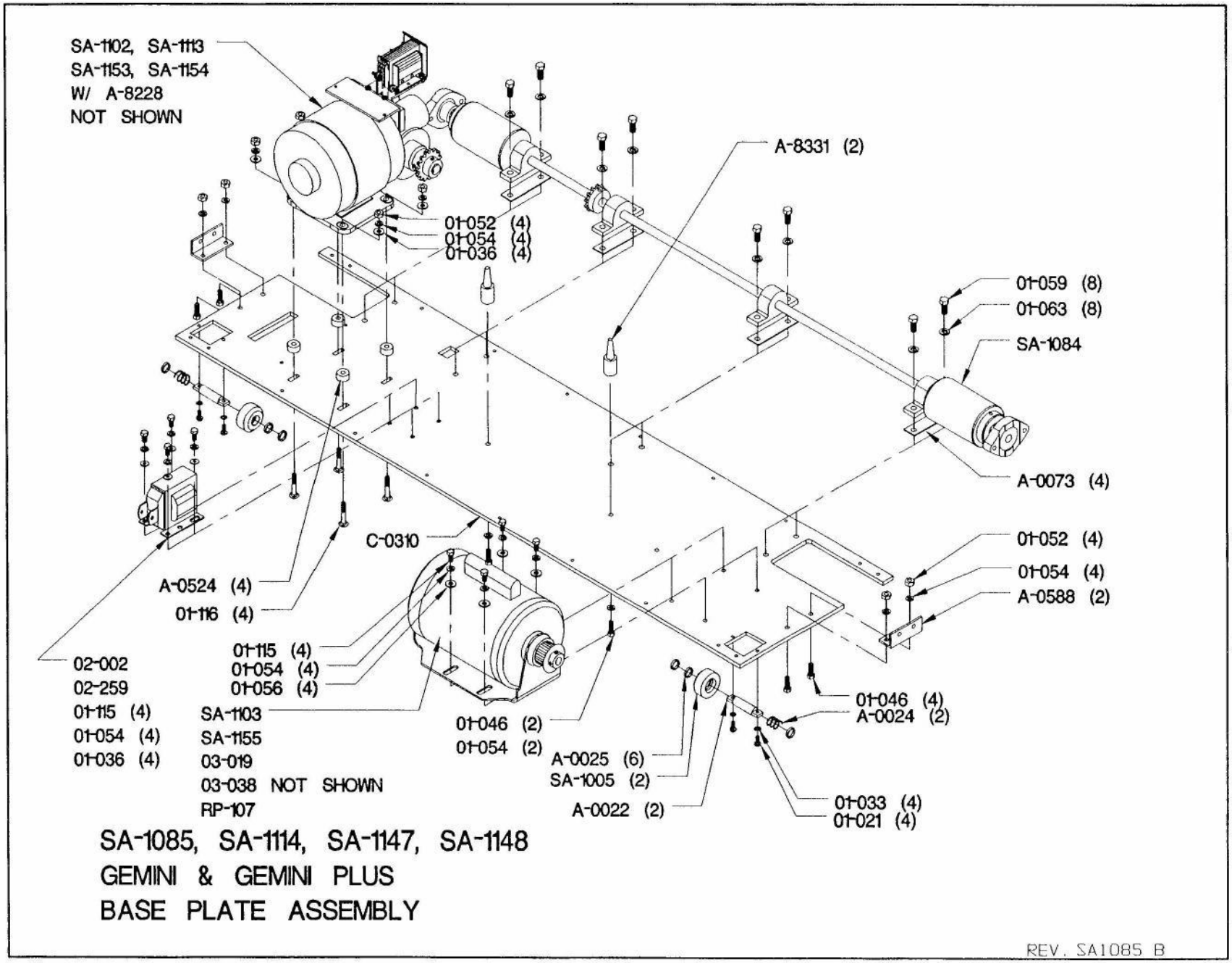
C-0391
04-069X10
04-074X46
TYP 2 PLCS
01-044
01-054
A-8346
TYP 2 PLCS
01-031 (2)
A-0342
A-0659 (2)
04-078
TYP 3 PLCS
C-0315
01-031 (2)
A-0343
A-0659 (2)
01-044 (2)
01-054 (2)
SA-3012
TYP 2 PLCS
01-191
B-5027
TYP 2 PLCS
01-009 (2)
01-015 (2)
01-016 (2)
A-5573
01-021
01-033
A-0341
01-041 (2)
01-044 (4)
01-054 (4)
B-0140
B-0142 (2)
01-052 (2)
01-070
01-119
01-128 (2)
04-071
B-0506
TYP 2 PLCS
C-0390
04-077
TYP 5 PLCS
01-025 (3)
01-031 (3)
01-044 (2)
01-054 (2)
A-0148
A-0513
TYP 2 PLCS
01-044 (2)
01-054 (2)
SA-0175
C-0392
01-122 (10)
01-044 (2)
01-054 (2)
B-0512
SA-1159
SA-1160
01-130 (13)
A-0031
B-0505
C-0393
01-044 (2)
01-054 (2)
SA-0176
01-046 (2)
01-052 (2)
01-070
01-074
01-119
04-071
B-0506
SA-3019
TYP 2 PLCS
01-122 (10)
TYP 2 PLCS
01-065
01-066
01-070
TYP 4 PLCS
C-0389
01-025
01-046 (2)
01-052 (2)
01-070
01-119
04-071
A-0586
TYP 2 PLCS
B-0585R RIGHT SIDE ONLY
B-0585L LEFT SIDE ONLY
A-5547
TYP 2 PLCS
01-023
01-032 (2)
01-033
TYP 2 PLCS
01-046 (2)
01-052 (2)
01-070
01-074
01-119
04-071
B-0506
TYP 2 PLCS
01-046 (2)
01-052 (2)
01-054 (2)
TYP 2 PLCS
SA-1161, SA-1162
SILVER BULLET
FRAME ASSEMBLY
REV. SA1161 C

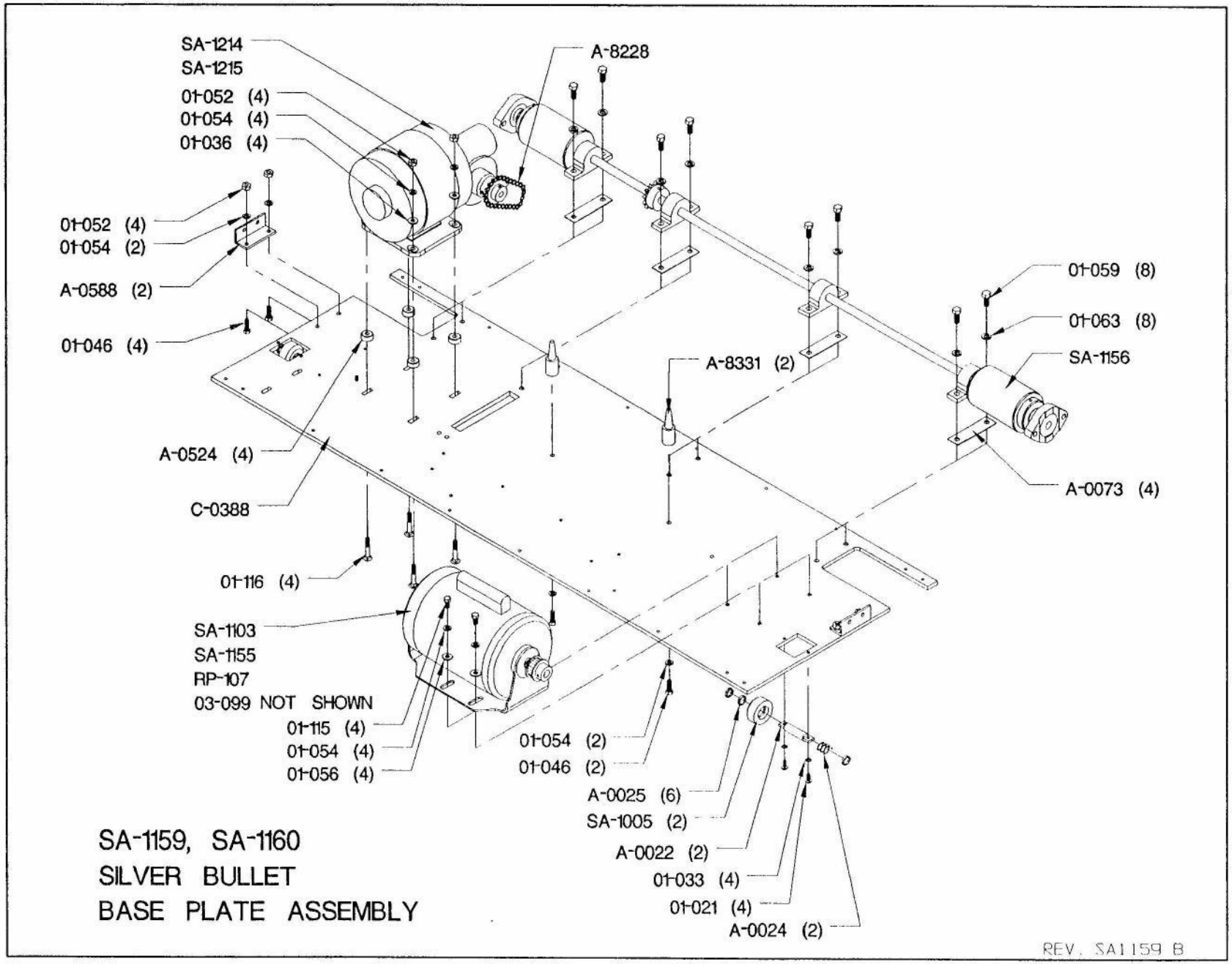
GEMINI AND GEMINI PLUS BASE PLATE ASSEMBLY

PART #	DESCRIPTION
01-021	10-32 X 1/2 INCH SLOTTED PAN HEAD MACHINE SCREW
01-033	#10 EXTERNAL TOOTH LOCKWASHER
01-036	3/16 INCH TYPE A WROUGHT WASHER PLAIN, PLATED
01-046	1/4-20 X 3/4 INCH HEX HEAD BOLT
01-052	1/4-20 HEX STEEL MACHINE NUT
01-054	1/4 INCH SPLIT LOCKWASHER
01-056	1/4 INCH USS WROUGHT WASHER
01-059	5/16-18 X 3/4 INCH HEX HEAD SCREW
01-063	5/16 INCH SPLIT LOCKWASHER
01-115	1/4-20 X 1/2 INCH NC HEX HEAD MACHINE SCREW, GRADE 5
01-116	1/4-20 X 1 1/2 INCH CARRIAGE SCREW
02-002	GEMINI OIL SOLENOID 110V 50/60 HZ
02-259	GEMINI OIL SOLENOID 220V 50/60 HZ
03-019	PULLEY, BUFFER MOTOR
03-038	BELT, BUFFER MOTOR, GEMINI AND GEMINI PLUS (NOT SHOWN)
03-040	CONNECTING LINK #35 CHAIN
A-0022	BASE PLATE NYLON GUIDE ROLLER SHAFT
A-0024	GUIDE ROLLER SPRING - REAR
A-0025	BASE PLATE NYLON GUIDE ROLLER WASHER
A-0073	PILLOW BLOCK SHIM
A-0524	DRIVE MOTOR SPACER
A-0588	FRAME BRACKET
A-8228	DRIVE SHAFT CHAIN
A-8331	WASTE TANK LOCATING PIN
C-0310	GEMINI BASE PLATE ONLY
RP-107	REPLACEMENT OIL BUFFER MOTOR, PREWIRED 110V
RP-186	REPLACEMENT OIL BUFFER MOTOR, PREWIRED 220V
SA-1005	BASE PLATE NYLON GUIDE ROLLER ASSEMBLY
SA-1084	GEMINI DRIVE SHAFT ASSEMBLY
SA-1102	GEMINI DRIVE MOTOR ASSEMBLY 110V 50/60 HZ
SA-1103	GEMINI OIL BUFFER MOTOR 115V 50/60 HZ
SA-1113	GEMINI DRIVE MOTOR ASSEMBLY 220V 50/60 HZ
SA-1153	GEMINI PLUS DRIVE MOTOR ASSEMBLY 110V, 50/60HZ
SA-1154	GEMINI PLUS DRIVE MOTOR ASSEMBLY 220V, 50/60HZ
SA-1155	GEMINI OIL BUFFER MOTOR, 220V, 50/60HZ


SA-1102, SA-1113
SA-1153, SA-1154
W/ A-8228
NOT SHOWN
A-8331 (2)
01-052 (4)
01-054 (4)
01-036 (4)
01-059 (8)
01-063 (8)
SA-1084
A-0073 (4)
C-0310
01-052 (4)
01-054 (4)
A-0588 (2)
A-0524 (4)
01-116 (4)
02-002
02-259
01-115 (4)
01-054 (4)
01-036 (4)
01-115 (4)
01-054 (4)
01-056 (4)
SA-1103
SA-1155
03-019
03-038 NOT SHOWN
RP-107
01-046 (2)
01-054 (2)
01-046 (4)
A-0024 (2)
A-0025 (6)
SA-1005 (2)
A-0022 (2)
01-033 (4)
01-021 (4)
SA-1085, SA-1114, SA-1147, SA-1148
GEMINI & GEMINI PLUS
BASE PLATE ASSEMBLY
REV. SA1085 B

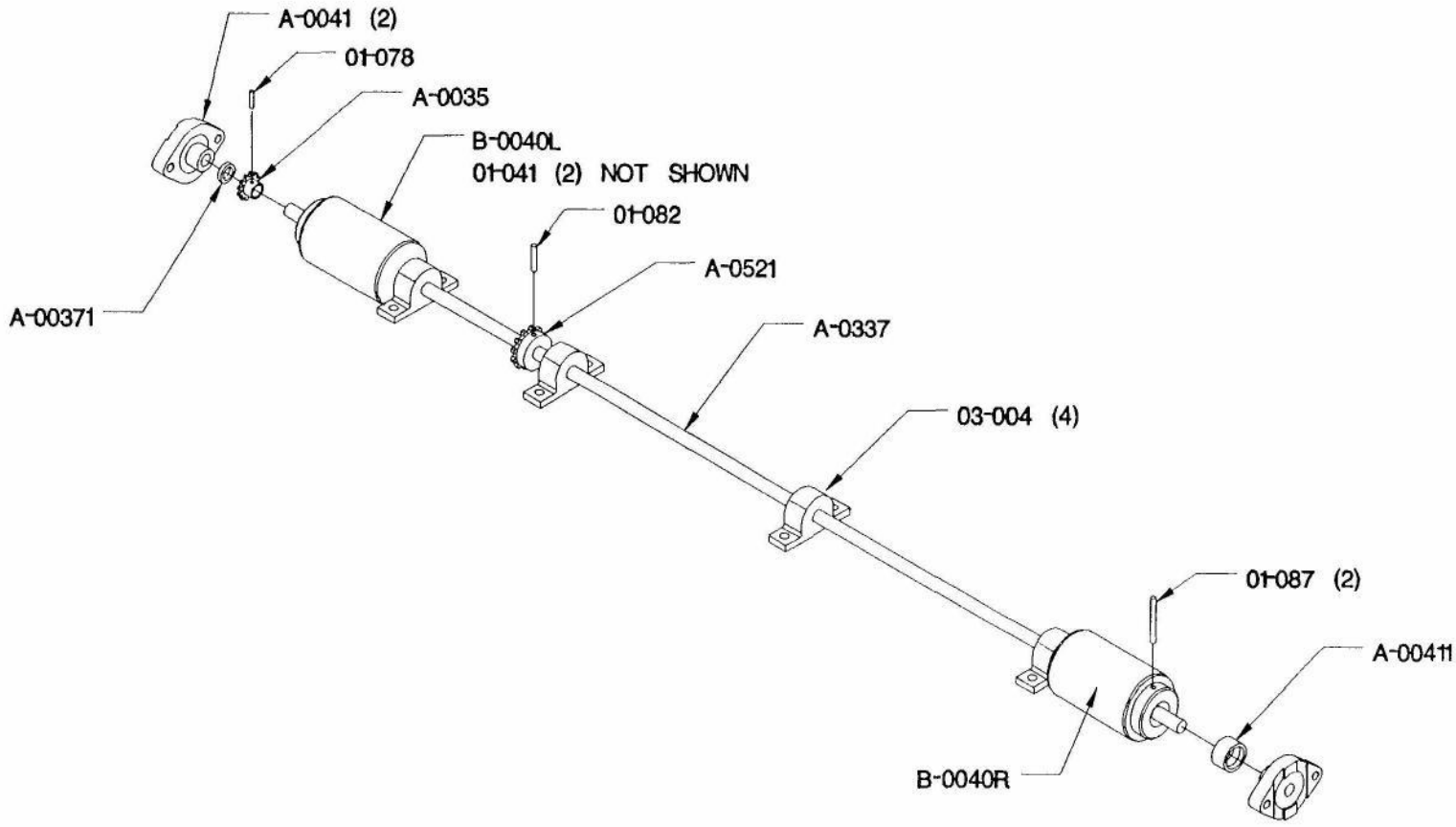
GEMINI SILVER BULLET BASE PLATE ASSEMBLY

PART #	DESCRIPTION
01-021	10-32 X 1/2 INCH SLOTTED PAN HEAD MACHINE SCREW
01-033	#10 EXTERNAL TOOTH LOCKWASHER
01-036	3/16 INCH TYPE A WROUGHT WASHER PLAIN, PLATED
01-046	1/4-20 X 3/4 INCH HEX HEAD BOLT
01-052	1/4-20 HEX STEEL MACHINE NUT
01-054	1/4 INCH SPLIT LOCKWASHER
01-056	1/4 INCH USS WROUGHT WASHER
01-059	5/16-18 X 3/4 INCH HEX HEAD BOLT
01-063	5/16 INCH SPLIT LOCKWASHER
01-115	1/4-20 X 1/2 INCH HEX HEAD
01-116	1/4-20 X 1 1/2 INCH CARRIAGE SCREW
03-040	CONNECTING LINK #35 CHAIN
03-066	PULLEY, BUFFER MOTOR
03-099	BELT, BUFFER MOTOR, GEMINI SILVER BULLET (NOT SHOWN)
A-0022	BASE PLATE NYLON GUIDE ROLLER SHAFT
A-0024	GUIDE ROLLER SPRING - REAR
A-0025	BASE PLATE NYLON GUIDE ROLLER WASHER
A-0073	PILLOW BLOCK SHIM
A-0524	DRIVE MOTOR SPACER
A-0588	FRAME BRACKET
A-8228	DRIVE SHAFT CHAIN
A-8331	WASTE TANK LOCATING PIN
C-0388	GEMINI SILVER BULLET BASE PLATE ONLY
RP-107	REPLACEMENT OIL BUFFER MOTOR, PREWIRED 110V
RP-186	REPLACEMENT OIL BUFFER MOTOR, PREWIRED 220V
SA-1005	BASE PLATE NYLON GUIDE ROLLER ASSEMBLY
SA-1103	GEMINI OIL BUFFER MOTOR 115V 50/60 HZ
SA-1155	GEMINI OIL BUFFER MOTOR, 220V, 50/60HZ
SA-1156	GEMINI SILVER BULLET DRIVE SHAFT ASSEMBLY
SA-1214	GEMINI SILVER BULLET DRIVE MOTOR ASSEMBLY 110V 50/60 HZ
SA-1215	GEMINI SILVER BULLET DRIVE MOTOR ASSEMBLY 220V 50/60 HZ


SA-1214
SA-1215
01-052 (4)
01-054 (4)
01-036 (4)
A-8228
01-052 (4)
01-054 (2)
A-0588 (2)
01-046 (4)
A-0524 (4)
C-0388
01-116 (4)
SA-1103
SA-1155
RP-107
03-099 NOT SHOWN
01-115 (4)
01-054 (4)
01-056 (4)
A-8331 (2)
01-059 (8)
01-063 (8)
SA-1156
A-0073 (4)
01-054 (2)
01-046 (2)
A-0025 (6)
SA-1005 (2)
A-0022 (2)
01-033 (4)
01-021 (4)
A-0024 (2)
SA-1159, SA-1160
SILVER BULLET
BASE PLATE ASSEMBLY
REV. SA1159 B

GEMINI AND GEMINI PLUS DRIVE SHAFT ASSEMBLY

PART #	DESCRIPTION
01-041	1/4-20 X 1/4 INCH HEX SOCKET HEAD SET SCREW
01-078	1/8 X 3/4 INCH ROLL PIN
01-082	3/16 X 1 1/8 INCH ROLL PIN
01-087	3/16 X 2 INCH ROLL PIN
03-004	PILLOW BLOCK BEARING
A-0035	DRIVE SHAFT SPROCKET MODIFICATION
A-00371	DRIVE SHAFT SPACER
A-0041	DRIVE SHAFT BEARING
A-00411	BEARING LOCK COLLAR
A-0073	PILLOW BLOCK SHIM (NOT SHOWN)
A-0337	DRIVE SHAFT
A-0521	DRIVE SHAFT SPROCKET MODIFICATION
B-0040R	DRIVE WHEEL - RIGHT
B-0040L	DRIVE WHEEL - LEFT
SA-1084	GEMINI DRIVE SHAFT ASSEMBLY



SA-1084

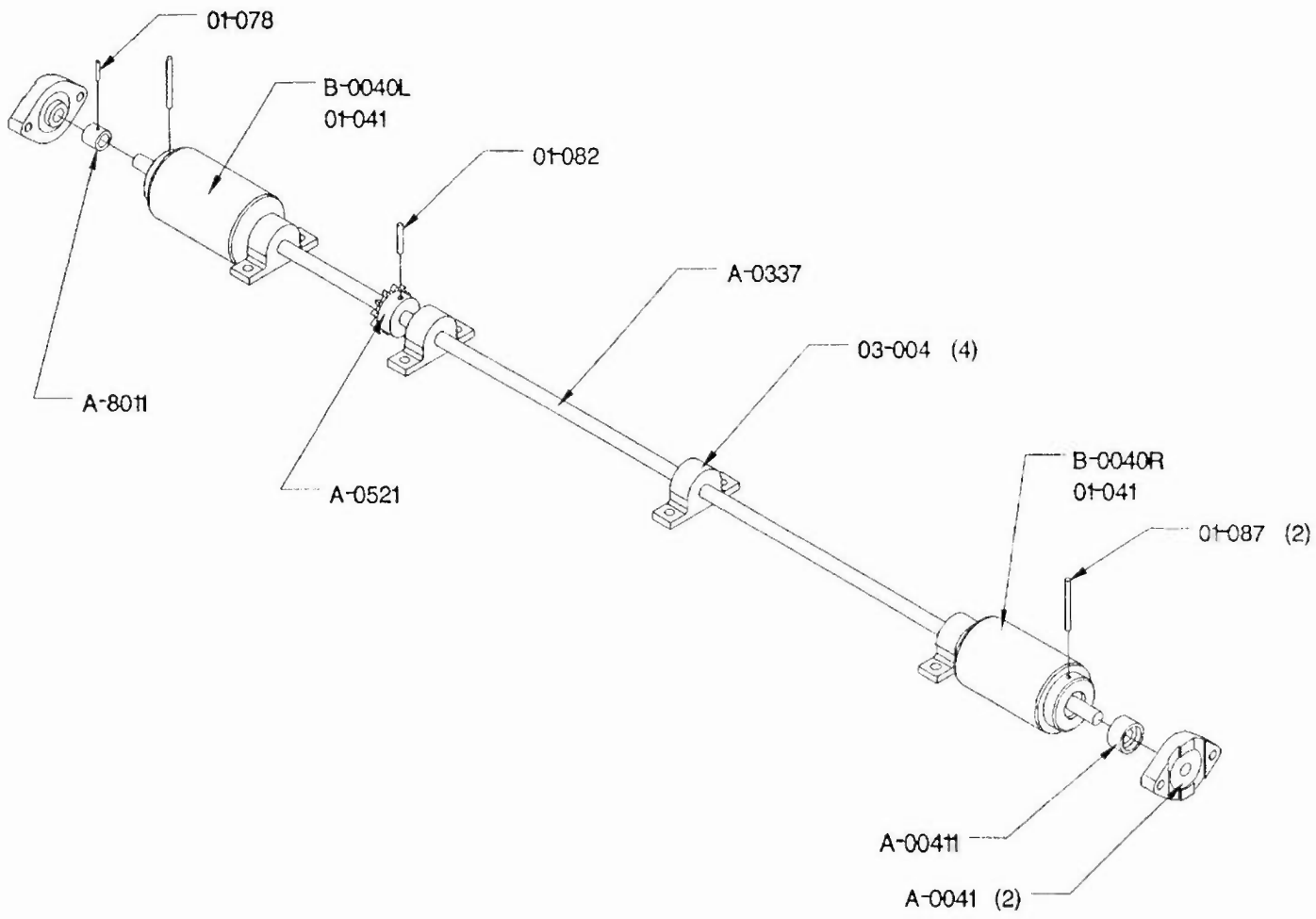
GEMINI & GEMINI PLUS

DRIVE SHAFT ASSEMBLY

REV. SA1084 B

GEMINI SILVER BULLET DRIVE SHAFT ASSEMBLY

PART #	DESCRIPTION
01-041	1/4-20 X 1/4 INCH HEX SOCKET HEAD SET SCREW
01-078	1/8 X 3/4 INCH ROLL PIN
01-082	3/16 X 1 1/8 INCH ROLL PIN
01-087	3/16 X 2 INCH ROLL PIN
03-004	PILLOW BLOCK BEARING
A-0035	DRIVE SHAFT SPROCKET MODIFICATION
A-0041	DRIVE SHAFT BEARING
A-00411	BEARING LOCK COLLAR
A-0073	PILLOW BLOCK SHIM (NOT SHOWN)
A-0337	DRIVE SHAFT
A-0521	DRIVE SHAFT SPROCKET MODIFICATION
A-8011	DRIVE SHAFT SPACER
B-0040R	DRIVE WHEEL - RIGHT
B-0040L	DRIVE WHEEL - LEFT
SA-1156	GEMINI SILVER BULLET DRIVE SHAFT ASSEMBLY

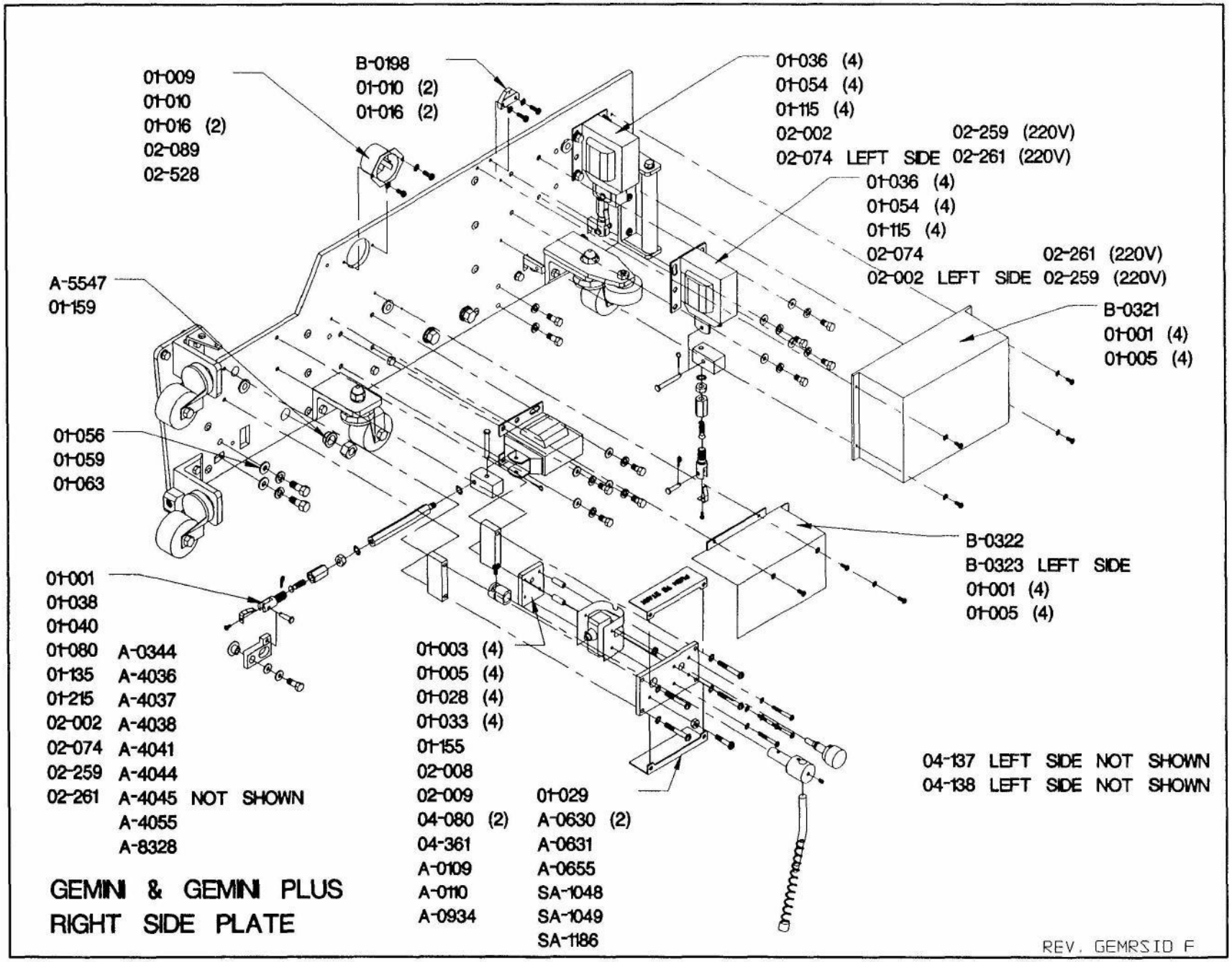


SA-1156
DRIVE SHAFT ASSEMBLY

REV. SA1156 A

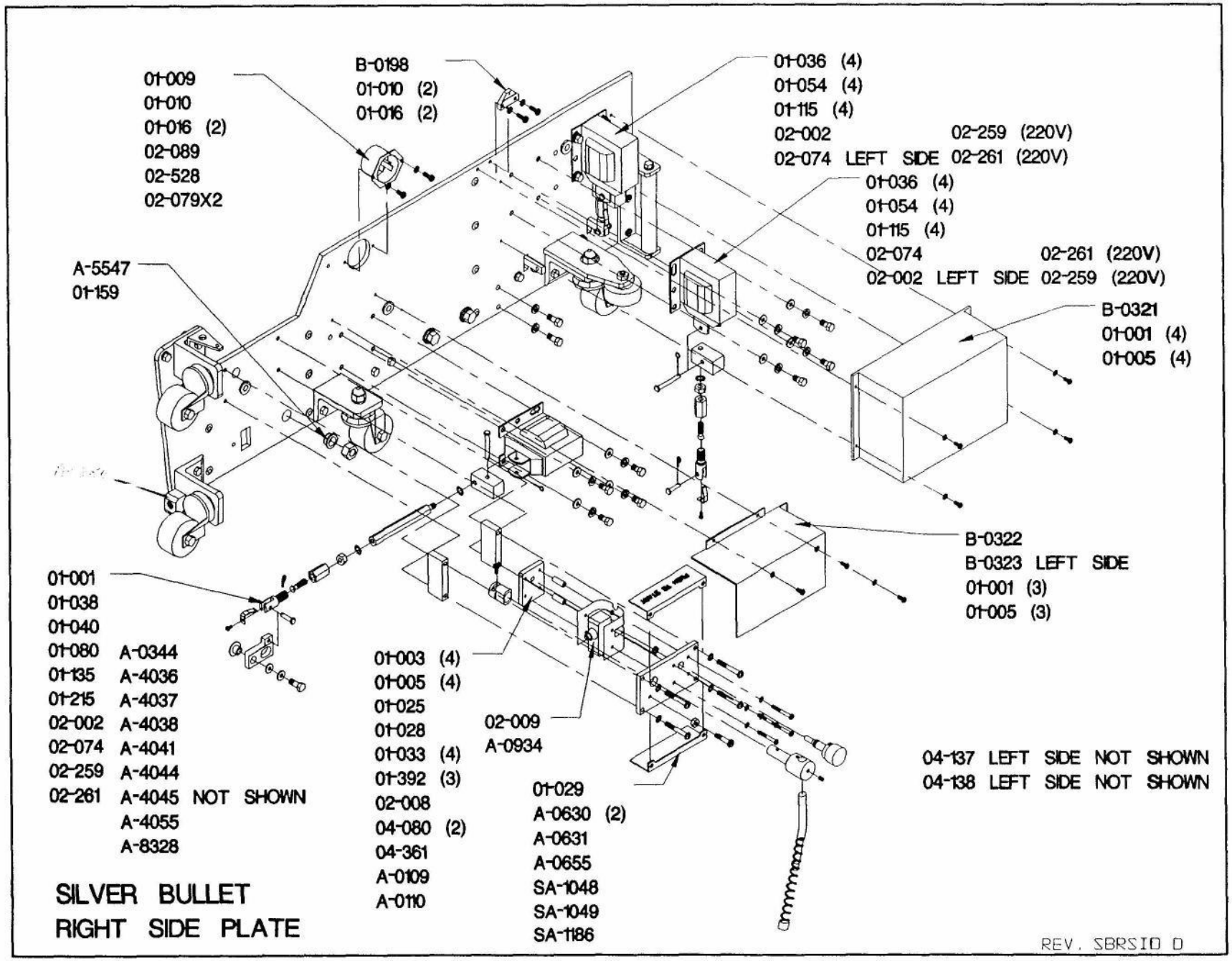
GEMINI AND GEMINI PLUS RIGHT SIDE PLATE ASSEMBLY

PART #	DESCRIPTION
01-001	6-32 X 3/8 SLOTTED ROUND HEAD MACHINE SCREW, PLATED
01-003	6-32 X 1 1/4 SLOTTED ROUND HEAD MACHINE SCREW, PLATED
01-005	#6 EXTERNAL TOOTH LOCKWASHER, PLATED
01-009	8-32 X 3/8 SLOTTED PAN HEAD MACHINE SCREW
01-010	8-32 X 1/2 SLOTTED PAN HEAD MACHINE SCREW
01-016	#8 EXTERNAL TOOTH LOCKWASHER, PLATED
01-028	10-32 X 1 1/2 SLOTTED ROUND HEAD MACHINE SCREW
01-029	10-32 X 3/16 INCH HEX SOCKET HEAD SET SCREW, CUP POINT
01-033	10-32 HEX STEEL MACHINE NUT, PLATED
01-036	3/16 FLAT WASHER, PLATED
01-038	3/16 DIAM X 1 1/2 INCH CLEVIS PIN, PLATED
01-040	3/64 DIAM X 9/16 HAIR PIN CLIP
01-054	1/4 INCH SPLIT LOCKWASHER, PLATED
01-056	1/4 INCH FLATWASHER, TYPE A, PLATED
01-059	5/16-18 X 3/4 HEX HEAD BOLT, GRADE 5
01-063	5/16 SPLIT LOCKWASHER, PLATED
01-080	1/16 DIAM X 1/2 COTTER PIN
01-115	1/4-20 X 1/2 HEX HEAD BOLT, GRADE 5
01-135	4-40 x 1/4 SELF TAPPING SCREW
01-155	10-32 X 2 SLOTTED ROUND HEAD MACHINE SCREW
01-159	7/16-20 NYLON INSERT HEX THIN NUT, PLATED
01-215	3/16 DIAM X 3/4 INCH CLEVIS PIN
02-002	SOLENOID 110V, RIGHT BUFFER & CLEANING PAD, LEFT VACUUM HEAD
02-008	PLASTIC WIRE CLAMP
02-009	START STOP MICRO SWITCH
02-074	SOLENOID 110V, LEFT BUFFER & CLEANING PAD, RIGHT VACUUM HEAD
02-079X2	HEAT SHRINK, 1 1/2 INCH ID
02-089	FLUSH 3 WIRE PLUG, 110 VOLT
02-259	SOLENOID 220V, RIGHT BUFFER & CLEANING PAD, LEFT VACUUM HEAD
02-261	SOLENOID 220V, LEFT BUFFER & CLEANING PAD, RIGHT VACUUM HEAD
02-528	FLUSH 3 WIRE PLUG, 220 VOLT (NOT SHOWN)
04-080	SPACER
04-137	1/4 X 1/4 PANEL MOUNT COUPLING BODY ONLY (NOT SHOWN)
04-138	1/4 X 1/4 PANEL MOUNT COUPLING BODY INSERT (NOT SHOWN)
04-361	O-RING
A-0109	SHUT OFF CAM
A-0110	START BOX MICRO SWITCH MOUNTING PLATE
A-0112	SHUT OFF ARM SPRING ONLY
A-0113	SHUT OFF ARM RETRACT SPRING
A-0269	START BUTTON SPRING
A-0344	BUFFER LINKAGE EXTENSION
A-0629	START BOX FRONT
A-0630	START BOX END
A-0631	START BOX COVER-TOP
A-0655	START BOX COVER-BOTTOM
A-0934	INSULATOR,START SWITCH
A-4036	PRESSURE ADJUSTING NUT
A-4037	PRESSURE ADJUSTING SWIVEL
A-4038	PRESSURE LINKAGE ROD
A-4041	PRESSURE LINKAGE SWIVEL PIVOT
A-4044	PRESSURE LINKAGE RIGHT
A-4045	PRESSURE LINKAGE LEFT (NOT SHOWN)
A-4055	DETENT SPRING
A-5547	SIDE PLATE BEARING STUD BUSHING
A-8328	SOLENOID LINKAGE BLOCK
B-0107	SHUT OFF SHAFT
B-0198	HOOD HANGER
B-0321	GEMINI VACUUM AND CLEANER HEAD SOLENOID COVER
B-0322	RIGHT SIDE DRESSING BUFFER SOLENOID COVER
B-0111	SHUT OFF ARM SHAFT
B-0323	LEFT SIDE DRESSING BUFFER SOLENOID COVER
SA-1048	START BUTTON ASSEMBLY
SA-1049	SHUT OFF ARM ASSEMBLY
SA-1186	SHUT OFF ARM SPRING ASSEMBLY


01-009
01-010
01-016 (2)
02-089
02-528
B-0198
01-010 (2)
01-016 (2)
01-036 (4)
01-054 (4)
01-115 (4)
02-002
02-074 LEFT SIDE
02-259 (220V)
02-261 (220V)
01-036 (4)
01-054 (4)
01-115 (4)
02-074
02-002 LEFT SIDE
02-261 (220V)
02-259 (220V)
A-5547
01-159
B-0321
01-001 (4)
01-005 (4)
01-056
01-059
01-063
B-0322
B-0323 LEFT SIDE
01-001 (4)
01-005 (4)
01-001
01-038
01-040
01-080 A-0344
01-135 A-4036
01-215 A-4037
02-002 A-4038
02-074 A-4041
02-259 A-4044
02-261 A-4045 NOT SHOWN
A-4055
A-8328
01-003 (4)
01-005 (4)
01-028 (4)
01-033 (4)
01-155
02-008
02-009
04-080 (2)
04-361
A-0109
A-0110
A-0934
01-029
A-0630 (2)
A-0631
A-0655
SA-1048
SA-1049
SA-1186
04-137 LEFT SIDE NOT SHOWN
04-138 LEFT SIDE NOT SHOWN
GEMINI & GEMINI PLUS
RIGHT SIDE PLATE
REV. GEMRSID F

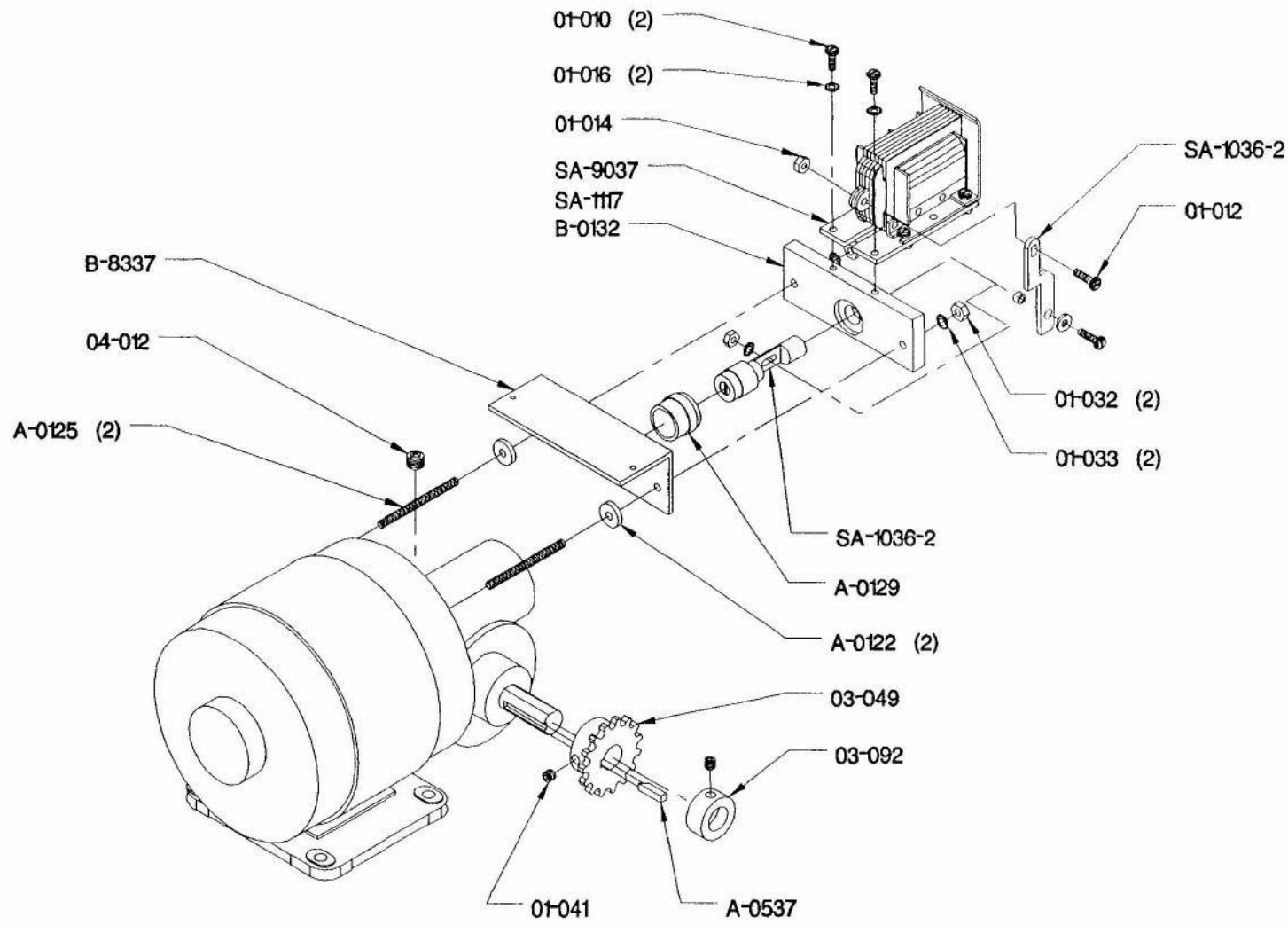
GEMINI SILVER BULLET RIGHT SIDE PLATE ASSEMBLY

PART #	DESCRIPTION
01-001	6-32 X 3/8 SLOTTED ROUND HEAD MACHINE SCREW, PLATED
01-003	6-32 X 1 1/4 SLOTTED ROUND HEAD MACHINE SCREW, PLATED
01-005	#6 EXTERNAL TOOTH LOCKWASHER, PLATED
01-009	8-32 X 3/8 SLOTTED PAN HEAD MACHINE SCREW
01-010	8-32 X 1/2 SLOTTED PAN HEAD MACHINE SCREW
01-016	#8 EXTERNAL TOOTH LOCKWASHER, PLATED
01-025	10-32 X 1" PAN HEAD MACHINE SCREW,PLATED
01-028	10-32 X 1 1/2 SLOTTED ROUND HEAD MACHINE SCREW
01-029	10-32 X 3/16 INCH HEX SOCKET HEAD SET SCREW, CUP POINT
01-033	10-32 HEX STEEL MACHINE NUT, PLATED
01-036	3/16 FLAT WASHER, PLATED
01-038	3/16 DIAM X 1 1/2 INCH CLEVIS PIN, PLATED
01-040	3/64 DIAM X 9/16 HAIR PIN CLIP
01-054	1/4 INCH SPLIT LOCKWASHER, PLATED
01-080	1/16 DIAM X 1/2 COTTER PIN
01-115	1/4-20 X 1/2 HEX HEAD BOLT, GRADE 5
01-135	4-40 x 1/4 SELF TAPPING SCREW
01-155	10-32 X 2 SLOTTED ROUND HEAD MACHINE SCREW
01-159	7/16-20 NYLON INSERT HEX THIN NUT, PLATED
01-215	3/16 DIAM X 3/4 INCH CLEVIS PIN
01-392	10-32 X 1 3/4 PAN HEAD MACHINE SCREW,PLATED
02-002	SOLENOID 110V, RIGHT BUFFER & CLEANING PAD, LEFT VACUUM HEAD
02-008	PLASTIC WIRE CLAMP
02-009	START STOP MICRO SWITCH
02-074	SOLENOID 110V, LEFT BUFFER & CLEANING PAD, RIGHT VACUUM HEAD
02-079X2	HEAT SHRINK, 1 1/2 INCH ID
02-089	FLUSH 3 WIRE PLUG, 110 VOLT
02-259	SOLENOID 220V, RIGHT BUFFER & CLEANING PAD, LEFT VACUUM HEAD
02-261	SOLENOID 220V, LEFT BUFFER & CLEANING PAD, RIGHT VACUUM HEAD
02-528	FLUSH 3 WIRE PLUG, 220 VOLT (NOT SHOWN)
04-080	SPACER
04-137	1/4 X 1/4 PANEL MOUNT COUPLING BODY ONLY (NOT SHOWN)
04-138	1/4 X 1/4 PANEL MOUNT COUPLING BODY INSERT (NOT SHOWN)
04-361	O-RING
A-0109	SHUT OFF CAM
A-0110	START BOX MICRO SWITCH MOUNTING PLATE
A-0112	SHUT OFF ARM SPRING ONLY
A-0113	SHUT OFF ARM RETRACT SPRING
A-0269	START BUTTON SPRING
A-0344	BUFFER LINKAGE EXTENSION
A-0629	START BOX FRONT
A-0630	START BOX END
A-0631	START BOX COVER-TOP
A-0655	START BOX COVER-BOTTOM
A-0934	INSULATOR,START SWITCH
A-4036	PRESSURE ADJUSTING NUT
A-4037	PRESSURE ADJUSTING SWIVEL
A-4038	PRESSURE LINKAGE ROD
A-4041	PRESSURE LINKAGE SWIVEL PIVOT
A-4044	PRESSURE LINKAGE RIGHT
A-4045	PRESSURE LINKAGE LEFT (NOT SHOWN)
A-4055	DETENT SPRING
A-5547	SIDE PLATE BEARING STUD BUSHING
A-8328	SOLENOID LINKAGE BLOCK
B-0107	SHUT OFF SHAFT
B-0111	SHUT OFF ARM SHAFT
B-0198	HOOD HANGER
B-0321	GEMINI VACUUM AND CLEANER HEAD SOLENOID COVER
B-0322	RIGHT SIDE DRESSING BUFFER SOLENOID COVER
B-0323	LEFT SIDE DRESSING BUFFER SOLENOID COVER
SA-1048	START BUTTON ASSEMBLY
SA-1049	SHUT OFF ARM ASSEMBLY
SA-1186	SHUT OFF ARM SPRING ASSEMBLY


01-009
01-010
01-016 (2)
02-089
02-528
02-079X2
B-0198
01-010 (2)
01-016 (2)
01-036 (4)
01-054 (4)
01-115 (4)
02-002
02-074 LEFT SIDE
02-259 (220V)
02-261 (220V)
01-036 (4)
01-054 (4)
01-115 (4)
02-074
02-002 LEFT SIDE
02-261 (220V)
02-259 (220V)
A-5547
01-159
B-0321
01-001 (4)
01-005 (4)
B-0322
B-0323 LEFT SIDE
01-001 (3)
01-005 (3)
01-001
01-038
01-040
01-080 A-0344
01-135 A-4036
01-215 A-4037
02-002 A-4038
02-074 A-4041
02-259 A-4044
02-261 A-4045 NOT SHOWN
A-4055
A-8328
01-003 (4)
01-005 (4)
01-025
01-028
01-033 (4)
01-392 (3)
02-008
04-080 (2)
04-361
A-0109
A-0110
02-009
A-0934
01-029
A-0630 (2)
A-0631
A-0655
SA-1048
SA-1049
SA-1186
04-137 LEFT SIDE NOT SHOWN
04-138 LEFT SIDE NOT SHOWN
SILVER BULLET
RIGHT SIDE PLATE
REV. SBRSID D

GEMINI DRIVE MOTOR ASSEMBLY

PART #	DESCRIPTION
01-010	8-32 X 1/2 INCH PAN HEAD MACHINE SCREW
01-012	8-32 X 5/8 INCH PAN HEAD MACHINE SCREW
01-014	8-32 NYLON INSERT HEX LOCK NUT
01-016	#8 EXTERNAL TOOTH LOCKWASHER
01-032	10-32 HEX MACHINE NUT
01-033	#10 EXTERNAL TOOTH LOCKWASHER
01-041	1/4-20 X 1/4 INCH SET SCREW
03-049	SPROCKET, 5/8 BORE
03-092	SET SCREW COLLAR 5/8 INCH
04-012	1/8 INCH PIPE PLUG
A-0122	MOUNTING SPACER
A-0125	DRIVE MOTOR EXTENSION STUD
A-0129	DRIVE MOTOR BRAKE PISTON SLEEVE
A-0137	BRAKE SPRING RETAINER - MOTOR END
A-0275	BRAKE COMPRESSION SPRING
A-0345	GEMINI BRAKE SPRING SPACER-FIREWALL (NOT SHOWN)
A-0537	DRIVE SPROCKET KEY
B-0132	BRAKE PISTON SLEEVE RETAINER PLATE
B-5051	BRAKE PISTON ACTUATING LEVER (NOT SHOWN)
B-8337	TERMINAL BLOCK MOUNTING ANGLE
SA10362	DRIVE MOTOR BRAKE PISTON ASSEMBLY
SA-1102	DRIVE MOTOR ASSEMBLY GEMINI 110V 50/60 HZ
SA-1113	DRIVE MOTOR ASSEMBLY GEMINI 220V 50/60 HZ
SA-1117	DRIVE MOTOR BRAKE SOLENOID ASSEMBLY 220V 50/60 HZ
SA-9037	DRIVE MOTOR BRAKE SOLENOID ASSEMBLY 110V 50/60 HZ



SA-1102, SA-1113

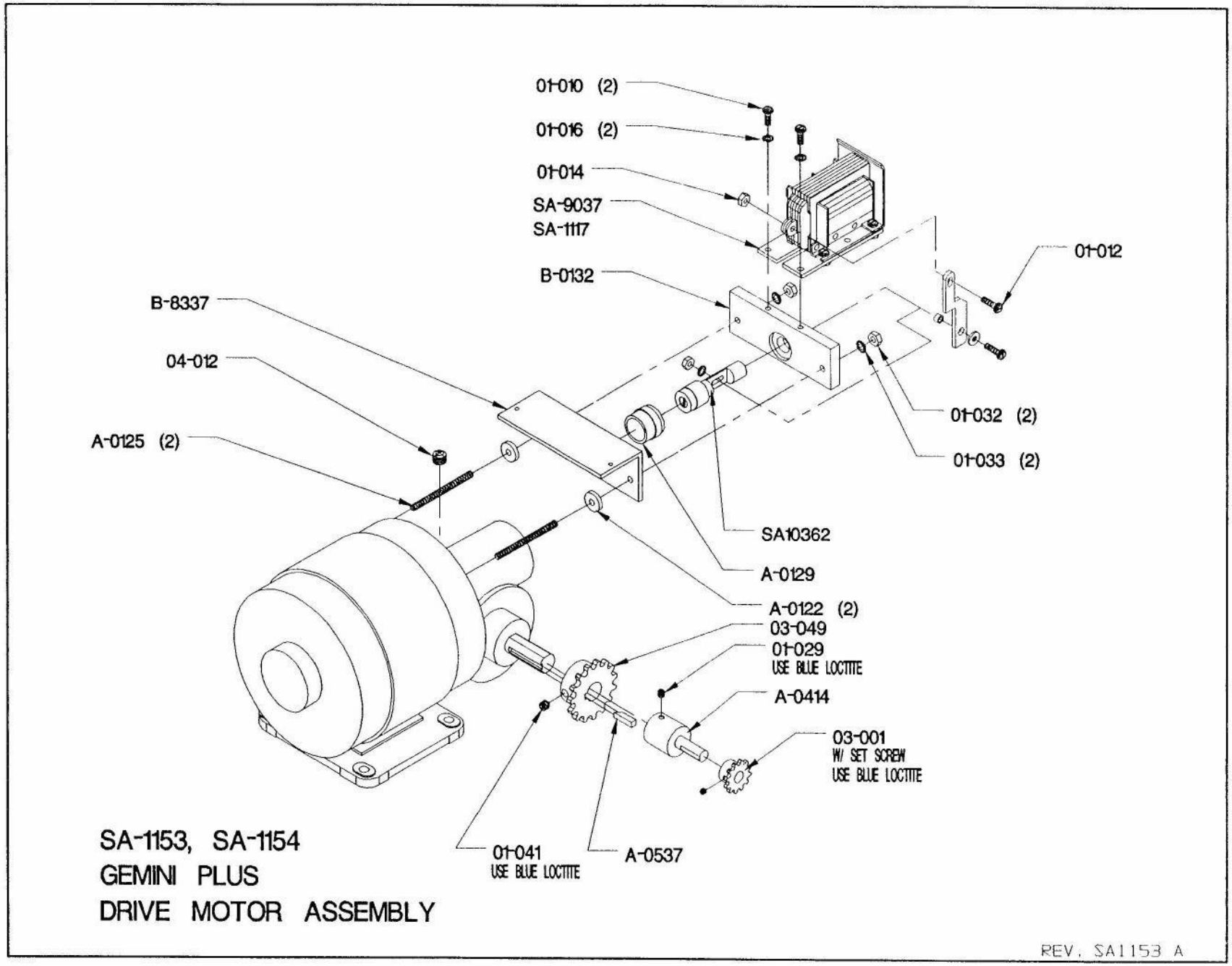
GEMINI

DRIVE MOTOR ASSEMBLY

REV. SA1102 B

GEMINI PLUS DRIVE MOTOR ASSEMBLY

PART #	DESCRIPTION
01-010	8-32 X 1/2 INCH PAN HEAD MACHINE SCREW
01-012	8-32 X 5/8 INCH PAN HEAD MACHINE SCREW
01-014	8-32 NYLON INSERT HEX LOCK NUT
01-016	#8 EXTERNAL TOOTH LOCKWASHER
01-029	10-32 X 3/16 SOCKET SET SCREW, CUP POINT
01-032	10-32 HEX MACHINE NUT
01-033	#10 EXTERNAL TOOTH LOCKWASHER
01-041	1/4-20 X 1/4 INCH SET SCREW
03-001	SPROCKET, 3/8 BORE
03-049	SPROCKET, 5/8 BORE
04-012	1/8 INCH PIPE PLUG
A-0122	MOUNTING SPACER
A-0125	DRIVE MOTOR EXTENSION STUD
A-0129	DRIVE MOTOR BRAKE PISTON SLEEVE
A-0137	BRAKE SPRING RETAINER - MOTOR END
A-0275	BRAKE COMPRESSION SPRING
A-0345	GEMINI BRAKE SPRING SPACER-FIREWALL (NOT SHOWN)
A-0414	DRIVE MOTOR SHAFT REDUCER
A-0537	DRIVE SPROCKET KEY
B-0132	BRAKE PISTON SLEEVE RETAINER PLATE
B-5051	BRAKE PISTON ACTUATING LEVER (NOT SHOWN)
B-8337	TERMINAL BLOCK MOUNTING ANGLE
SA10362	DRIVE MOTOR BRAKE PISTON ASSEMBLY
SA-1117	DRIVE MOTOR BRAKE SOLENOID ASSEMBLY 220V 50/60 HZ
SA-1153	DRIVE MOTOR ASSEMBLY GEMINI PLUS 110V 50/60 HZ
SA-1154	DRIVE MOTOR ASSEMBLY GEMINI PLUS 220V 50/60 HZ
SA-9037	DRIVE MOTOR BRAKE SOLENOID ASSEMBLY 110V 50/60 HZ

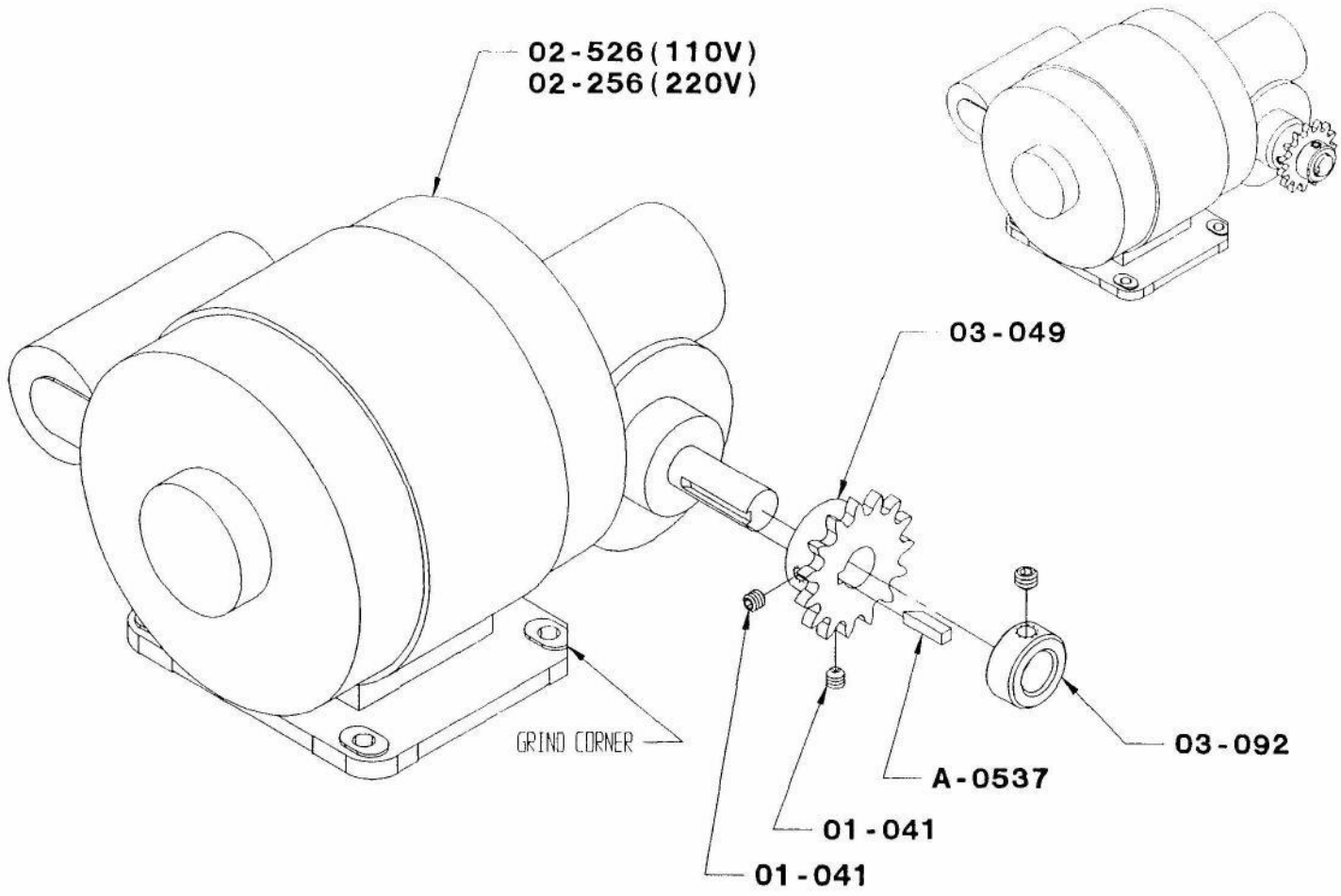


SA-1153, SA-1154
GEMINI PLUS
DRIVE MOTOR ASSEMBLY

REV. SA1153 A

GEMINI SILVER BULLET DRIVE MOTOR ASSEMBLY

PART #	DESCRIPTION
01-041	1/4-20 X 1/4 INCH SET SCREW
02-256	GEAR MOTOR, 20:1, 50/60 HZ, 220V
02-526	GEAR MOTOR, 20:1, 50/60 HZ, 110V
03-049	SPROCKET, 5/8 BORE
03-092	SET SCREW COLLAR
A-0537	DRIVE SPROCKET KEY
SA-1214	DRIVE MOTOR ASSEMBLY, 110V
SA-1215	DRIVE MOTOR ASSEMBLY, 220V

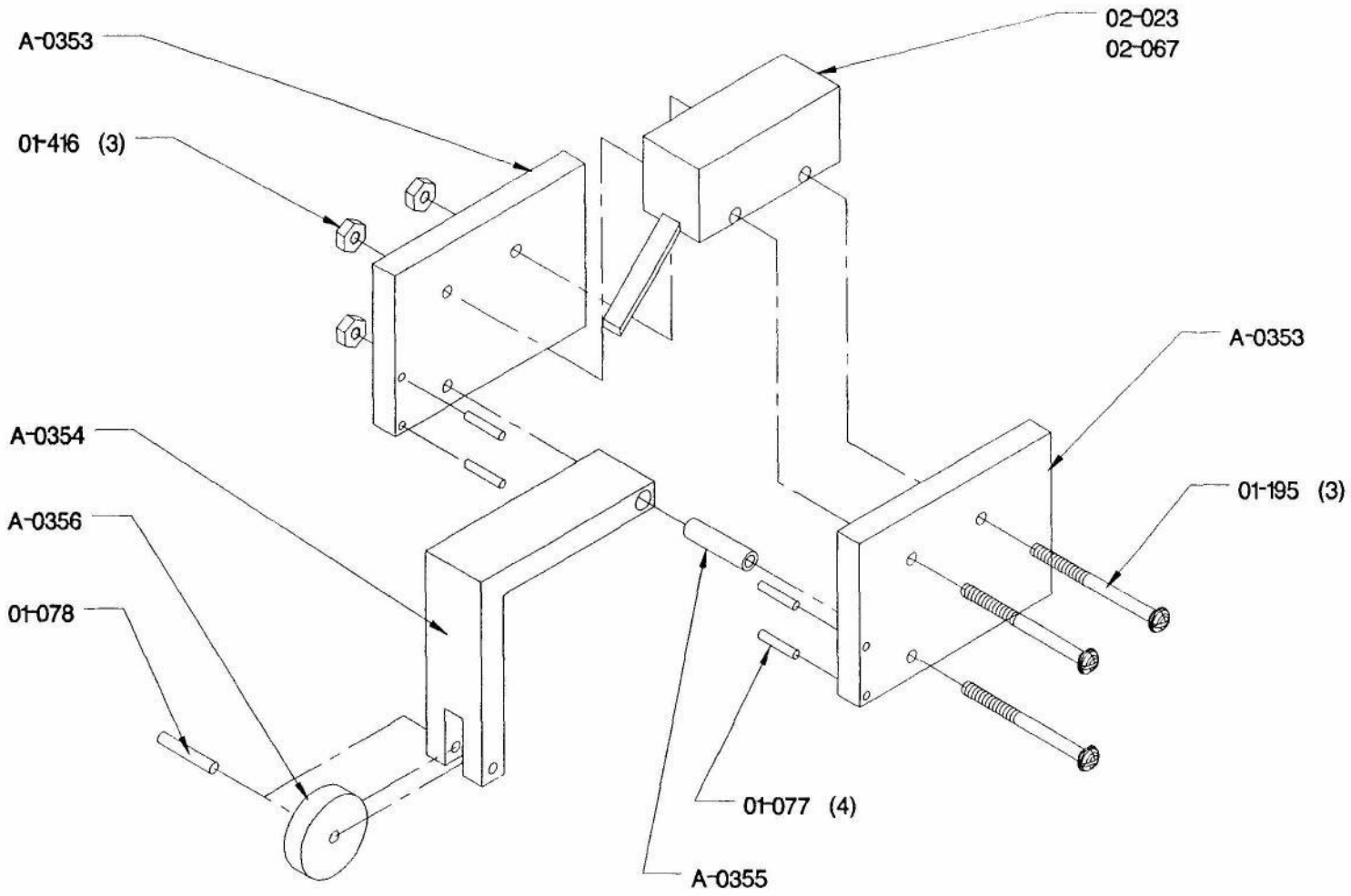


SA-1214(110V), SA-1215(220V)
DRIVE MOTOR ASSEMBLY

REV. SA-1214 C

GEMINI REVERSING TRIP ARM ASSEMBLY

PART #	DESCRIPTION
01-077	3/32 DIA X 1/2 INCH ROLL PIN, PLATED
01-078	1/8 DIA X 3/4 ROLL PIN, PLATED
01-195	6-32 X 1 3/4 INCH ROUND HEAD MACHINE SCREW
01-416	6-32 HEX LOCK NUT
02-023	MICRO SWITCH
02-067	PLASTIC ENCLOSURE
A-0353	TRIP ARM MOUNT GEMINI
A-0354	TRIP ARM
A-0355	TRIP ARM SPACER
A-0356	TRIP ARM WHEEL
SA-1104	GEMINI REVERSING TRIP ARM ASSEMBLY

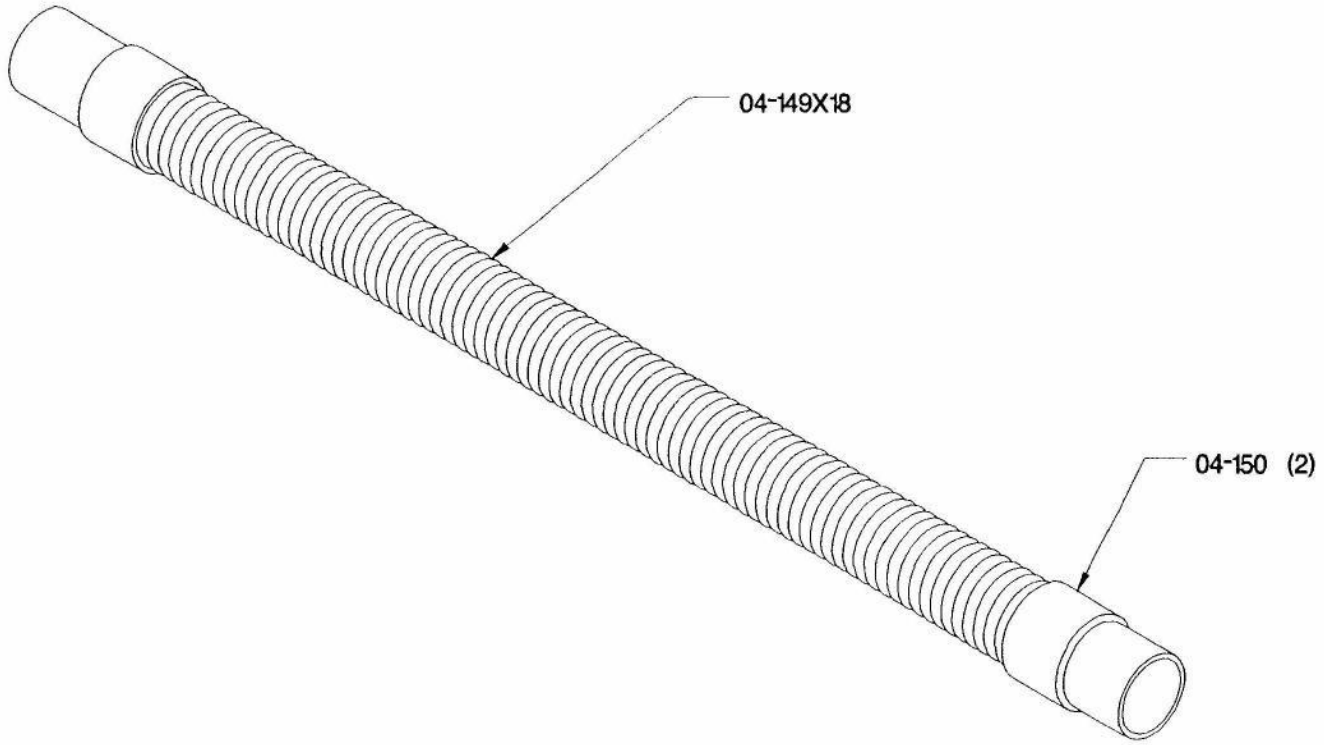


SA-1104
REVERSING TRIP ARM ASSEMBLY

REV. SA1104 A

GEMINI WASTE TANK VACUUM HOSE ASSEMBLY

PART #	DESCRIPTION
04-149X18	1 1/2 INCH HOSE LENGTH 18 INCHES
04-150	1 1/2 INCH X 2 HOSE ADAPTER STRAIGHT
SA-1101	GEMINI WASTE TANK VACUUM HOSE ASSEMBLY

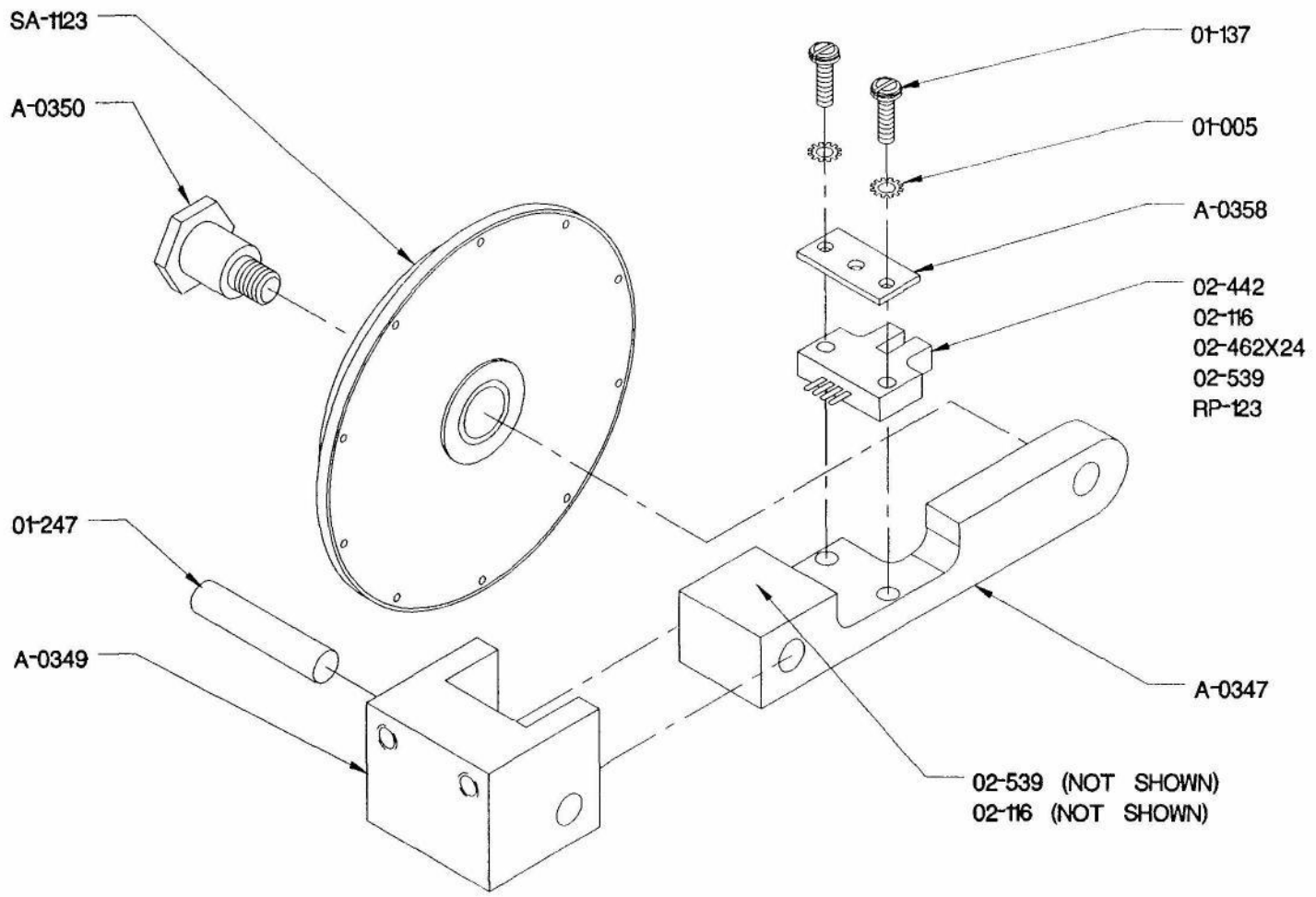


SA-1101
VAC HOSE ASSEMBLY

REV. SA1101 B

GEMINI COUNTER WHEEL ASSEMBLY

PART #	DESCRIPTION
01-005	#6 EXTERNAL TOOTH LOCKWASHER
01-137	6-32 X 1/2 INCH SLOTTED PAN HEAD MACHINE SCREW
01-247	5/16 DIA X 1 1/2 INCH DOWEL PIN
02-116	PLASTIC WIRE TIE (NOT SHOWN)
02-442	PHOTO MICRO SENSOR
02-462X24	MICRO SENSOR WIRE
02-539	PLASTIC WIRE HOLDER (NOT SHOWN)
04-088	BUSHING
A-0347	COUNTER WHEEL ARM
A-0349	COUNTER WHEEL MOUNT
A-0350	COUNTER WHEEL AXLE
A-0358	METAL PHOTO SENSOR SHIELD
RP-123	PREWIRED PHOTO MICRO SENSOR
SA-1094	COUNTER WHEEL ASSEMBLY
SA-1123	COUNTER WHEEL AND BUSHING

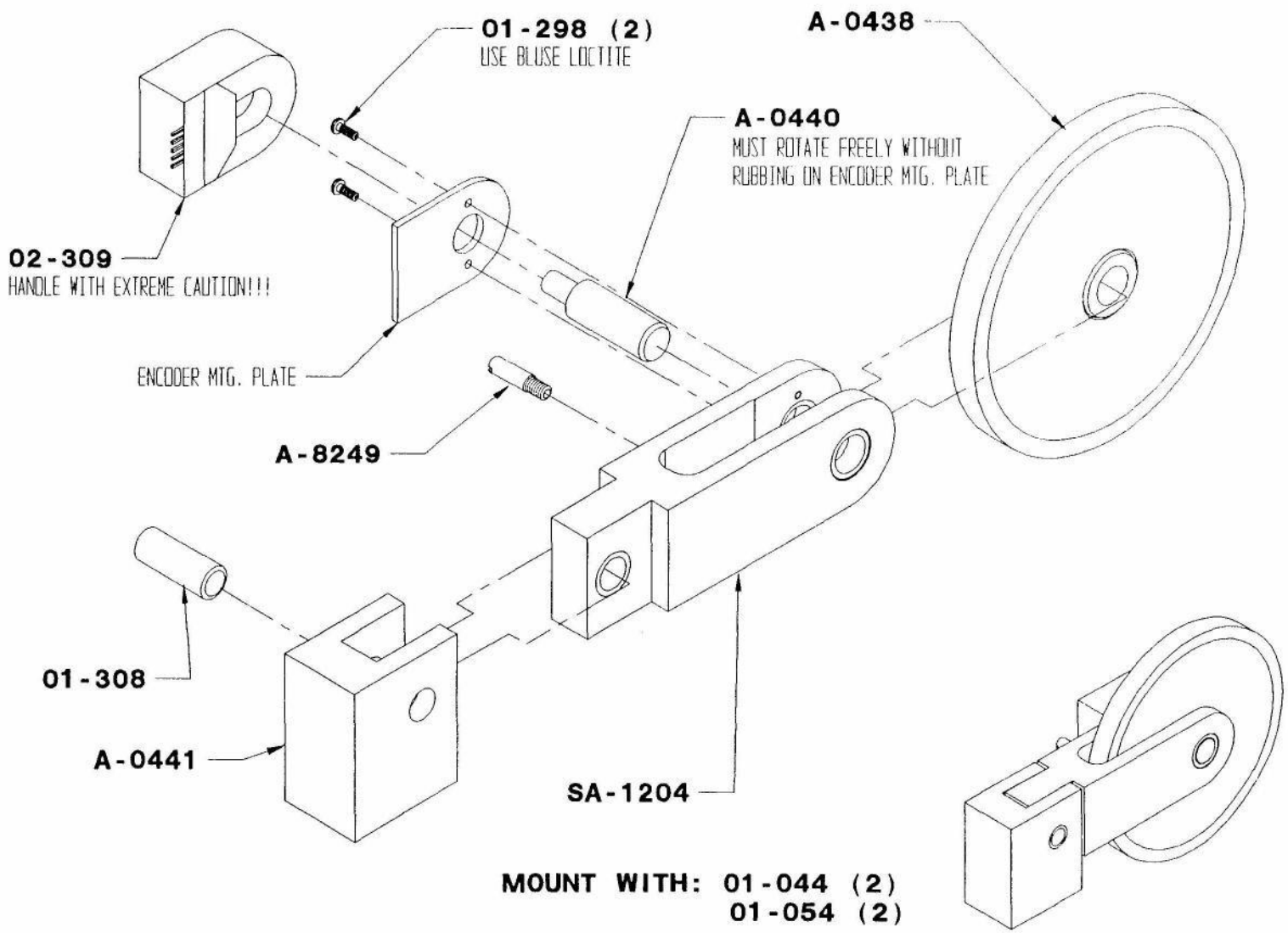


SA-1094
COUNTER WHEEL ASSEMBLY

REV. SA1094 B

GEMINI PLUS AND GEMINI SILVER BULLET COUNTER WHEEL ASSEMBLY

PART #	DESCRIPTION
01-298	2-56 X 1/4 PAN HEAD SCREW, PLTD.
01-308	3/8 DIA X 1 DOWEL PIN
02-309	ENCODER
A-0438	WHEEL
A-0440	AXLE
A-0441	MOUNT
A-8249	SHUT OFF ARM STOP
SA-1204	FORK ASSEMBLY
SA-1205	COUNTER WHEEL ASSEMBLY

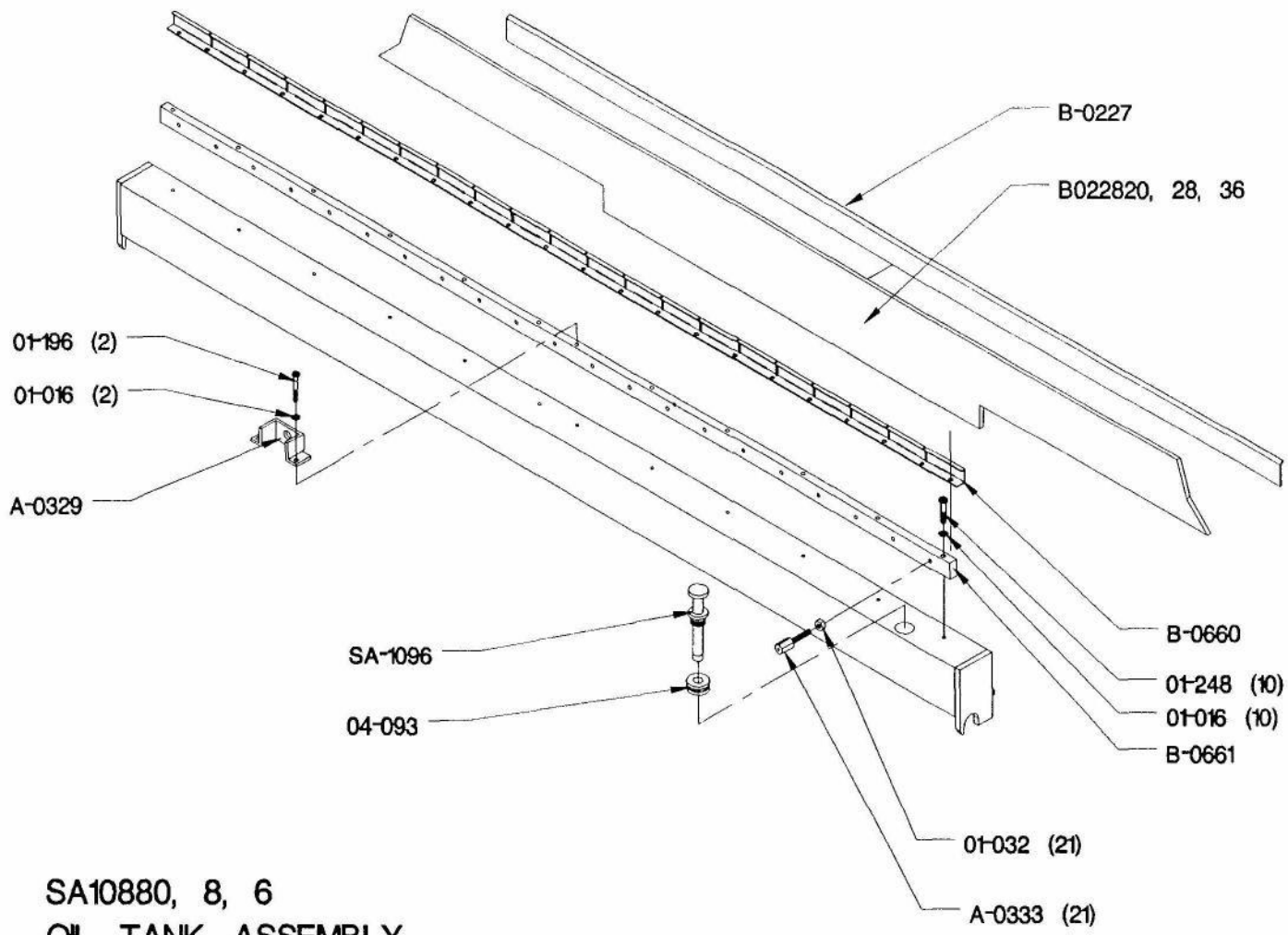


SA-1205
COUNTER WHEEL ASSEMBLY

REV. SA-1205 D

GEMINI AND GEMINI PLUS OIL TANK ASSEMBLY

PART #	DESCRIPTION
01-008	8-32 X 1/4 IN PAN HEAD MACHINE SCREW
01-016	#8 EXTERNAL TOOTH LOCKWASHER
01-032	10-32 HEX STEEL MACHINE NUT
01-051	1/4-20 NYLON INSERT LOCKNUT
01-056	1/4 INCH FLAT WASHER, TYPE A, PLATED
01-164	10-32 X 1/2 INCH WING SCREW
01-196	8-32X 1 1/4 HEX SOCKET BUTTON HEAD SCREW
01-248	8-32 X 1 INCH PAN HEAD MACHINE SCREW
01-474	10-32 X 1 1/4 SET SCREW (ONLY ON GEMINI TANKS SO EQUIPPED)
04-093	VITON WASHER
A-0329	OIL TANK PULL LINKAGE - GEMINI TANK
A-0333	TANK CALIBRATION SCREW WITH HANDLE - GEMINI TANK
A-0632	TANK TILT ADJUSTING BOLT (NOT SHOWN)
A-0633	TANK TILT ADJUSTING PIVOT ROD (NOT SHOWN)
B-0227	TANK FELT RETAINER
B022820	OIL TANK FELT - 20 INCH TONGUE
B022828	OIL TANK FELT - 28 INCH TONGUE
B022836	OIL TANK FELT - 36 INCH TONGUE
B-0660	GEMINI OIL TANK ANGLE
B-0661	GEMINI OIL TANK BAR
B-5024	TANK TILT CONNECTING ROD
RP-76	OIL TANK LINKAGE REPAIR KIT
SA10880	GEMINI OIL TANK ASSEMBLY - 20 INCH TONGUE WICK
SA10888	GEMINI OIL TANK ASSEMBLY - 28 INCH TONGUE WICK
SA10886	GEMINI OIL TANK ASSEMBLY - 36 INCH TONGUE WICK
SA-1096	DIP STICK ASSEMBLY-GEMINI TANK
SA-1098	TANK TILT SUPPORT ARM ASSEMBLY-RIGHT (NOT SHOWN)
SA-1099	TANK TILT SUPPORT ARM ASSEMBLY-LEFT (NOT SHOWN)
RP-59	OIL TANK REPAIR KIT

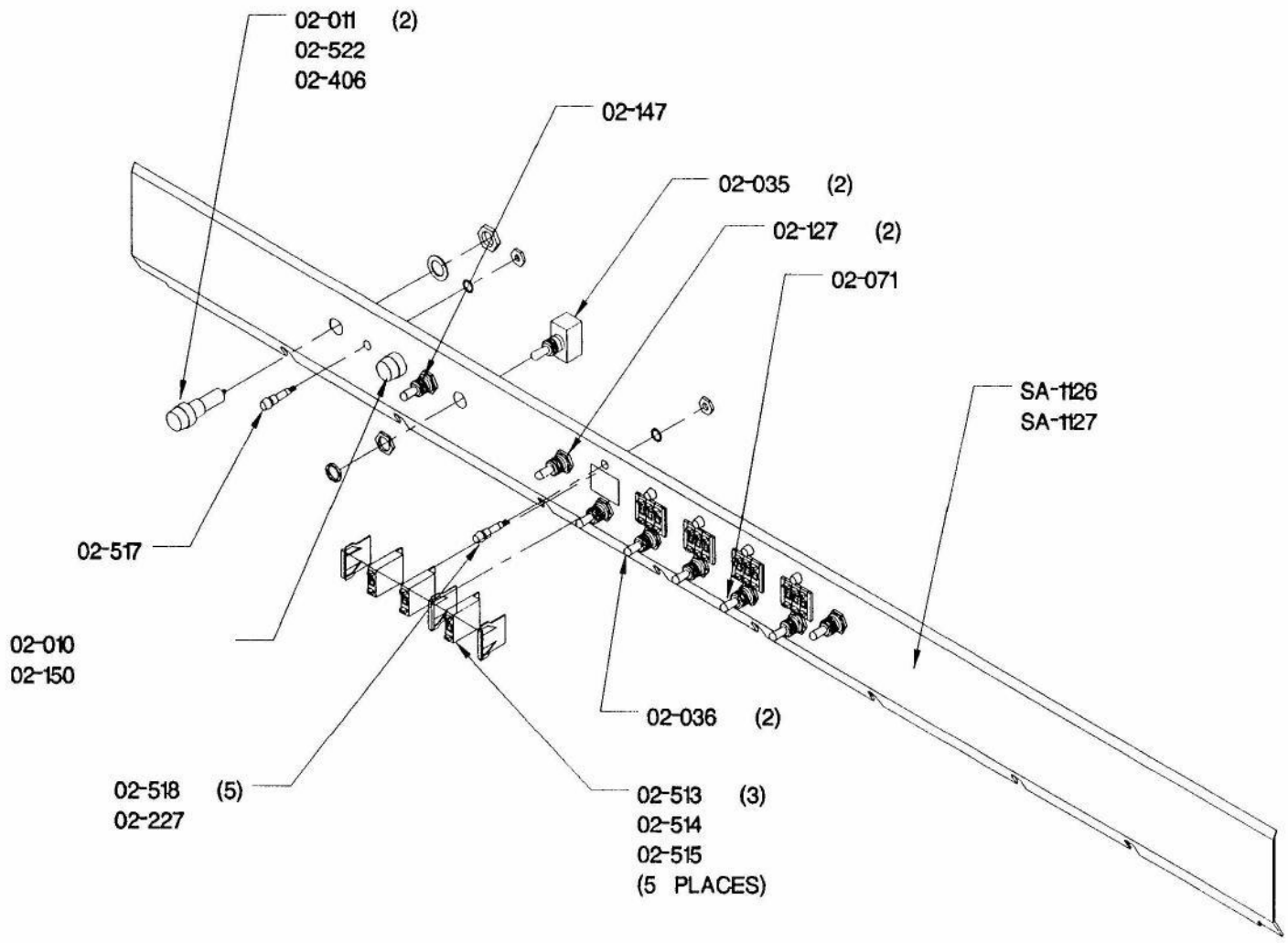


SA10880, 8, 6
OIL TANK ASSEMBLY

REV. SA1088 B

GEMINI DASH ASSEMBLY

PART #	DESCRIPTION
02-010	DRIVE MOTOR FUSE 110 VOLT 6 1/4 AMP SLOW BLOW
02-011	FUSE HOLDER
02-035	TOGGLE SWITCH - DOUBLE OR SINGLE OIL OR VACUUM MOTOR
02-036	TOGGLE SWITCH
02-071	TOGGLE SWITCH - SHORT RUN
02-127	TOGGLE SWITCH - OIL DIRECTION OR STRIP MODE
02-147	MANUAL REVERSE SWITCH
02-150	DRIVE MOTOR FUSE 220 VOLT 4 AMP SLOW BLOW
02-208	1/2 INCH HEAT SHRINK TUBE, 2 INCH LENGTH
02-227	RESISTOR 1/4 WATT 56 K 220 VOLT GEMINI ONLY
02-406	MAIN POWER FUSE 220 VOLT 10 AMP SLOW BLOW
02-513	THUMBWHEEL SWITCH
02-514	SWITCH END PLATE PAIR
02-515	SWITCH DECIMAL POINT
02-517	NEON LIGHT - RED 110 & 220 VOLT
02-518	NEON LIGHT GREEN 110 & 220 VOLT
02-522	MAIN POWER FUSE 110 VOLT 20 AMP SLOW BLOW
B-02161	DASH PANEL RETAINING STRIP (NOT SHOWN)
B-0352	GEMINI DASH SHIELD (NOT SHOWN)
SA-1126	GEMINI DASH ONLY 110 VOLT
SA-1127	GEMINI DASH ONLY 220 VOLT
SA-1087	GEMINI DASH ASSEMBLY 110V 50/60 HZ
SA-1092	GEMINI RIBBON CABLE AND SWITCH CONNECTOR ASSEMBLY
SA-1125	GEMINI DASH ASSEMBLY 220V 50/60 HZ

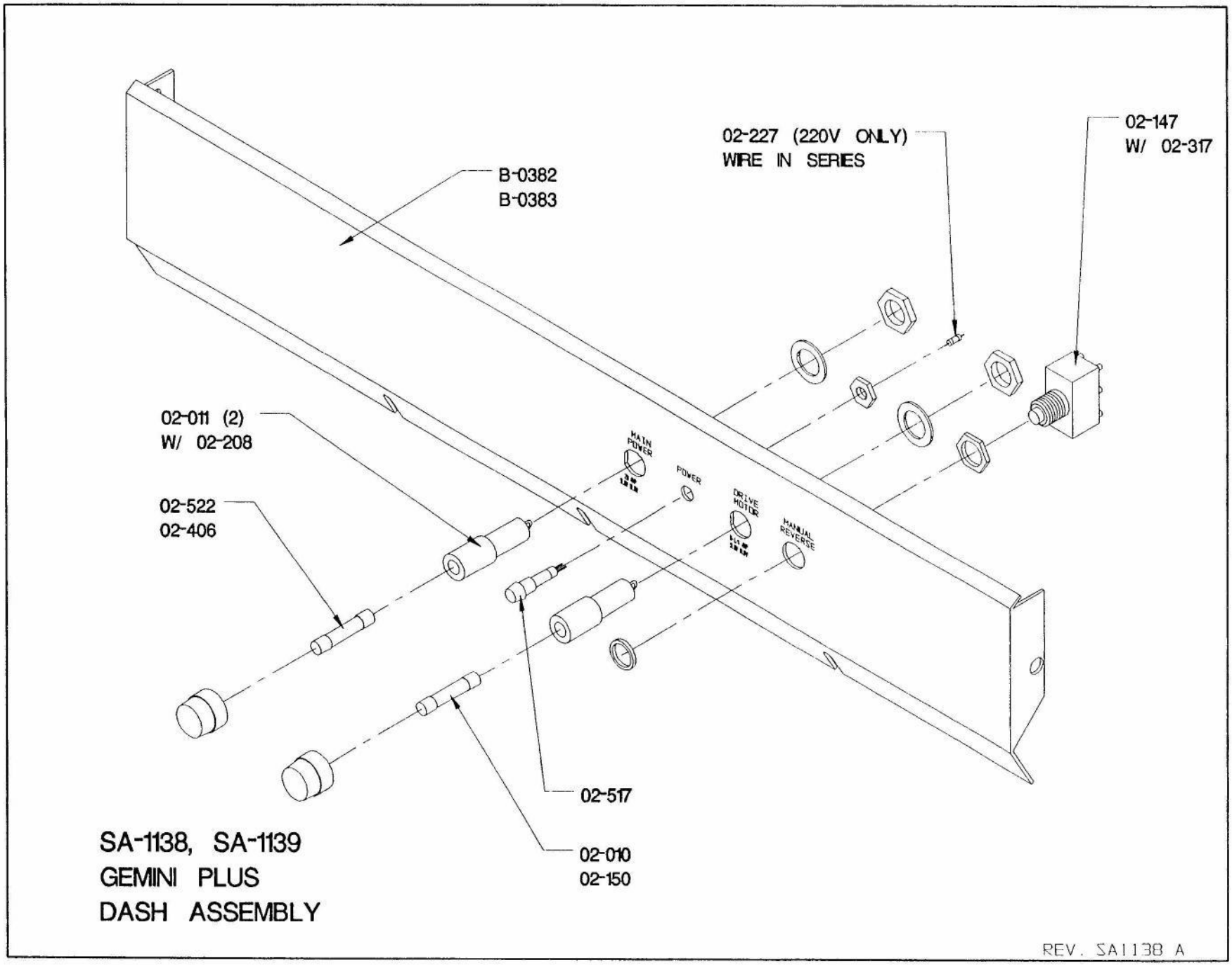


SA-1087, SA-1125
GEMINI
DASH ASSEMBLY

REV. SA1087 A

GEMINI PLUS DASH ASSEMBLY

PART #	DESCRIPTION
02-010	DRIVE MOTOR FUSE 110 VOLT 6 1/4 AMP SLOW BLOW
02-011	FUSE HOLDER
02-127	TOGGLE SWITCH - OIL DIRECTION OR STRIP MODE
02-147	MANUAL REVERSE SWITCH
02-150	DRIVE MOTOR FUSE 220 VOLT 4 AMP SLOW BLOW
02-208	1/2 INCH ID HEAT SHRINK TUBE, 2 INCH LENGTH
02-227	RESISTOR 1/4 WATT, 56K 220 VOLT MACHINES ONLY
02-317	HEAT SHRINK, 1 INCH LENGTH, 1" ID
02-406	MAIN POWER FUSE 220 VOLT 10 AMP SLOW BLOW
02-517	NEON LIGHT - RED 110 & 220 VOLT
02-522	MAIN POWER FUSE 110 VOLT 20 AMP SLOW BLOW
B-0382	GEMINI PLUS DASH ONLY, 110 VOLT
B-0383	GEMINI PLUS DASH ONLY, 220 VOLT
SA-1138	GEMINI PLUS DASH ASSEMBLY 110V 50/60 HZ
SA-1139	GEMINI PLUS DASH ASSEMBLY 220V 50/60 HZ

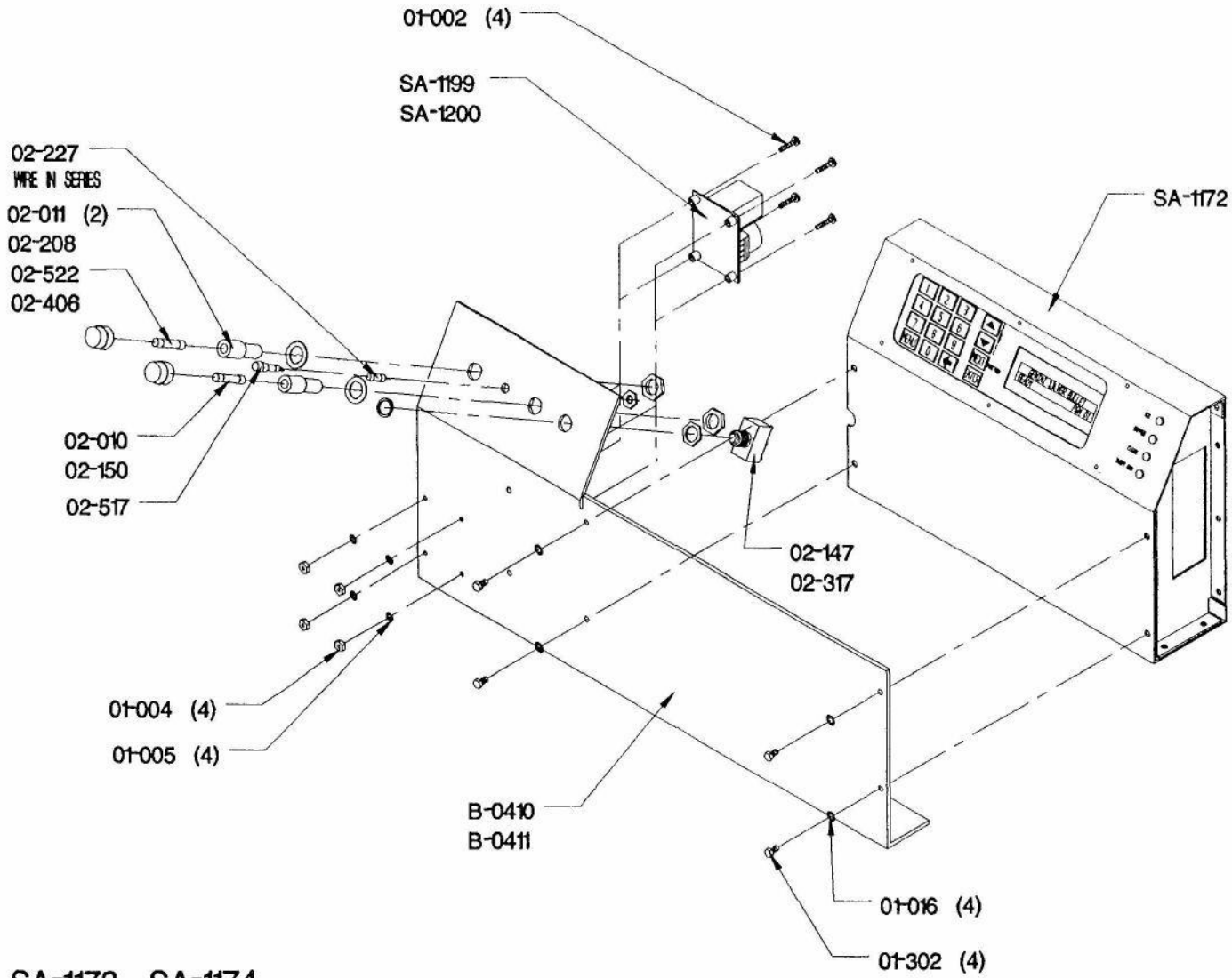


SA-1138, SA-1139
GEMINI PLUS
DASH ASSEMBLY

REV. SA1138 A

GEMINI SILVER BULLET DASH ASSEMBLY

PART #	DESCRIPTION
01-002	6-32 X 1/2 SLOTTED ROUND HEAD MACHINE SCREW, PLATED
01-004	6-32 HEX MACHINE NUT, PLATED
01-005	#6 EXTERNAL TOOTH LOCKWASHER, PLATED
01-016	#8 EXTERNAL TOOTH LOCKWASHER, PLATED
01-302	8-32 X 3/8 HEX HEAD MACHINE SCREW
02-010	DRIVE MOTOR FUSE 110 VOLT 6 1/4 AMP SLOW BLOW
02-011	FUSE HOLDER
02-127	TOGGLE SWITCH - OIL DIRECTION OR STRIP MODE
02-147	MANUAL REVERSE SWITCH
02-149	PHENOLIC SPACER FOR PCB
02-150	DRIVE MOTOR FUSE 220 VOLT 4 AMP SLOW BLOW
02-227	RESISTOR 1/4 WATT 56 K 220 VOLT GEMINI ONLY
02-317	HEAT SHRINK, 1 INCH LENGTH
02-406	MAIN POWER FUSE 220 VOLT 10 AMP SLOW BLOW
02-517	NEON LIGHT - RED 110 & 220 VOLT
02-522	MAIN POWER FUSE 110 VOLT 20 AMP SLOW BLOW
B-0410	GEMINI SILVER BULLET DASH ONLY 110 VOLT
B-0411	GEMINI SILVER BULLET DASH ONLY 220 VOLT
SA-1172	GEMINI SILVER BULLET CONTROL MODULE 110/220V 50/60HZ
SA-1173	GEMINI SILVER BULLET DASH ASSEMBLY 110V 50/60 HZ
SA-1174	GEMINI SILVER BULLET DASH ASSEMBLY 220V 50/60 HZ
SA-1199	DRIVE MOTOR BRAKE PCB, 110 VOLT
SA-1200	DRIVE MOTOR BRAKE PCB, 220 VOLT

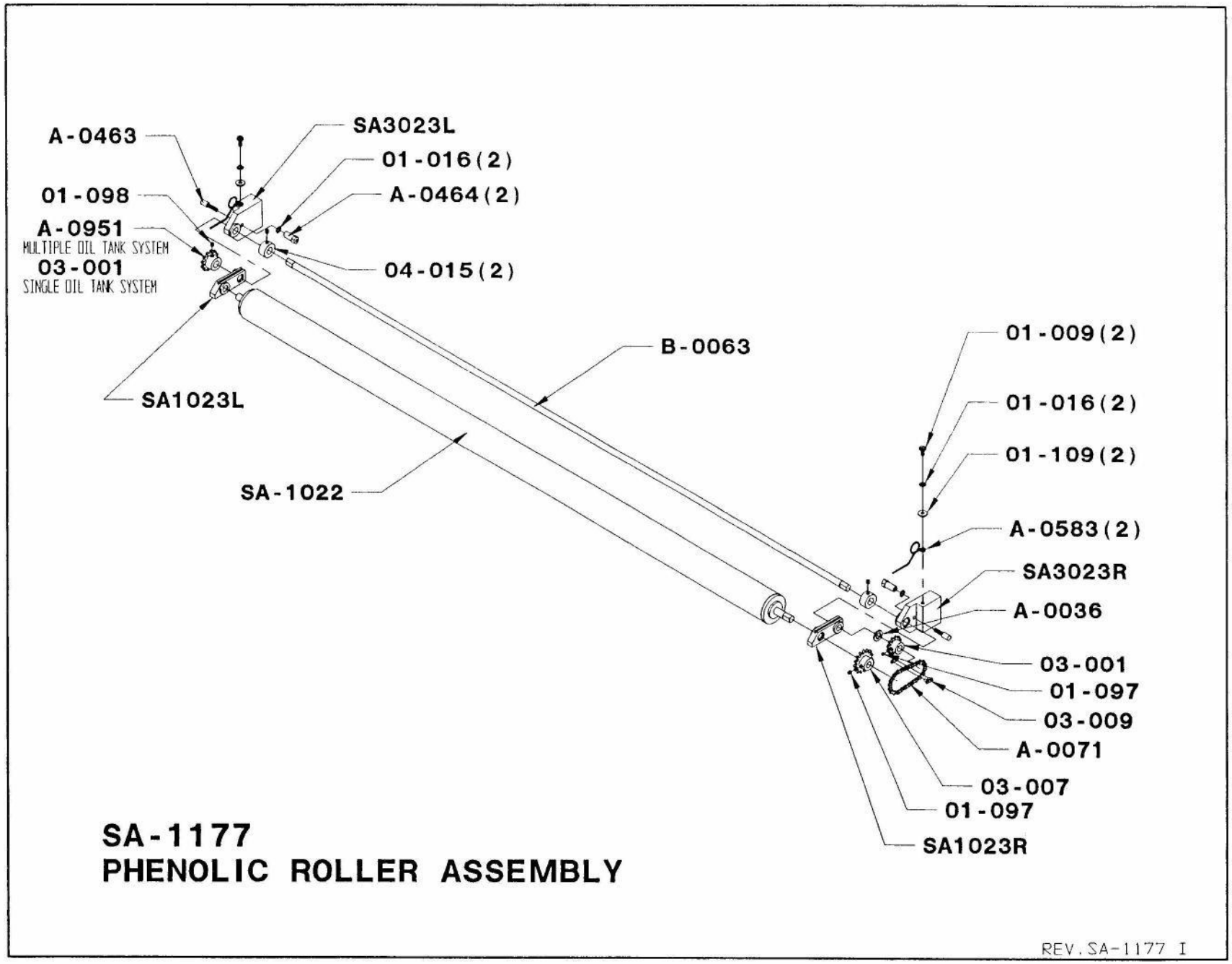


SA-1173, SA-1174
SILVER BULLET
DASH ASSEMBLY

REV. SA1173 B

GEMINI SILVER BULLET DRESSING TRANSFER ROLLER ASSEMBLY

PART #	DESCRIPTION
01-009	8-32 X 3/8 SLOTTED PAN HEAD MACHINE SCREW, PLATED
01-016	#8 EXTERNAL LOCK WASHER
01-097	10-32 X 1/4 HEX SOCKET HEAD SET SCREW, CUP POINT
01-098	10-32 X 3/8 HEX SOCKET HEAD SET SCREW, CUP POINT
01-109	#8 USS WROUGHT WASHER, PLATED
03-001	SPROCKET
03-007	SPROCKET
03-009	CONNECTING LINK
04-015	SET SCREW COLLAR
A-0036	ROLLER DRIVE SHAFT WASHER
A-0071	DRESSING TRANSFER ROLLER CHAIN
A-0463	POSITIVE STOP SCREW
A-0464	POSITIVE STOP NUT
A-0583	PHENOLIC ROLLER SPRING
A-0951	SPROCKET MODIFICATION
B-0063	OIL TRANSFER ROLLER DRIVE SHAFT
SA-1022	DRESSING TRANSFER ROLLER ASSEMBLY
SA1023R	ROLLER SUPPORT ARM ASSEMBLY - RIGHT
SA1023L	ROLLER SUPPORT ARM ASSEMBLY - LEFT
SA-1177	GEMINI SILVER BULLET DRESSING TRANSFER ROLLER ASSEMBLY
SA3023R	DRESSING TRANSFER ROLLER SUPPORT ARM ASSEMBLY - RIGHT
SA3023L	DRESSING TRANSFER ROLLER SUPPORT ARM ASSEMBLY - LEFT

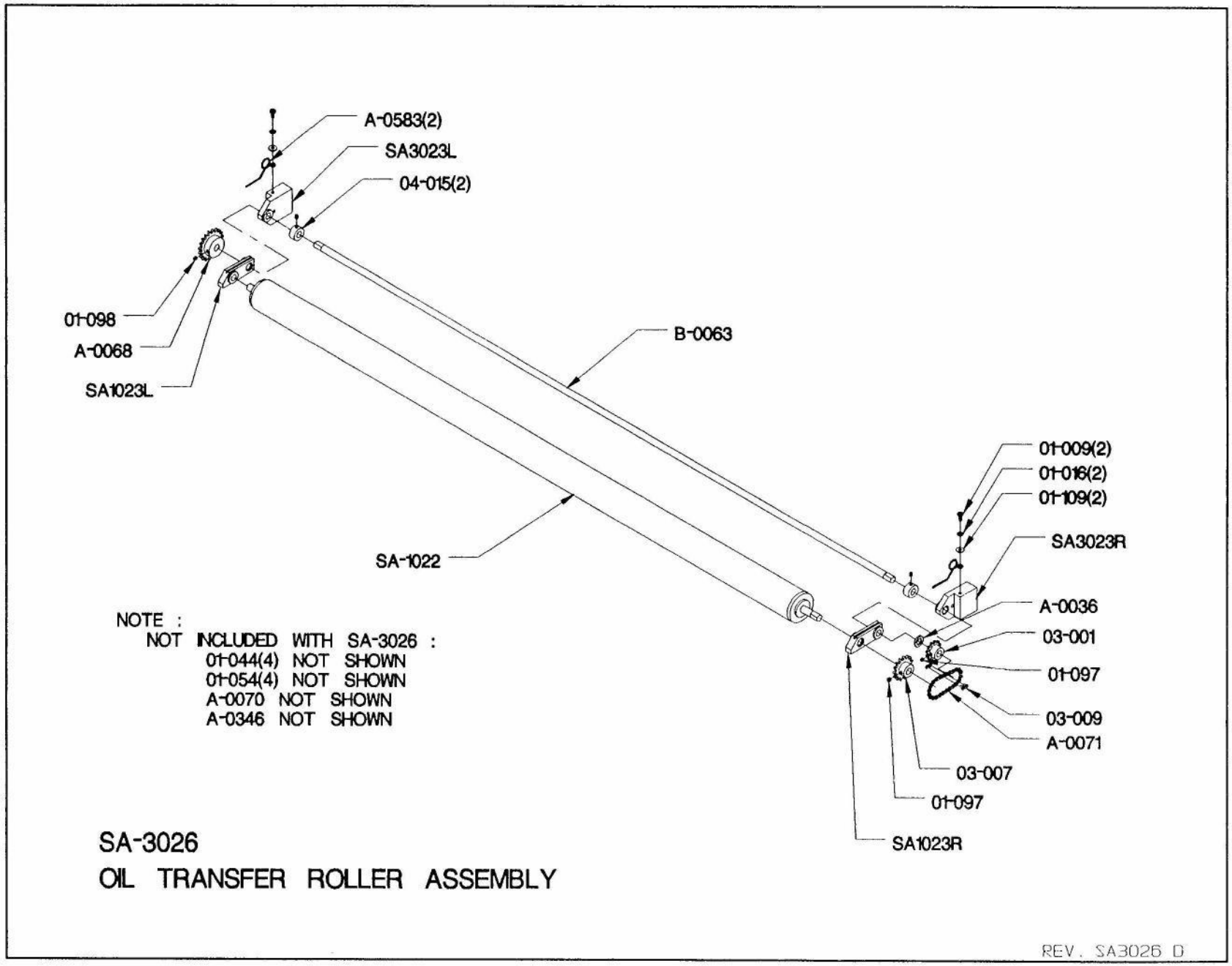


SA-1177
PHENOLIC ROLLER ASSEMBLY

REV. SA-1177 I

GEMINI & GEMINI PLUS DRESSING TRANSFER ROLLER ASSEMBLY

PART #	DESCRIPTION
01-009	8-32 X 3/8 SLOTTED PAN HEAD MACHINE SCREW, PLATED
01-016	#8 EXTERNAL LOCK WASHER
01-044	1/4-20 X 5/8 HEX HEAD BOLT, GRADE 5, PLATED
01-054	1/4 INCH SPLIT LOCKWASHER, PLATED
01-097	10-32 X 1/4 INCH SOCKET HEAD SET SCREW, CUP POINT
01-098	10-32 X 3/8 INCH SOCKET HEAD SET SCREW, CUP POINT
01-109	#8 USS WROUGTH WASHER, PLATED
03-001	SPROCKET
03-007	SPROCKET
03-009	CONNECTING LINK
04-015	SET SCREW COLLAR
A-0036	ROLLER DRIVE SHAFT WASHER
A-0068	RECEIVER SPROCKET
A-0070	IDLER SPROCKET CHAIN
A-0071	DRESSING TRANSFER ROLLER CHAIN
A-0346	DRESSING TRANSFER ROLLER DRIVE CHAIN
A-0583	PHENOLIC ROLLER SPRING
B-0063	OIL TRANSFER ROLLER DRIVE SHAFT
SA-1022	DRESSING TRANSFER ROLLER ASSEMBLY
SA1023R	ROLLER SUPPORT ARM ASSEMBLY - RIGHT
SA1023L	ROLLER SUPPORT ARM ASSEMBLY - LEFT
SA3023R	DRESSING TRANSFER ROLLER SUPPORT ARM ASSEMBLY - RIGHT
SA3023L	DRESSING TRANSFER ROLLER SUPPORT ARM ASSEMBLY - LEFT
SA-3026	GEMINI & GEMINI PLUS DRESSING TRANSFER ROLLER ASSEMBLY



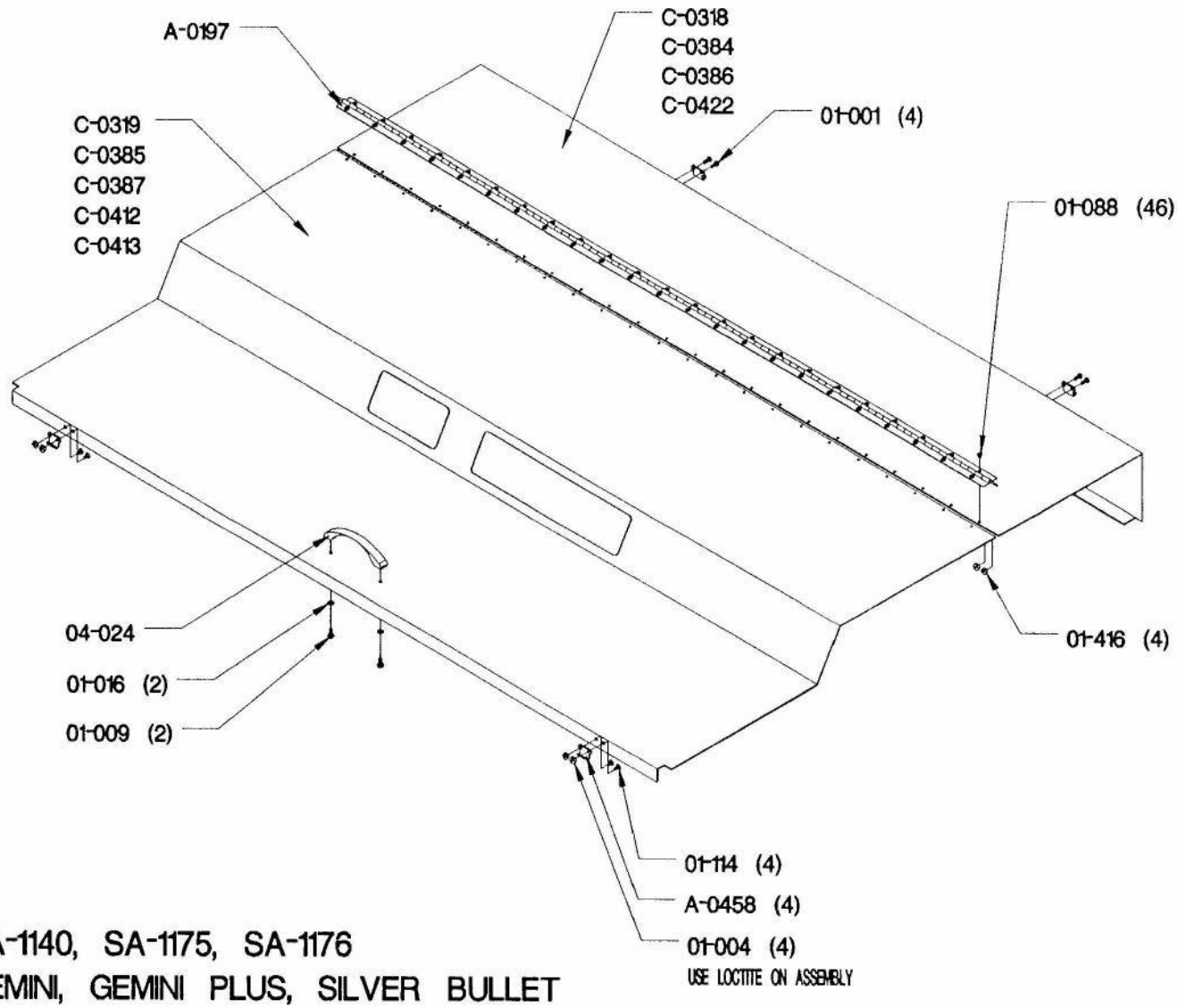
NOTE :
NOT INCLUDED WITH SA-3026 :
01-044(4) NOT SHOWN
01-054(4) NOT SHOWN
A-0070 NOT SHOWN
A-0346 NOT SHOWN

SA-3026
OIL TRANSFER ROLLER ASSEMBLY

REV. SA3026 D

GEMINI HOOD ASSEMBLY

PART #	DESCRIPTION
01-001	6-32 X 3/8 SLOTTED ROUND HEAD MACHINE SCREW
01-002	6-32 C 1/2 SLOTTED ROUND HEAD MACHINE SCREW
01-004	6-32 HEX STEEL MACHINE NUT
01-005	#6 EXTERNAL TOOTH LOCKWASHER
01-009	8-32 X 3/8 PAN HEAD MACHINE SCREW
01-010	8-32 X 1/2 INCH SLOTTED PAN HEAD MACHINE SCREW
01-013	8-32 X 3/4 INCH SLOTTED PAN HEAD MACHINE SCREW
01-016	#8 EXTERNAL TOOTH LOCKWASHER
01-088	1/8 DIAM X 1/8 ALUMINUM POP RIVET
01-114	6-32 X 1/4 SLOTTED FLAT HEAD MACHINE SCREW, PLATED
01-416	6-32 NYLON INSERT LOCKNUT
04-024	HOOD PULL
A-0197	HOOD HINGE
A-0458	DRAW PULL CATCH MODIFICATION
B-0198	HOOD HANGER
C-0318	FRONT HOOD, (GEMINI & GEMINI PLUS)
C-0319	REAR HOOD, (GEMINI)
C-0384	FRONT HOOD, AMF (GEMINI PLUS, SILVER BULLET)
C-0385	REAR HOOD, AMF, (GEMINI PLUS)
C-0386	FRONT HOOD, CENTURY (GEMINI PLUS, SILVER BULLET)
C-0387	REAR HOOD, CENTURY (GEMINI PLUS)
C-0412	REAR HOOD, CENTURY (SILVER BULLET)
C-0413	REAR HOOD, AMF (SILVER BULLET)
C-0422	FRONT HOOD, CENTURY (SILVER BULLET)

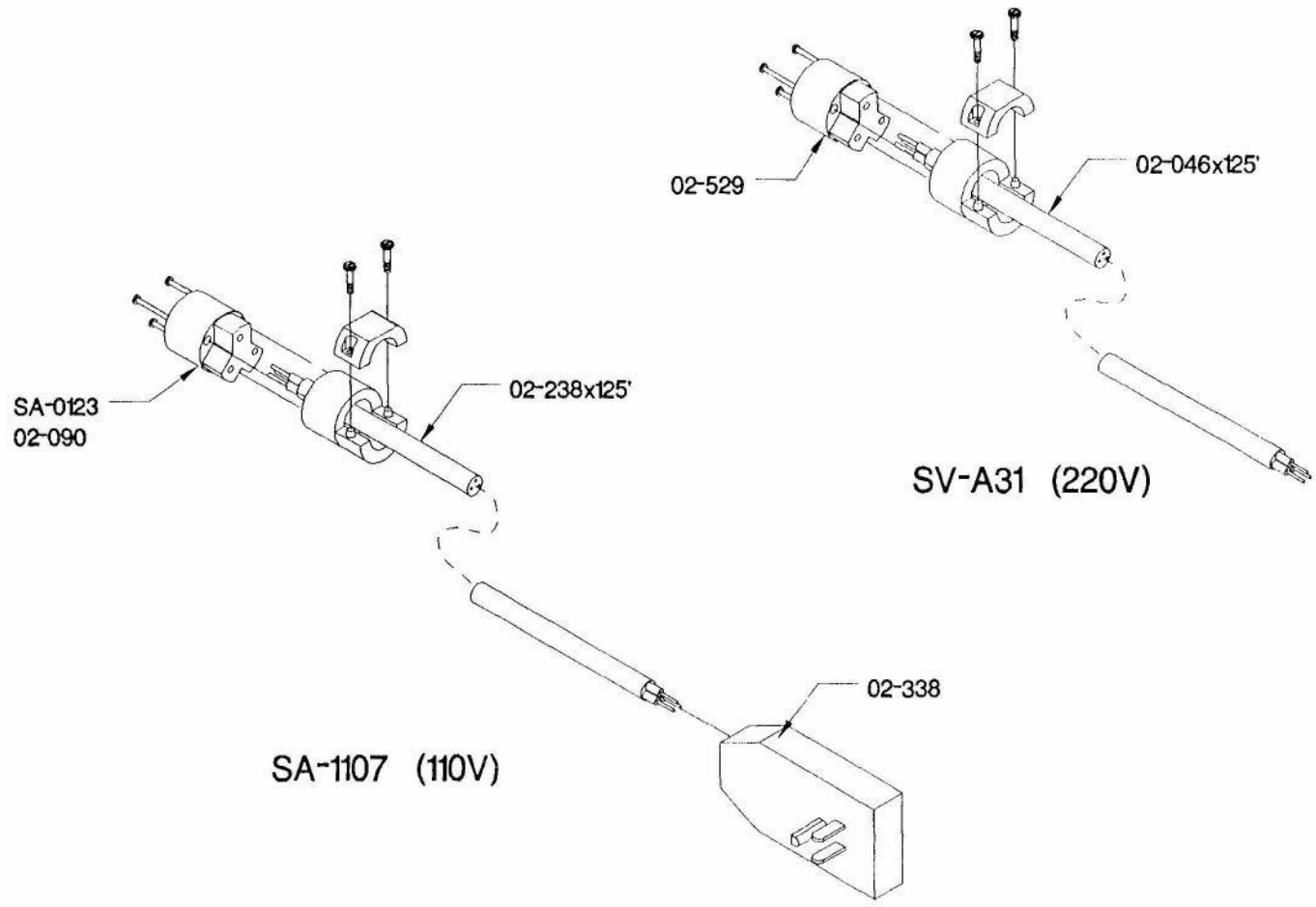


SA-1140, SA-1175, SA-1176
GEMINI, GEMINI PLUS, SILVER BULLET
HOOD ASSEMBLY

REV. GEMHOOD C

POWER CORD ASSEMBLY

PART #	DESCRIPTION
02-046X125	125 FOOT 14/3 POWER CORD LENGTH - NO ENDS
02-089	FLUSH 3 WIRE PLUG 110 VOLT (NOT SHOWN)
02-090	CORD END CONNECTOR BODY 110 VOLT
02-238X125	125 FOOT 12/3 POWER CORD LENGTH -NO ENDS
02-338	GROUND FAULT PLUG
02-528	FLUSH 3 WIRE PLUG 220 VOLT (NOT SHOWN)
02-529	CORD END CONNECTOR BODY 220 VOLT
SA-0123	POWER CORD ASSEMBLY 110 VOLT
SA-1107	110 VOLT POWER CORD ASSEMBLY 12/3 WIRE
SV-A31	220 VOLT POWER CORD ASSEMBLY 14/3 WIRE

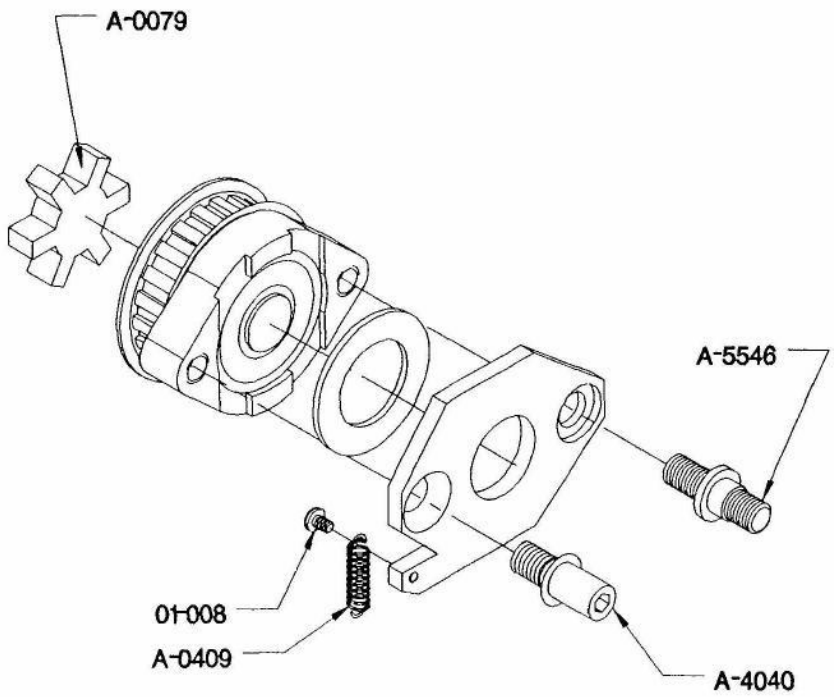


SA-1107, SV-A31
POWER CORD ASSEMBLY

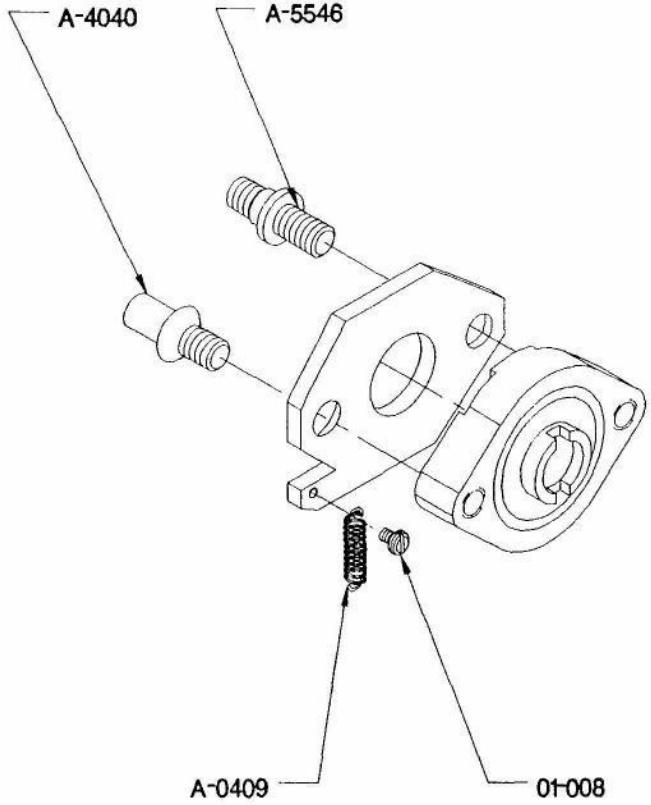
REV. SA1107 D

DRESSING BUFFER BEARING ASSEMBLIES

PART #	DESCRIPTION
01-008	8-32 X 1/4 INCH SLOTTED PAN HEAD MACHINE SCREW
01-041	1/4-20 X 1/4 INCH HEX SOCKET HEAD SET SCREW, CUP POINT
01-159	7/16-20 NYLON INSERT LOCKNUT
A-0079	COUPLING RUBBER SPIDER
A-0409	BUFFER RETURN SPRING ***(SILVER BULLET ONLY OR DRESSING BUFFER BRUSH)***
A-4040	PRESSURE LINKAGE PIN
A-5546	BEARING MOUNTING STUD
A-5547	SIDE PLATE BUSHING
SA-1105	GEMINI DRESSING BUFFER DRIVE BEARING ASSEMBLY
SA-1106	GEMINI DRESSING BUFFER IDLER BEARING ASSEMBLY



SA-1105
BUFFER DRIVE ASSEMBLY

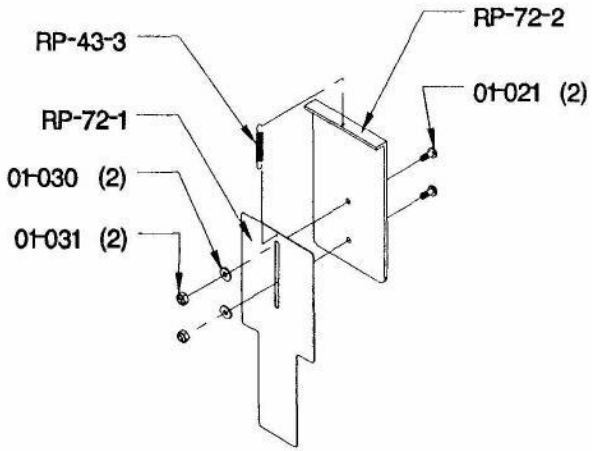


SA-1106
BUFFER IDLER ASSEMBLY

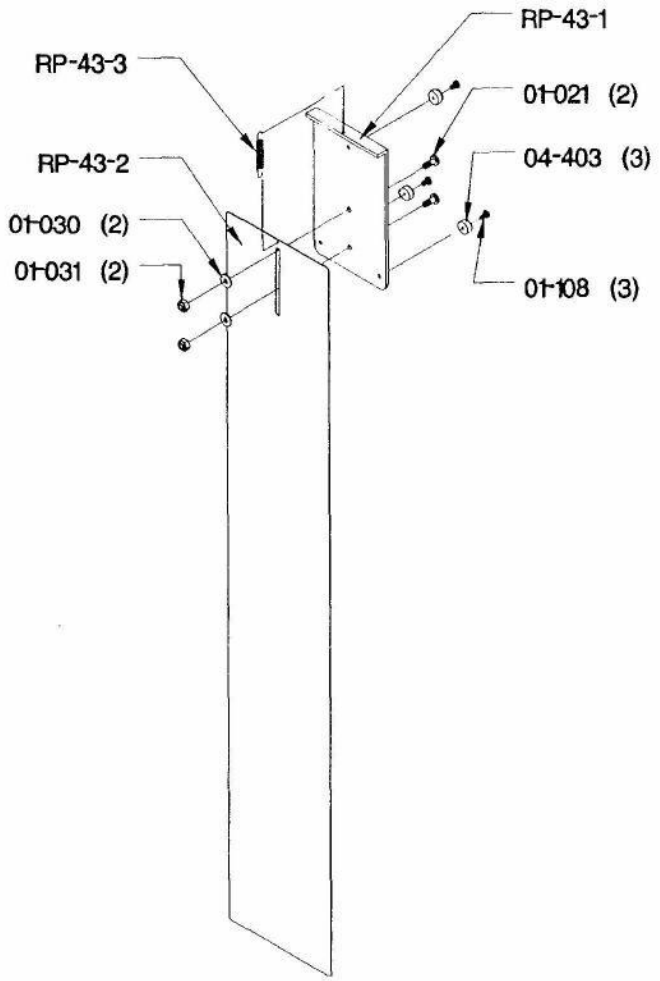
REV. SA1105 C

PRESSURE ADJUSTING TOOLS

PART #	DESCRIPTION
01-021	10-32 X 1/2 INCH SLOTTED PAN HEAD MACHINE SCREW
01-030	#10 FLAT WASHER
01-031	10-32 HEX LOCKWASHER
01-108	6-32 X 1/4 INCH SLOTTED PAN HEAD MACHINE SCREW
04-403	RUBBER BUMPER
RP-43-1	PRESSURE GAUGE ALUMINUM PLATE ONLY
RP-43-2	PLASTIC GAUGE
RP-43-3	SPRING
RP-43	BUFFER AND CLEANING PAD PRESSURE
RP-72A1	DRESSING TANK PRESSURE GAUGE ASSEMBLY ONLY
RP-72-1	DRESSING TANK PRESSURE GAUGE PLASTIC ONLY
RP-72-2	DRESSING TANK PRESSURE GAUGE ALUMINUM PLATE ONLY



RP-72A1
DRESSING TANK PRESSURE GAUGE

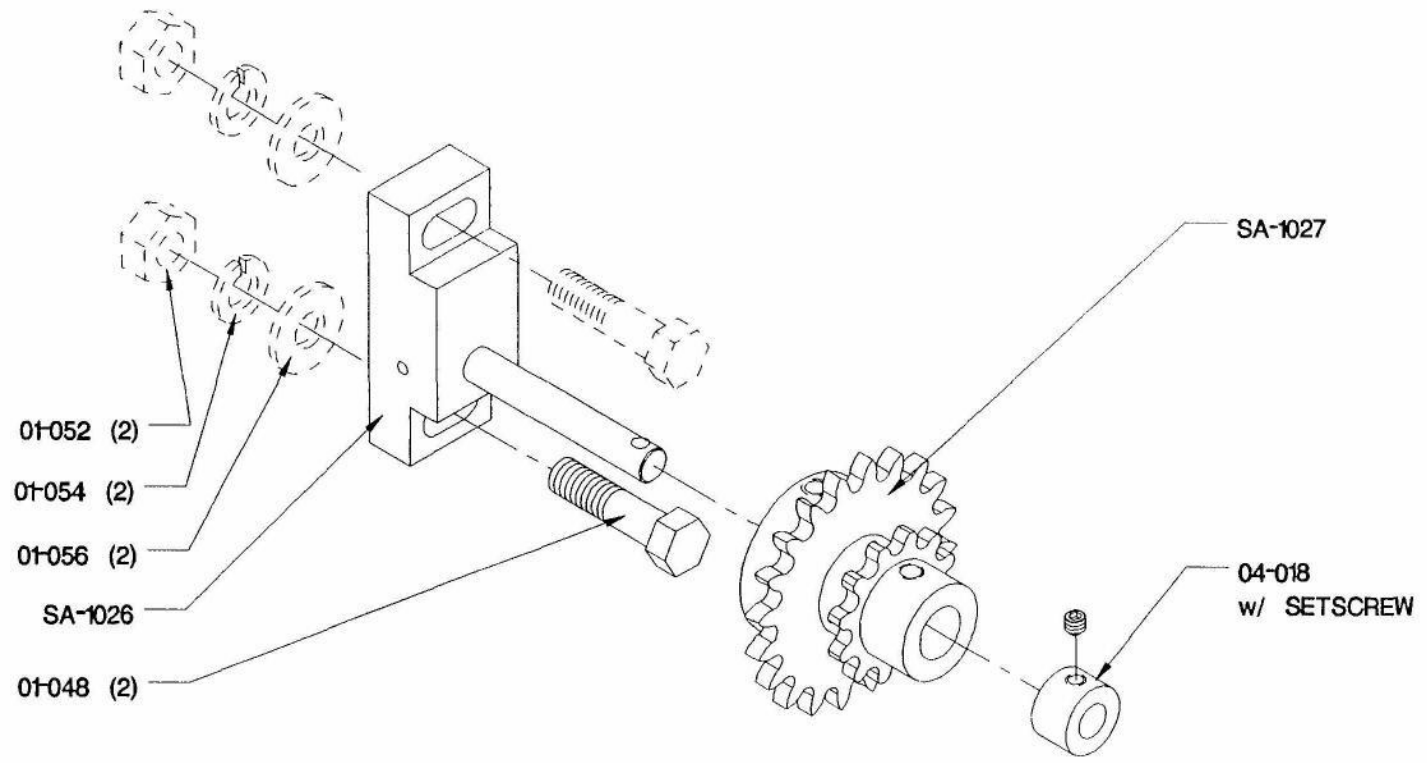


RP-43
BUFFER PRESSURE ADJUSTING TOOL

REV. RP72A1 A

CHAIN IDLER ASSEMBLY

PART #	DESCRIPTION
01-048	1/4-20 X 1 INCH HEX HEAD SCREW, PLATED
01-052	1/4-20 HEX STEEL MACHINE NUT, PLATED
01-054	1/4 INCH SPLIT LOCKWASHER, PLATED
01-056	1/4 INCH FLAT WASHER, TYPE A, PLATED
04-018	SET SCREW COLLAR
A-0070	OIL TRANSFER ROLLER DRIVE CHAIN (NOT SHOWN)
A-0346	OIL TRANSFER ROLLER DRIVE SHAFT CHAIN (NOT SHOWN)
SA-1026	CHAIN ARM AND SHAFT ASSEMBLY
SA-1027	CHAIN SPROCKET ASSEMBLY
SA-1028	CHAIN IDLER ASSEMBLY



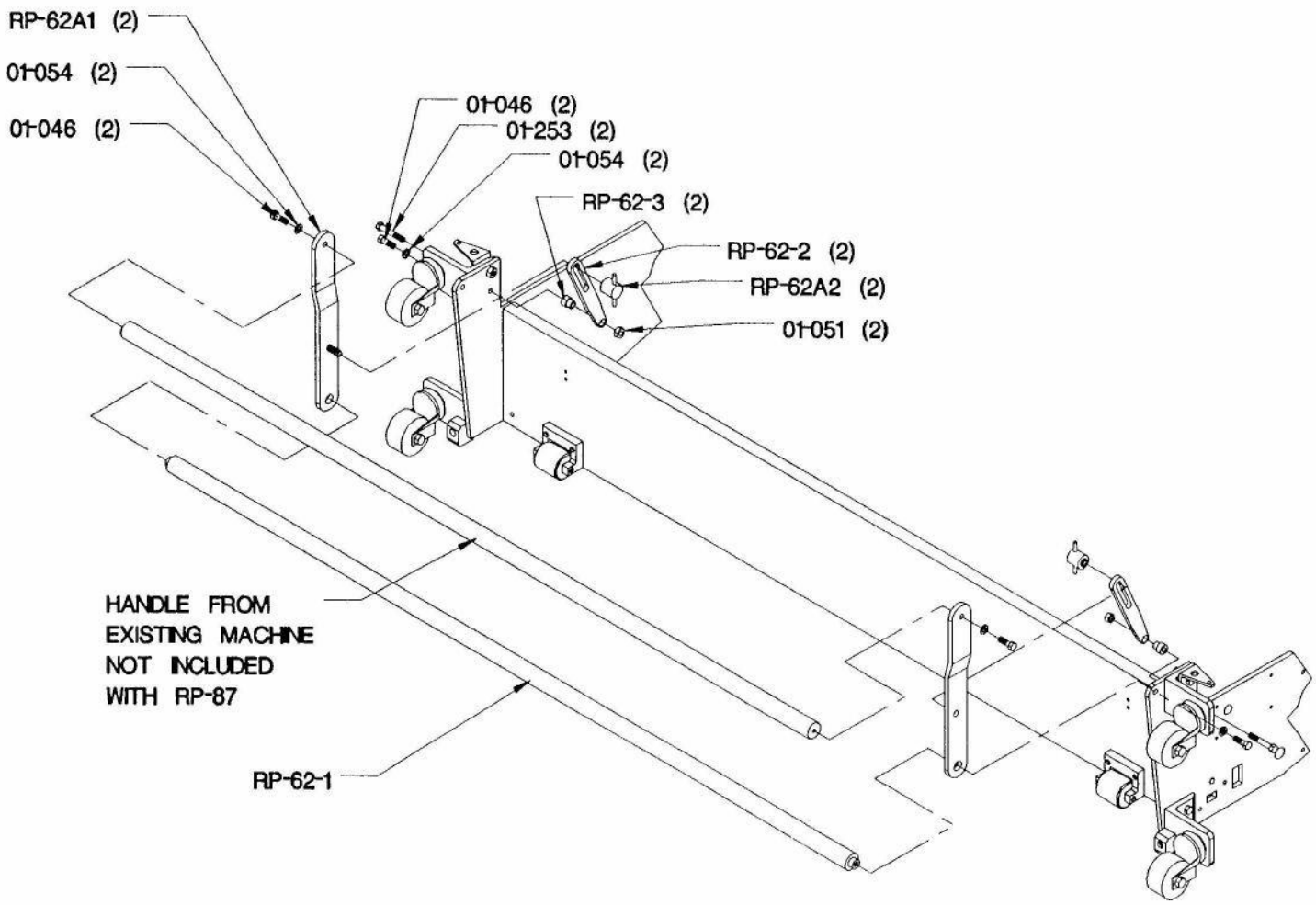
SA-1028
CHAIN IDLER ASSEMBLY

NOTE: DASHED ITEMS NOT SUPPLIED WITH SA-1028

REV. SA1028 A

HANDLE ASSEMBLY

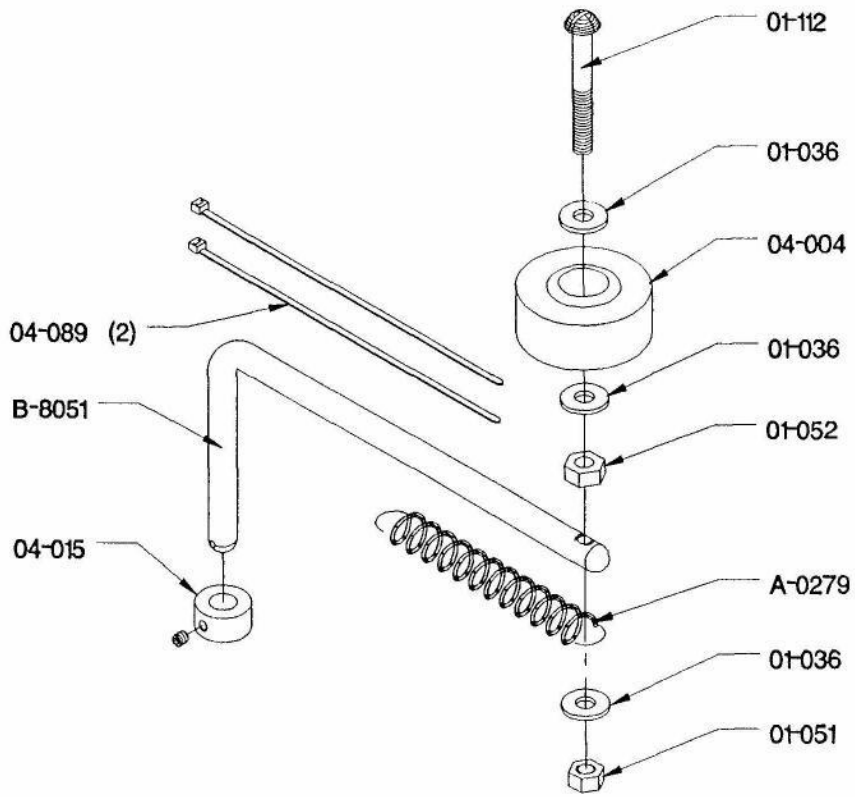
PART #	DESCRIPTION
01-006	8-32 X 3/16 HEX SOCKET HEAD SET SCREW, CUP POINT
01-046	1/4-20 X 3/4 INCH HEX HEAD SCREW, GRADE 5, PLATED
01-051	11/4-20 NYLON INSERT HEX LOCK NUT
01-054	1/4 INCH SPLIT LOCKWASHER
01-253	1/4-20 X 1 1/2 NC HEX SCREW, GRADE 5, PLATED, FULL THREAD
RP-62A1	HANDLE BRACKET
RP-62A2	HANDLE LOCK
RP-62-1	SUPPORT BAR
RP-62-2	SLIDE PLATE
RP-62-3	SLIDE PLATE SPACER
RP-87	HANDLE ASSEMBLY ALC, GEMINI, 100, 300 & ALD



RP-87
HANDLE ASSEMBLY

CORD ARM ASSEMBLY

PART #	DESCRIPTION
01-036	3/16 USS WROUGHT WASHER
01-051	1/4-20 NYLON INSERT HEX LOCKNUT, PLATED
01-052	1/4-20 HEX STEEL MACHINE NUT, PLATED
01-112	1/4-20 X 2 INCH SLOTTED ROUND HEAD MACHINE SCREW
04-004	CASTER WHEEL
04-015	SET SCREW COLLAR
04-089	PLASTIC WIRE TIE
A-0279	CORD ARM SPRING
B-5027	CORD ARM BRACKET
B-8051	CORD ARM ONLY
SA-9017	CORD ARM ASSEMBLY - SHORT

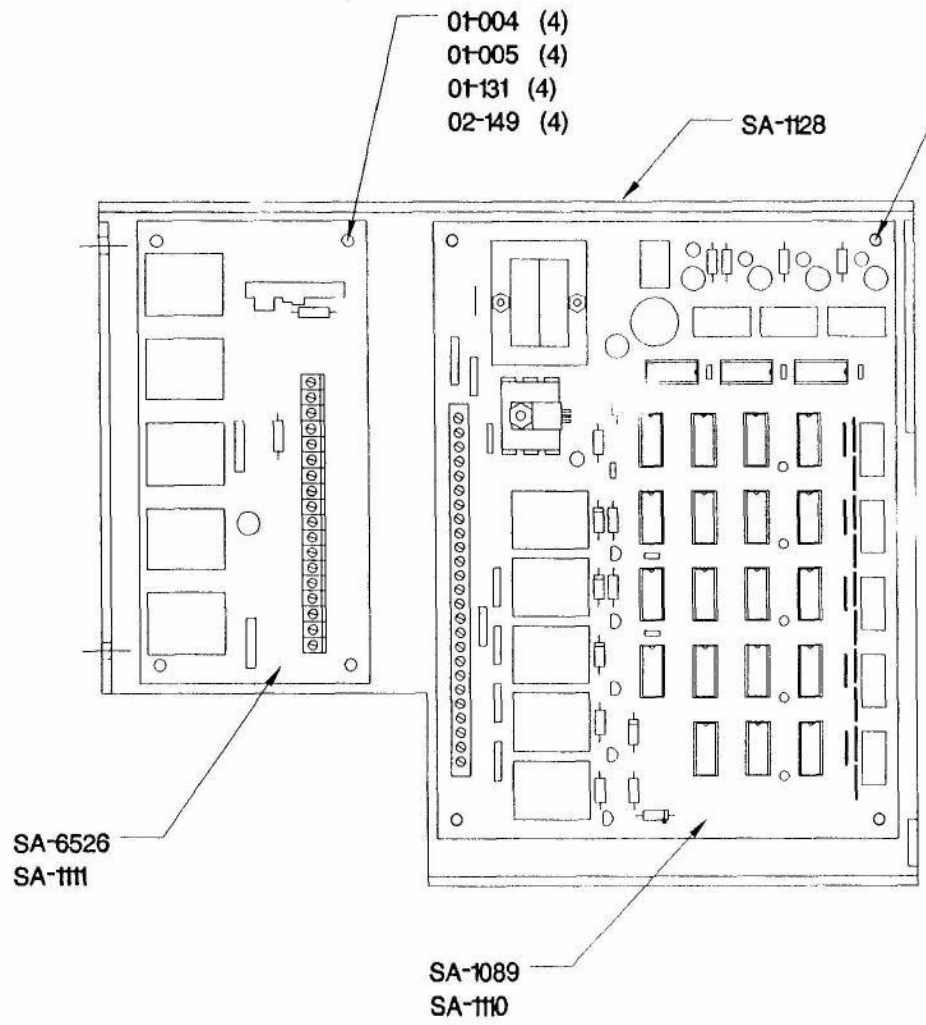


SA-9017
CORD ARM ASSEMBLY

REV. SA9017 B

GEMINI CIRCUIT ASSEMBLY

PART #	DESCRIPTION
01-004	6-32 HEX STEEL MACHINE NUT
01-005	#6 EXTERNAL TOOTH LOCKWASHER
01-131	6-32 X 5/8 INCH PAN HEAD MACHINE SCREW
02-149	SPACER
A-0351	CIRCUIT BOARD STAND OFF
LK-324	GROMMET (NOT SHOWN)
RP-137	110 VOLT GEMINI LOGIC BOARD 18 PIN TO 21 PIN CONVERSION KIT
SA-1089	GEMINI LOGIC BOARD ASSEMBLY (21 PIN) 110 V 50/60 HZ ONLY
SA-1092	RIBBON CABLE AND SWITCH CONNECTOR ASSEMBLY (NOT SHOWN)
SA-1095	CIRCUIT BOARD COVER ASSEMBLY (NOT SHOWN)
SA-6526	CIRCUIT POWER BOARD ASSEMBLY 110 V 50/60 HZ
SA-1110	GEMINI LOGIC BOARD ASSEMBLY 220 V 50/60 HZ ONLY
SA-1111	CIRCUIT POWER BOARD ASSEMBLY 220 V 50/60 HZ
SA-1128	GEMINI CIRCUIT BOARD MOUNT ASSEMBLY



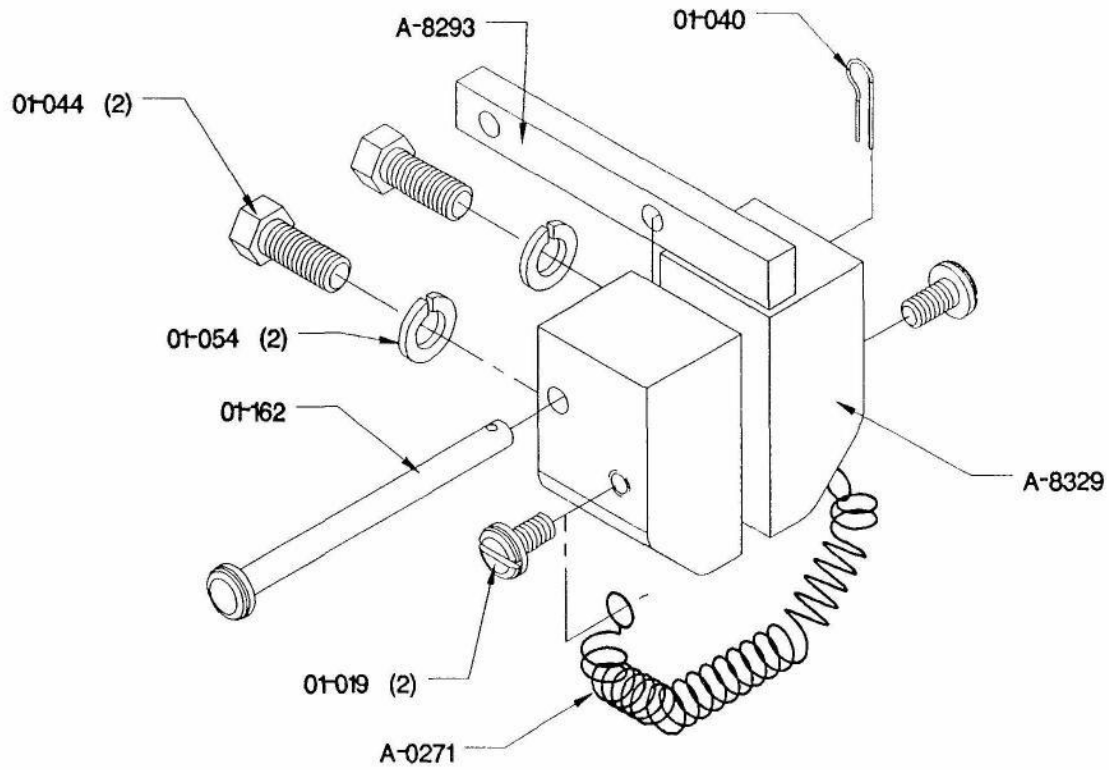
SA-1090, SA-1124
GEMINI
CIRCUIT ASSEMBLY

SA-1095 (NOT SHOWN) MOUNTS TO B-0334
W/ 01-004 (4)
01-005 (4)
A-0351 (4)

REV. SA1090 A

VACUUM HEAD SLIDE BLOCK MOUNT ASSEMBLY

PART #	DESCRIPTION
01-019	10-32 X 3/8 SLOTTED PAN HEAD MACHINE SCREW PLATED
01-040	3/64 DIAM X 9/16 HAIR PIN CLIP
01-044	1/4-20 X 5/8 HEX HEAD SCREW, GRADE 5
01-054	1/4 INCH SPLIT LOCKWASHER
01-162	3/16 DIAM X 2 1/2 INCH CLEVIS PIN
A-0271	SPRING
A-8293	SLIDE BLOCK LINKAGE
A-8329	VACUUM HEAD SLIDE BLOCK MOUNT
SA-9036	VACUUM HEAD SLIDE BLOCK MOUNT ASSEMBLY



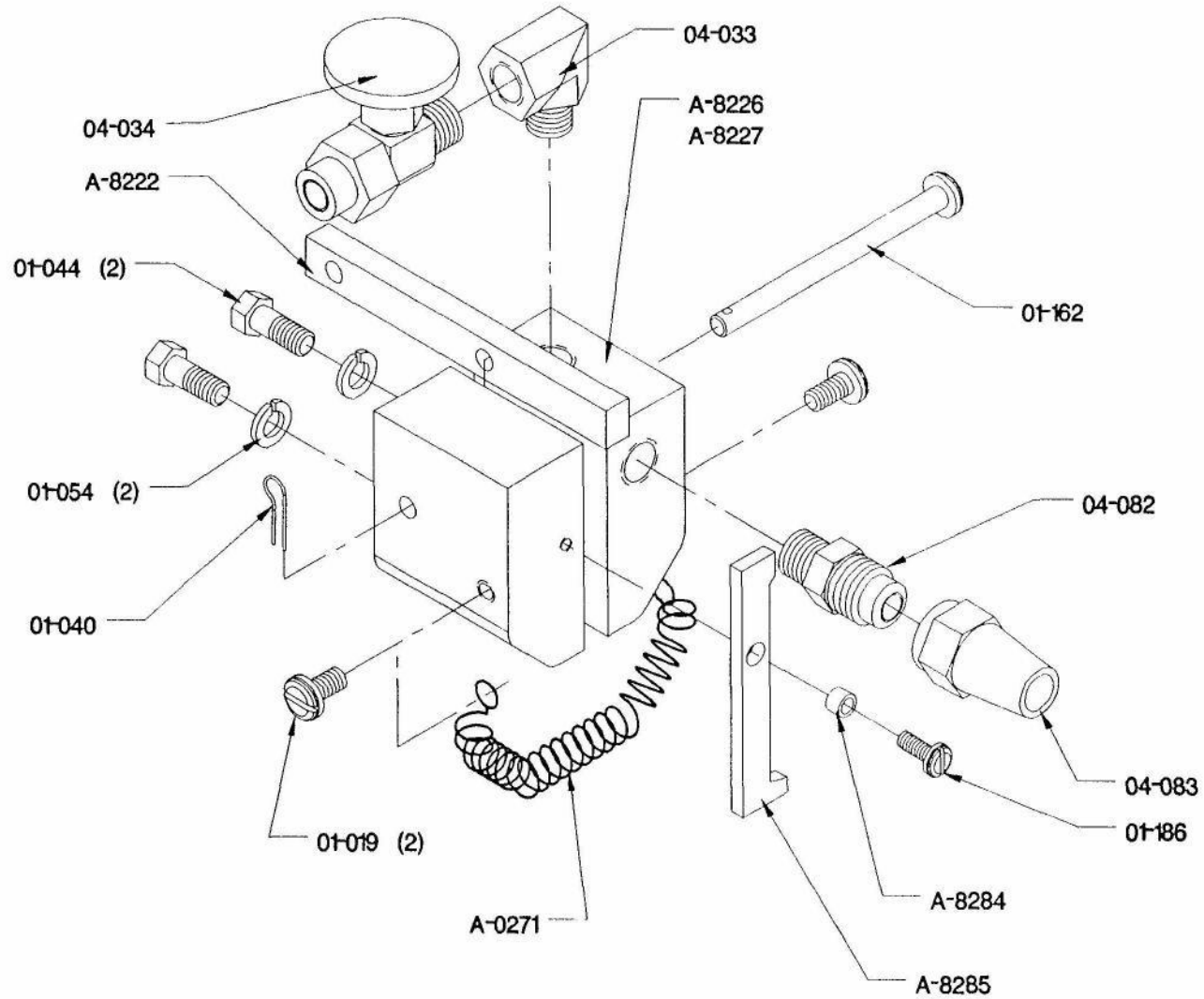
NOTE : 01-044 & 01-054 ARE NOT SUPPLIED WITH SA-9036

SA-9036
VACUUM HEAD SLIDE BLOCK MOUNT ASSEMBLY

REV. SA9036 A

CLEANER PAD TRAY MOUNT ASSEMBLY

PART #	DESCRIPTION
01-019	10-32 X 3/8 PAN HEAD MACHINE SCREW, PLATED
01-040	HAIR PIN CLIP
01-044	1/4-20 X 5/8 HEX HEAD BOLT, PLATED
01-054	1/4 INCH SPLIT LOCKWASHER
01-162	3/16 X 2 1/2 INCH CLEVIS PIN
01-186	6-32 X 3/8 SLOTTED PAN HEAD MACHINE SCREW, PLATED
01-277	1/8 DIA X 1/8 S/S POP RIVET
01-303	.130 ID X .344 OD X .025 THICK FLAT WASHER, S/S
04-013	HEX NIPPLE
04-033	STREET ELBOW
04-034	SHUT OFF VALVE
04-036X12	POLY TUBING 12 INCH LENGTH
04-082	MALE CONNECTOR
04-083	UNION NUT
04-444	MALE ELBOW
A-0271	SPRING
A-8222	CLEANER PAD LINKAGE ARM
A-8226	CLEANER PAD TRAY MOUNT - RIGHT
A-8227	CLEANER PAD TRAY MOUNT - LEFT
A-8275	VELCRO HOOK 5/8 X 42
A-8384	CLEANER TRAY LOCK PIVOT
A-8285	CLEANER TRAY LOCK
RP-41	PLASTIC SLEEVE ONLY FOR 04-036 POLY TUBING
SA-8511	CLEANER PAD TRAY MOUNT ASSEMBLY - RIGHT
SA-8512	CLEANER PAD TRAY MOUNT ASSEMBLY - LEFT



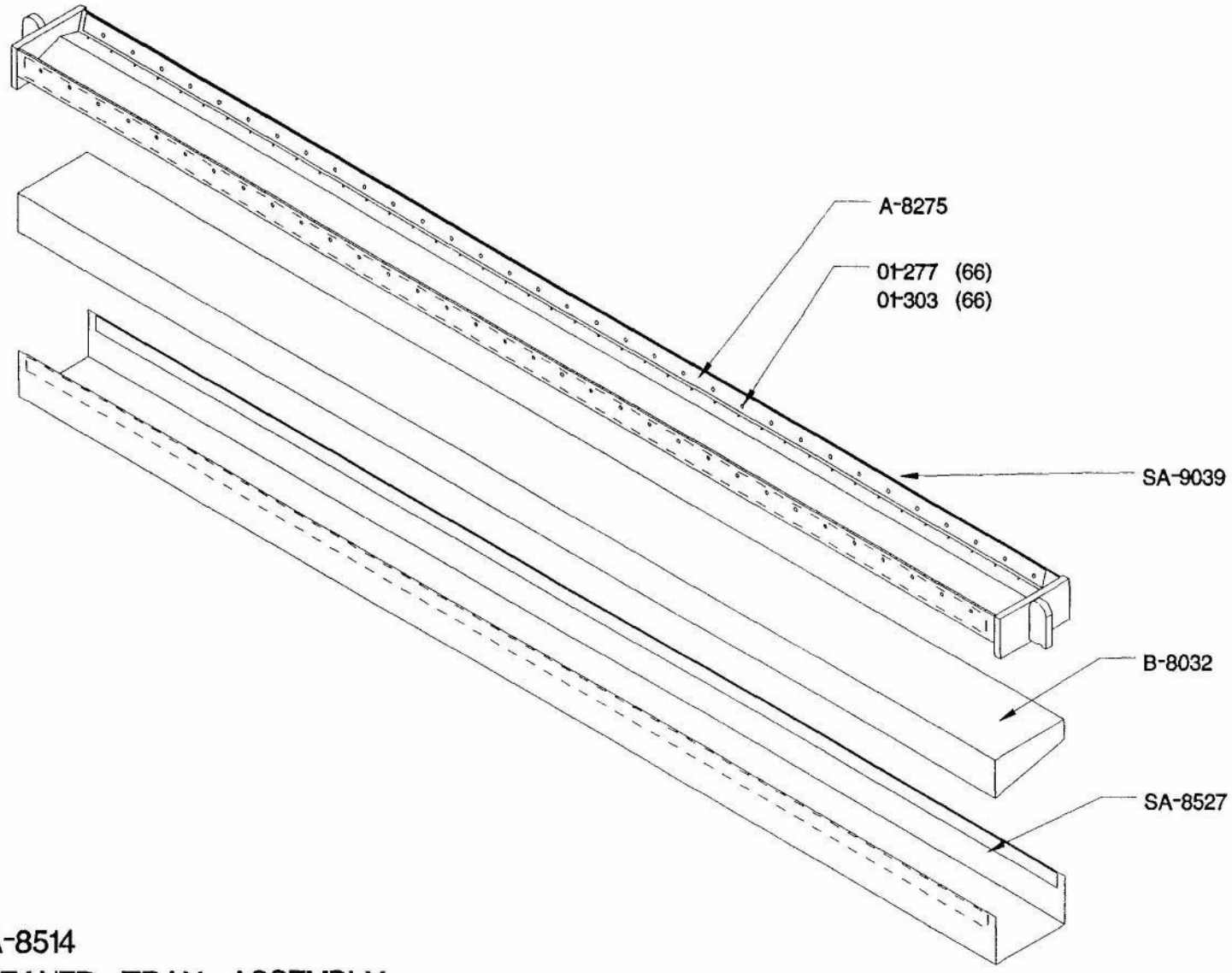
SA-8511, SA-8512
CLEANER PAD TRAY MOUNT ASSEMBLY

NOTE : 01-044 & 01-054 ARE NOT SUPPLIED WITH SA-8511, SA-8512

REV. SA8511 B

CLEANER TRAY ASSEMBLY

PART #	DESCRIPTION
01-227	1/8 X 1/8 STAINLESS STEEL POP RIVET
01-216	#6 USS WROUGHT WASHER TYPE A STAINLESS STEEL
A-8375	VELCRO HOOK SIDE 5/8 X 42 INCHES
B-8032	CLEANER TRAY SPONGE
SA-8514	CLEANER TRAY ASSEMBLY COMPLETE
SA-8527	CLEANER PAD COVER WITH VELCRO
SA-9039	CLEANER TRAY WITH VELCRO ONLY

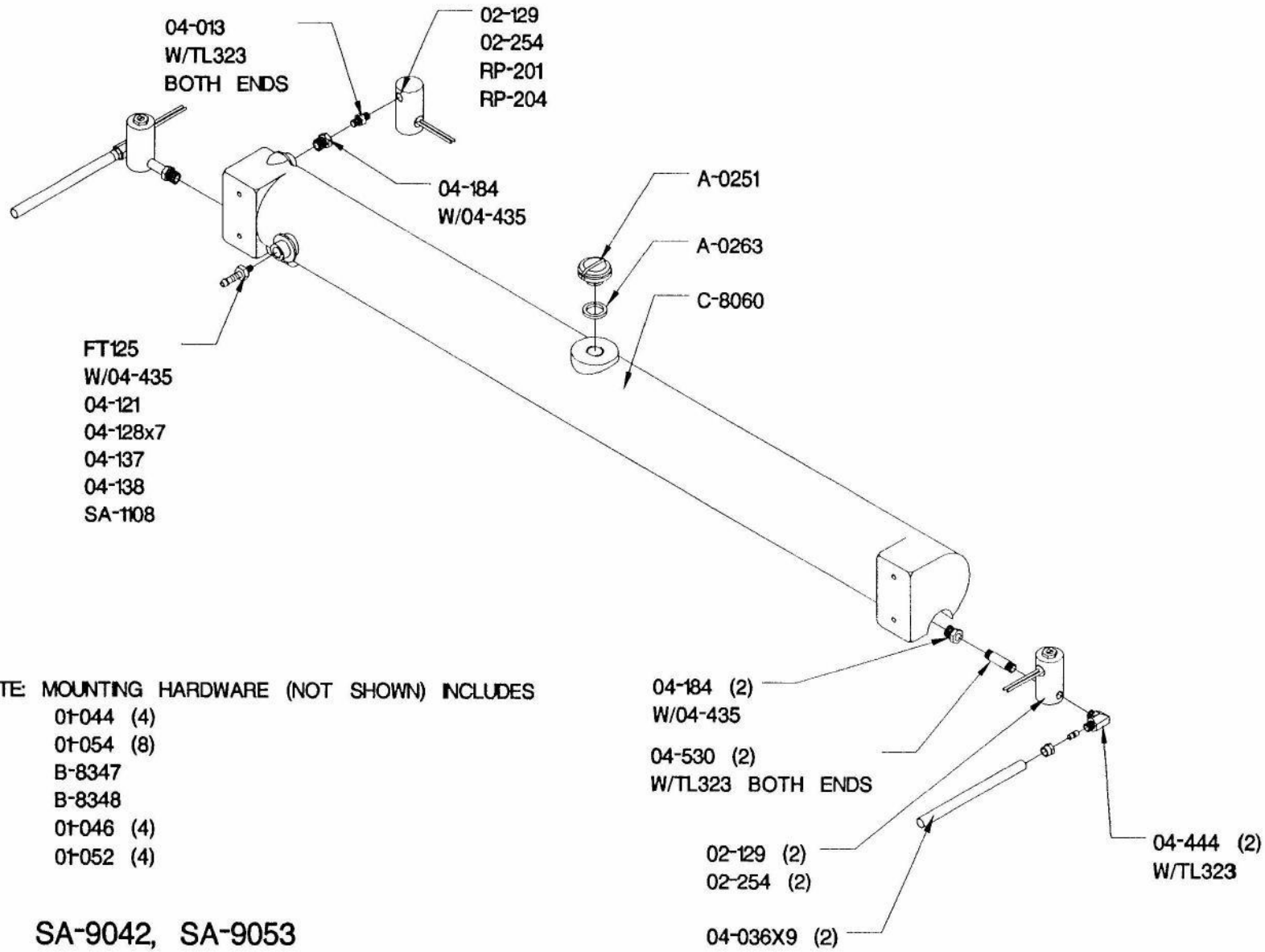


SA-8514
CLEANER TRAY ASSEMBLY

REV. SA8514 B

CLEANER TANK ASSEMBLY

PART #	DESCRIPTION
01-044	1/4-20 X 5/8 HEX HEAD SCREW, GRADE 5 PLATED
01-046	1/4-20 X 3/4 HEX HEAD SCREW, GRADE 5, PLATED
01-052	1/4-20 HEX STEEL MACHINE NUT, PLATED
01-054	1/4 INCH SPLIT LOCKWASHER, PLATED
02-129	SOLENOID VALVE 110 VOLT
02-254	SOLENOID VALVE 220 VOLT
04-036X9	POLY TUBING 9 INCH LENGTH
04-121	CLAMP
04-128X7	DRAIN TUBING
04-137	1/4 INCH X 1/4 INCH PANEL MOUNT COUPLING BODY
04-138	1/4 INCH X 1/4 INCH PANEL MOUNT COUPLING INSERT
04-154	1/8 INCH BRASS CLOSE NIPPLE (STAINLESS STEEL TANKS ONLY)
04-169	DUCKBILL VALVE
04-184	3/4 NPT TO 1/8 RE BUSHING
04-435	TUBE OF SEALANT FOR THREAD SEAL ON FITTINGS
04-444	MALE ELBOW
04-530	1/8 X 1 1/2 BRASS NIPPLE (PLASTIC TANKS ONLY)
A-0251	CLEANER TANK PLUG
A-0263	CLEANER TANK FILLER PLUG WASHER
A-8058	DUCKBILL VALVE THREADED FITTING (PLASTIC TANK ONLY)
B-8347	LEFT PLASTIC CLEANER TANK MOUNTING BRACKET
B-8348	RIGHT PLASTIC CLEANER TANK MOUNTING BRACKET
C-8060	CLEANER TANK PLASTIC
FT125	BARBED HOSE FITTING
RP-41	PLASTIC SLEEVE ONLY FOR 04-036 POLY TUBING
RP-201	75EELECTRONIC DUCK BILL VALVE UPDATE KIT, 110V
RP-204	ELECTRONIC DUCK BILL VALVE UPDATE KIT, 220V
SA-1108	CLEANER TANK DRAIN HOSE ASSEMBLY
SA-9042	PLASTIC CLEANER TANK ASSEMBLY, 110V
SA-9053	PLASTIC CLEANER TANK ASSEMBLY, 220V
TL323	TEFLON TAPE



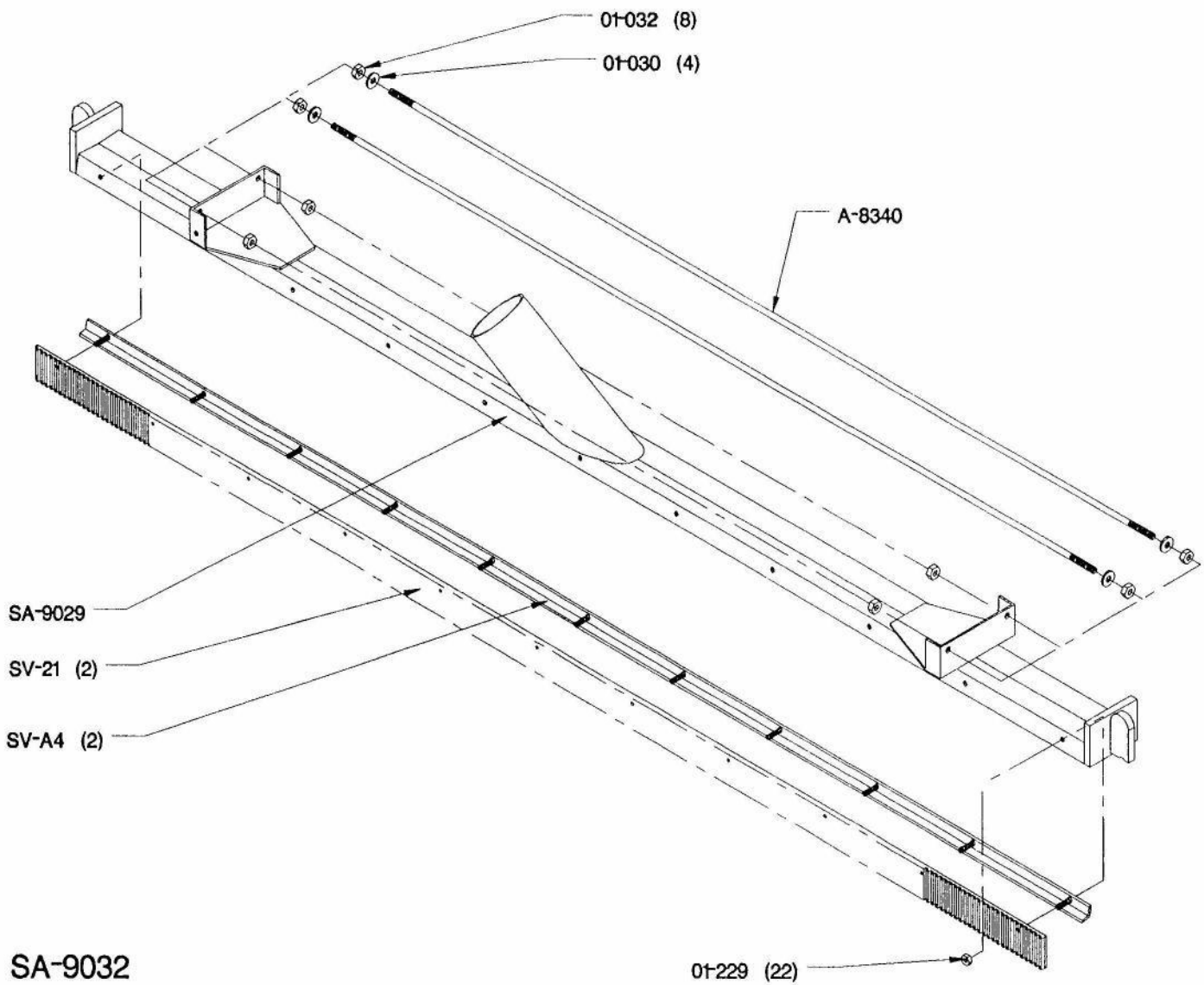
NOTE: MOUNTING HARDWARE (NOT SHOWN) INCLUDES
- 01-044 (4)
- 01-054 (8)
- B-8347
- B-8348
- 01-046 (4)
- 01-052 (4)

SA-9042, SA-9053
CLEANER TANK PLASTIC ASSEMBLY

REV. SA9042 D

VACUUM HEAD ASSEMBLY

PART #	DESCRIPTION
01-030	#10 FLAT WASHER, TYPE A, PLATED
01-032	10-32 HEX STEEL MACHINE NUT, PLATED
01-229	6-32 NYLON INSERT HEX LOCK NUT, STAINLESS STEEL
A-8340	VACUUM HEAD TENSION ROD
SA-9029	VACUUM HEAD WELDMENT ONLY
SA-9032	VACUUM HEAD ASSEMBLY
SV-21	URETHANE SQUEEGEE
SV-A4	SQUEEGEE BRACKET ASSEMBLY

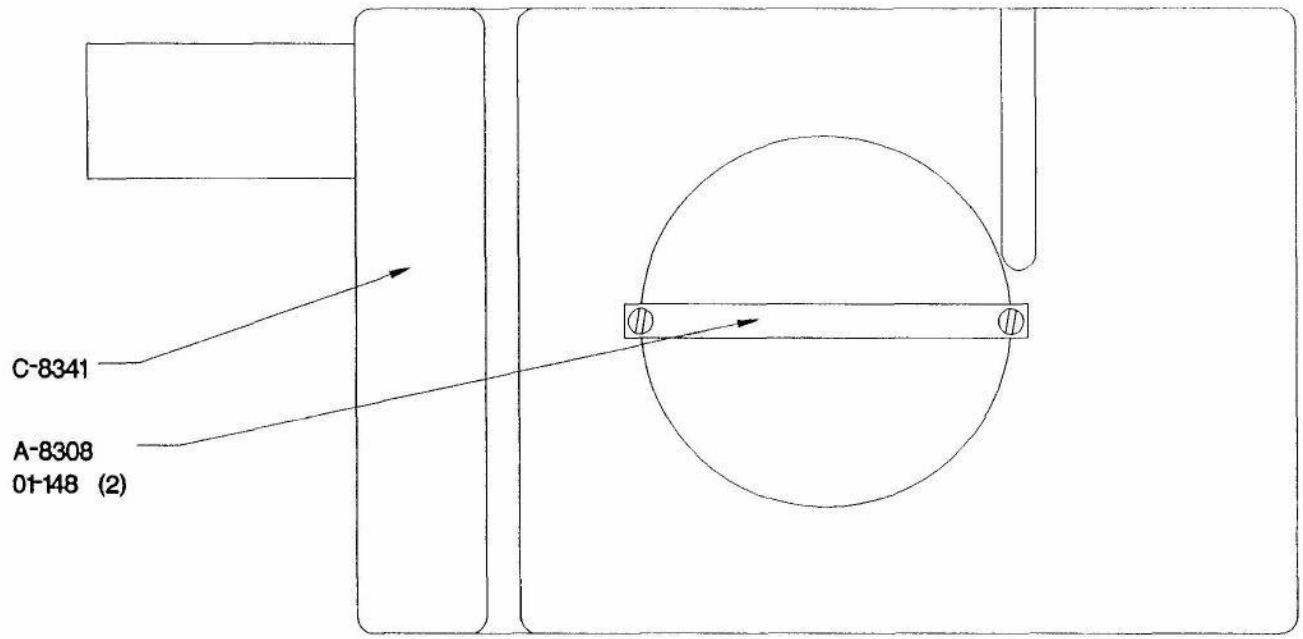


SA-9032
VAC-HEAD ASSEMBLY

REV. SA9032 A

VACUUM WASTE TANK ASSEMBLY

PART #	DESCRIPTION
01-148	1/4-20 X 3/4 SLOTTED FLAT HEAD MACHINE SCREW, PLATED
A-8307	WASTE TANK SEAL (NOT SHOWN)
A-8308	WASTE TANK HANDLE
C-8341	POLYETHYLENE WASTE TANK ONLY
SA-1129	GEMINI POLYETHYLENE WASTE TANK ASSEMBLY

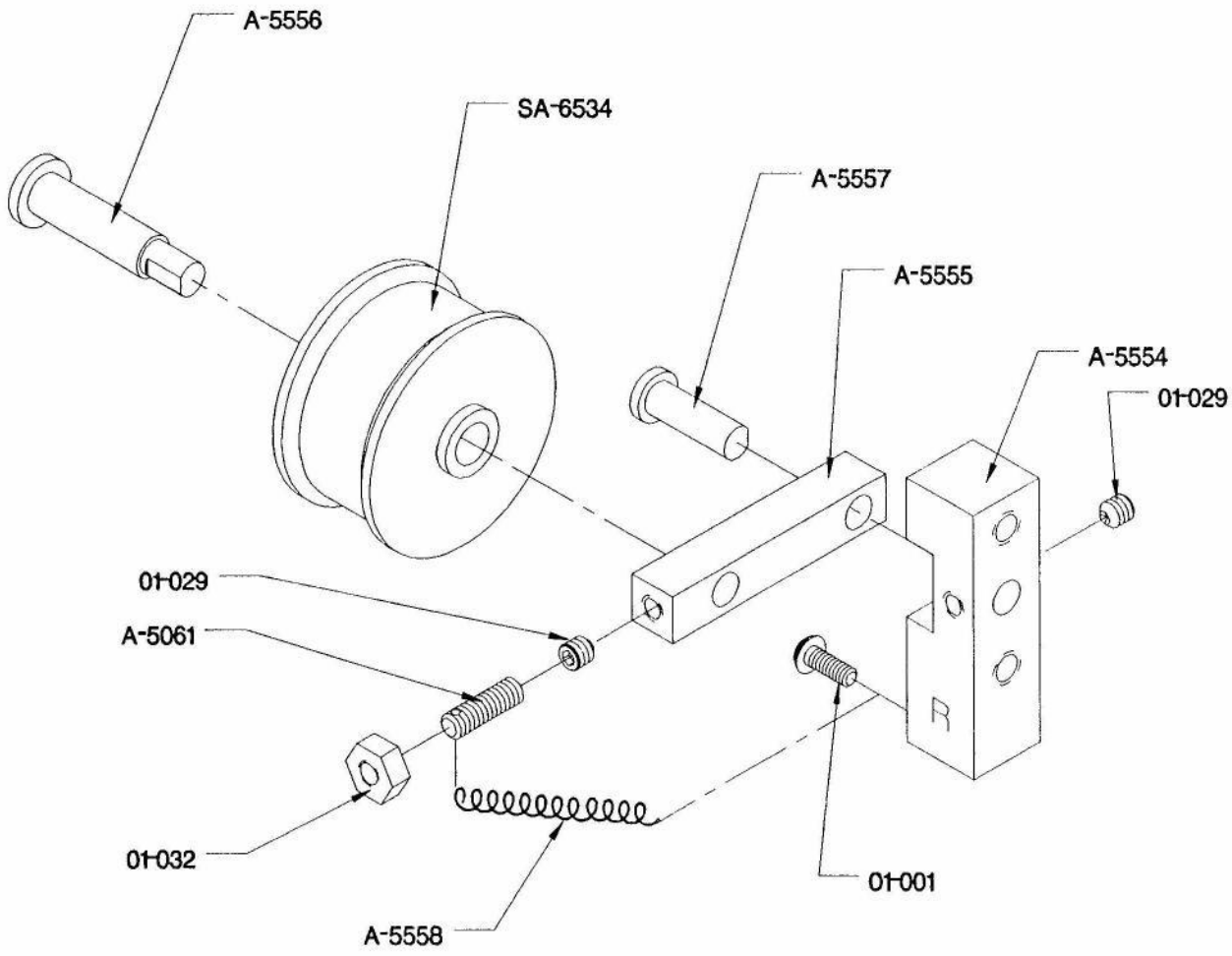


SA-1129
WASTE TANK ASSEMBLY

REV. SA1129 B

DRESSING BUFFER SPRING LOADED IDLER PULLEY ASSEMBLY

PART #	DESCRIPTION
01-001	6-32 X 3/8 SLOTTED ROUND HEAD MACHINE SCREW, PLATED
01-029	10-32 X 3/16 HEX SOCKET HEAD SET SCREW, CUP POINT
01-032	10-32 HEX STEEL MACHINE NUT, PLATED
A-5061	SPRING BOLT
A-5554	IDLER MOUNT BRACKET
A-5555	IDLER PIVOT ARM
A-5556	ROLLER PIN
A-5557	PIVOT ARM PIN
A-5558	IDLER SPRING
SA6516R	DRESSING BUFFER SPRING LOADED IDLER PULLEY ASSEMBLY
SA-6534	NYLON IDLER PULLEY WITH BUSHING

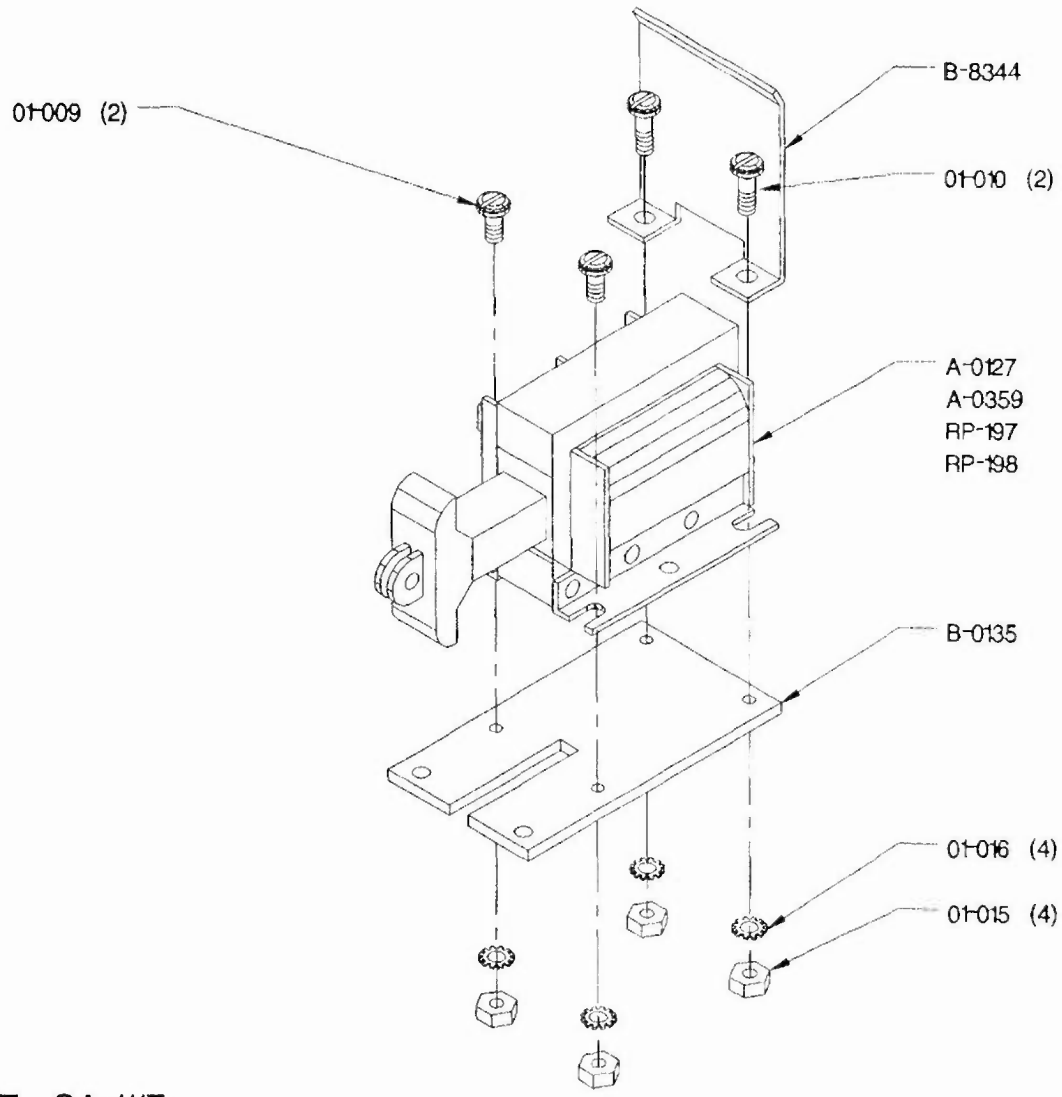


SA6516R
IDLER ASSEMBLY, RIGHT

REV. SA6516R B

DRIVE MOTOR BRAKE SOLENOID ASSEMBLY

PART #	DESCRIPTION
01-009	8-32 X 3/8 SLOTTED PAN HEAD MACHINE SCREW, PLATED
01-010	8-32 X 1/2 SLOTTED PAN HEAD MACHINE SCREW, PLATED
01-015	8-32 HEX STEEL MACHINE NUT, PLATED
01-016	#8 EXTERNAL TOOTH LOCKWASHER, PLATED
A-0127	BRAKE SOLENOID MODIFIED 110 V 50/60 HZ
A-0359	BRAKE SOLENOID MODIFIED 220 V 50/60 HZ
B-0135	BRAKE SOLENOID MOUNTING PLATE
B-8344	BRAKE SOLENOID HEAT SHIELD
RP-197	ELECTRONIC DRIVE MOTOR BRAKE UPDATE KIT, 110V
RP-197	ELECTRONIC DRIVE MOTOR BRAKE UPDATE KIT, 220V
SA-1117	DRIVE MOTOR BRAKE SOLENOID ASSEMBLY 220V 50/60 HZ
SA-9037	DRIVE MOTOR BRAKE SOLENOID ASSEMBLY 110V 50/60 HZ

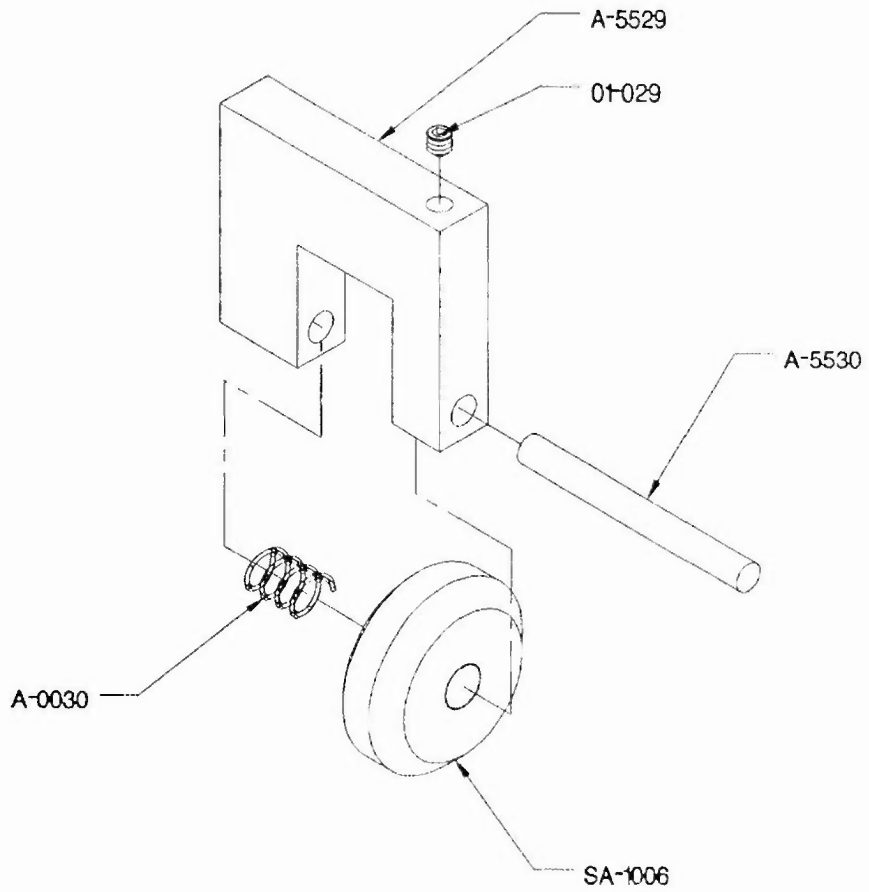


SA-9037, SA-1117
BRAKE SOLENOID ASSEMBLY

REV. SA9037 C

FRONT GUIDE ROLLER ASSEMBLY

PART #	DESCRIPTION
01-029	10-32 X 3/16 HEX SOCKET HEAD SET SCREW, CUP POINT
01-095	8-32 X 1/8 HEX SOCKET HEAD SET SCREW, CUP POINT
A-0030	FRONT GUIDE ROLLER SPRING
A-5529	FRONT GUIDE ROLLER BRACKET
A-5530	FRONT GUIDE ROLLER SHAFT
SA-1006	FRONT NYLON GUIDE ROLLER
SA-6509	FRONT GUIDE ROLLER ASSEMBLY

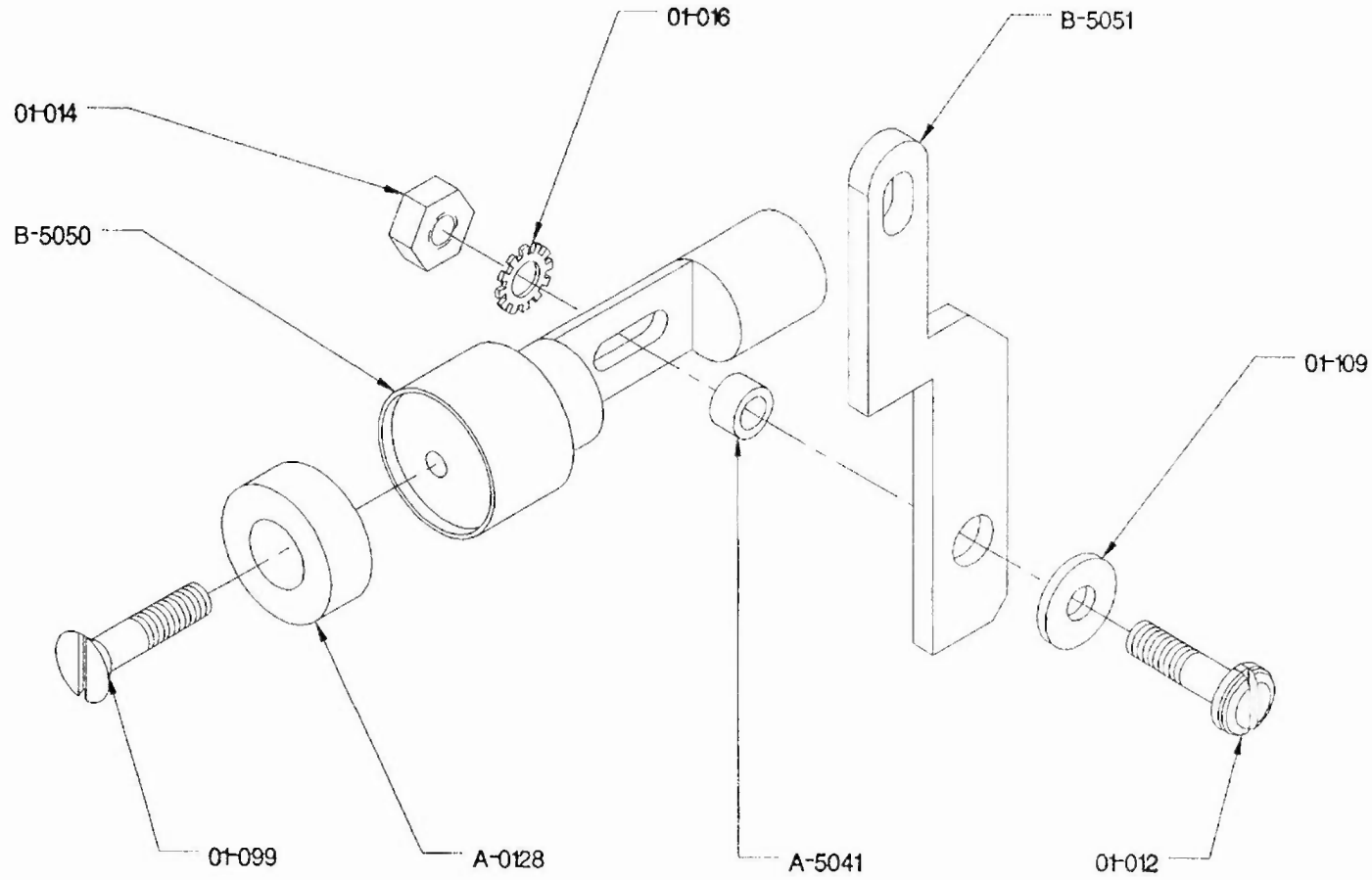


SA-6509
FRONT GUIDE ASSEMBLY

REV. SA6509 D

DRIVE MOTOR BRAKE PISTON ASSEMBLY

PART #	DESCRIPTION
01-012	8-32 X 5/8 SLOTTED PAN HEAD MACHINE SCREW
01-014	8-32 NYLON INSERT LOCKNUT, PLATED
01-016	#8 EXTERNAL TOOTH LOCKWASHER, PLATED
01-099	8-32 X 3/4 PAN HEAD MACHINE SCREW
01-109	#8 FLAT WASHER
A-0128	BRAKE PISTON LEATHER
A-0137	BRAKE SPRING RETAINER-MOTOR END
A-0275	BRAKE COMPRESSION SPRING
A-0345	GEMINI DRIVE MOTOR BRAKE SPRING SPACER-FIREWALL
A-5041	BRAKE LEVER BUSHING
B-5050	BRAKE PISTON
B-5051	BRAKE PISTON LEVER
RP-197	ELECTRONIC DRIVE MOTOR BRAKE UPDATE KIT, 110V
RP-198	ELECTRONIC DRIVE MOTOR BRAKE UPDATE KIT, 220V
SA10362	DRIVE MOTOR BRAKE PISTON ASSEMBLY



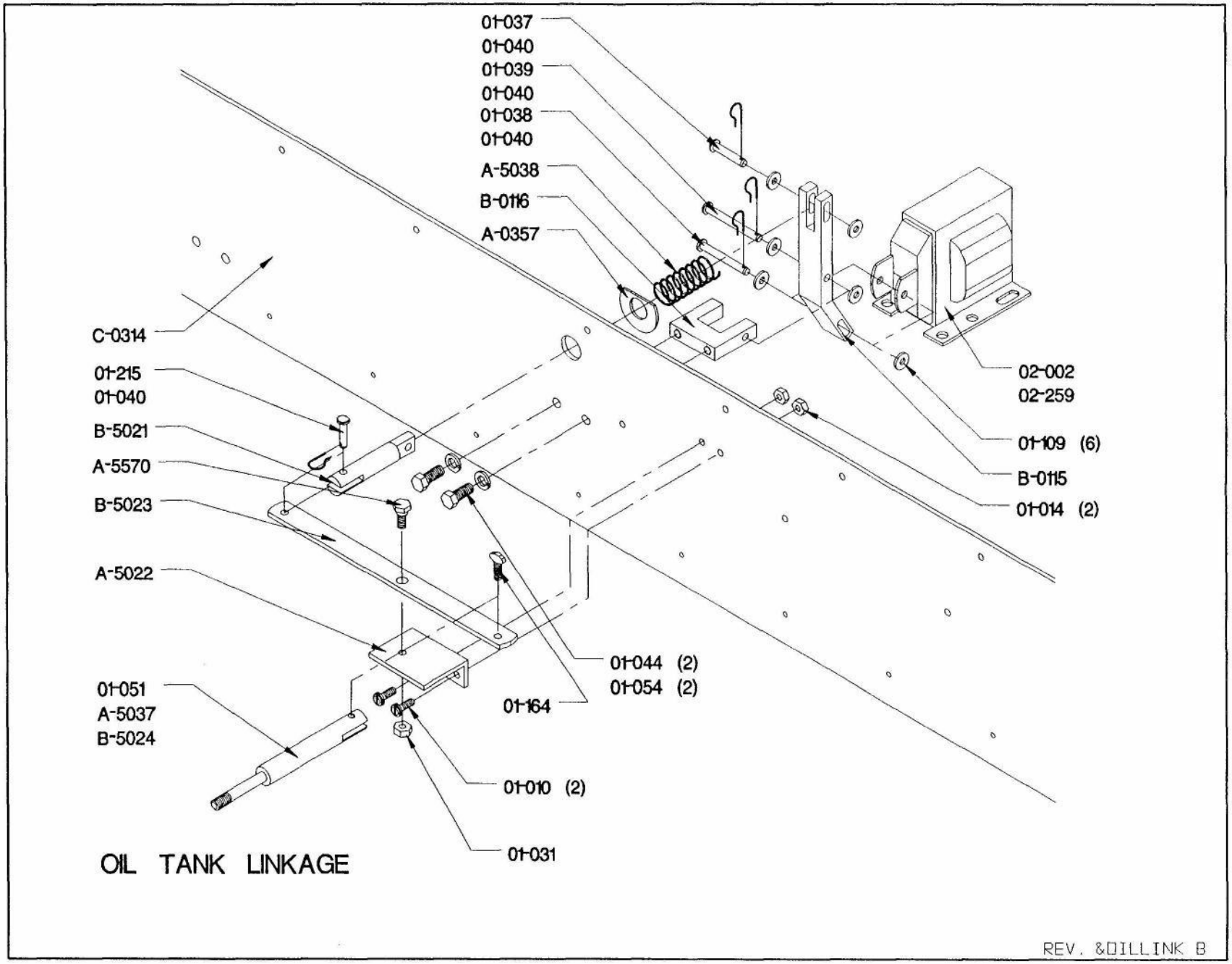
SA10362

DRIVE MOTOR BRAKE PISTON ASSEMBLY

REV. SA10362 A

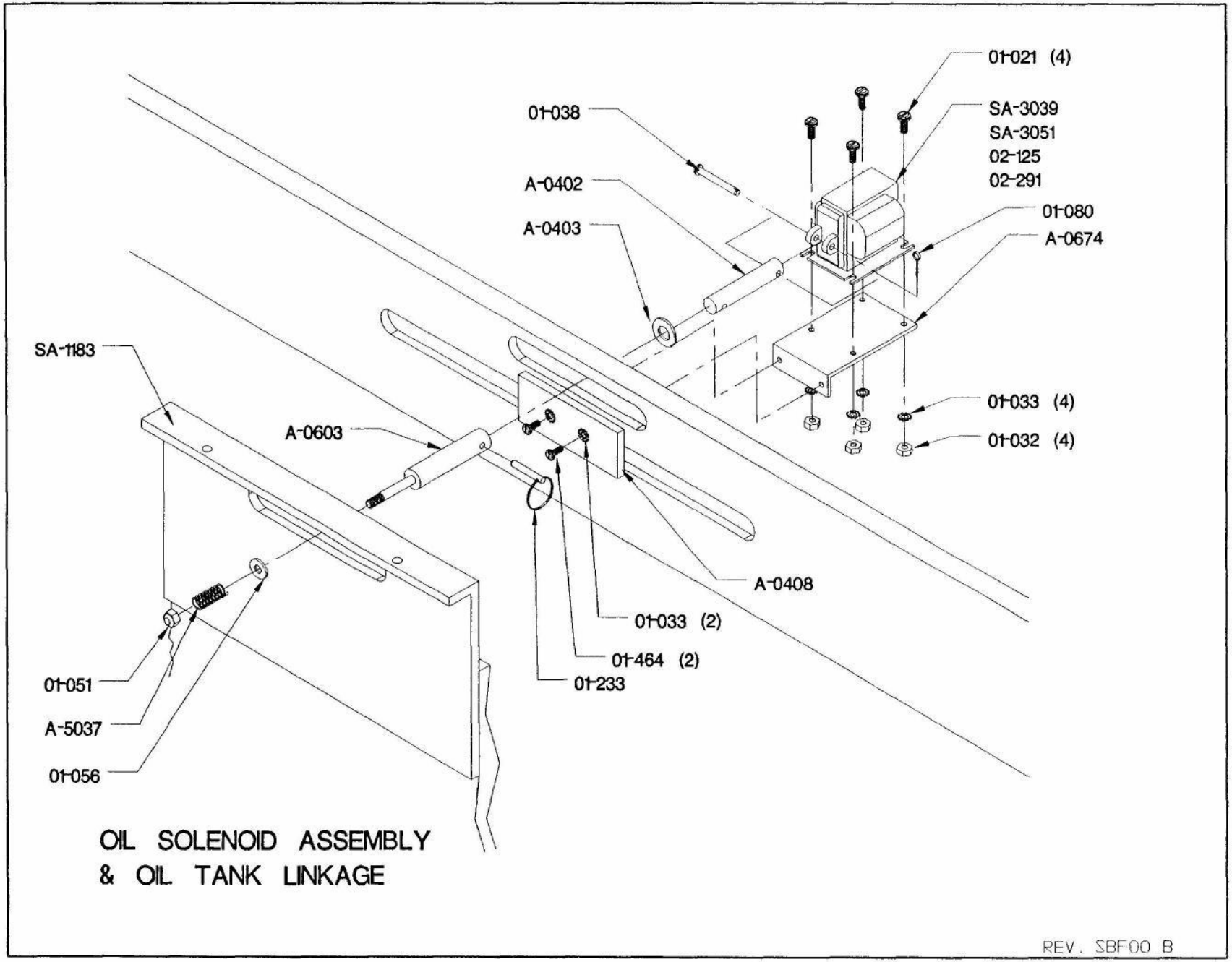
GEMINI AND GEMINI PLUS OIL TANK SOLENOID AND LINKAGE

PART #	DESCRIPTION
01-010	8-32 X 1/2 INCH SLOTTED PAN HEAD MACHINE SCREW
01-014	8-32 NYLON INSERT LOCKNUT
01-031	10-32 NYLON INSERT LOCKNUT, PLATED
01-037	3/16 DIAM X 1 INCH CLEVIS PIN
01-038	3/16 DIAM X 1 1/2 INCH CLEVIS PIN
01-039	3/64 X 1 3/4 INCH CLEVIS PIN
01-040	HAIR PIN CLIP
01-044	1/4-20 X 5/8 INCH HEX HEAD SCREW, PLATED
01-051	1/4-20 NYLON INSERT LOCKNUT
01-054	1/4 INCH SPLIT LOCKWASHER, PLATED
01-056	1/4 INCH FLATWASHER
01-080	1/16 X 1/2 INCH COTTER PIN
01-109	#8 FLATWASHER
01-164	10-32 X 1/2 INCH WING SCREW
01-215	3/16 DIA X 3/4 INCH CLEVIS PIN
02-002	OIL TANK SOLENOID 110V 50/60 HZ
02-259	OIL TANK SOLENOID 220V 50/60 HZ
A-0357	OIL TANK SPRING WASHER
A-5022	TANK TILT LEVER ANGLE
A-5037	OIL TANK LINKAGE SPRING
A-5038	OIL TANK RETURN SPRING
A-5570	TANK TILT LEVER BOLT
B-0115	TANK TILT SOLENOID ARM
B-0116	TANK TILT SOLENOID ARM BRACKET
B-5021	TANK TILT ACTIVATING ROD
B-5023	TANK TILT LEVER
B-5024	TANK TILT CONNECTING ROD
RP-76	OIL TANK LINKAGE REPAIR KIT


01-037
01-040
01-039
01-040
01-038
01-040
A-5038
B-0116
A-0357
C-0314
01-215
01-040
B-5021
A-5570
B-5023
A-5022
01-051
A-5037
B-5024
01-164
01-044 (2)
01-054 (2)
01-010 (2)
01-031
02-002
02-259
01-109 (6)
B-0115
01-014 (2)
OIL TANK LINKAGE
REV. &OILLINK B

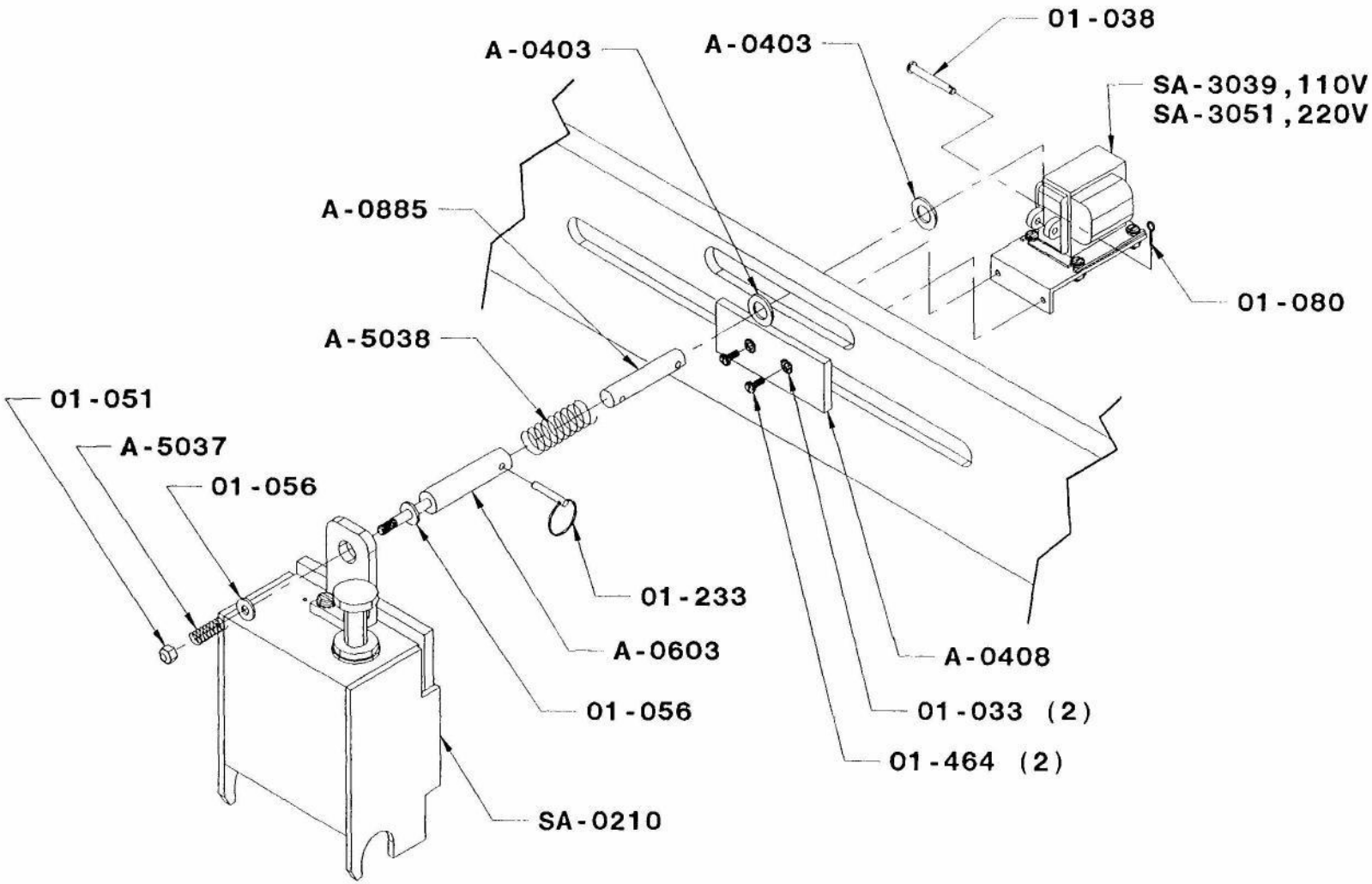
GEMINI SILVER BULLET OIL SOLENOID ASSEMBLY AND LINKAGE

PART #	DESCRIPTION
01-021	10-32 X 1/2 INCH SLOTTED PAN HEAD MACHINE SCREW, PLATED
01-032	10-32 HEX STEEL MACHINE NUT, PLATED
01-033	#10 EXTERNAL TOOTH LOCKWASHER, PLATED
01-038	3/16 DIAM X 1 1/2 INCH CLEVIS PIN
01-051	1/4-020 NYLON INSERT LOCKNUT
01-056	1/4 INCH FLATWASHER
01-080	1/16 X 1/2 INCH COTTER PIN
01-233	COTTERLESS HITCH PIN
01-464	10-32 X 1/2 BUTTON HEAD CAP SCREW
02-125	OIL SOLENOID 110 VOLT 50/60HZ
02-291	OIL SOLENOID 220 VOLT 50/60HZ
A-0402	OIL TANK LINKAGE GEMINI SILVER BULLET
A-0403	LINKAGE WASHER
A-0408	SOLENOID MOUNT STIFFENER
A-0603	OIL TANK PULL ROD
A-0674	OIL SOLENOID MOUNTING BRACKET
A-5037	OIL TANK LINKAGE SPRING
SA1183A	GEMINI SILVER BULLET & PC OIL TANK FELT ASSEMBLY 5,5,20,5,5
SA1183B	GEMINI SILVER BULLET & PC OIL TANK FELT ASSEMBLY 8,5,14,5,8
SA1183C	GEMINI SILVER BULLET & PC OIL TANK FELT ASSEMBLY 7,3,20,3,7
SA1183D	GEMINI SILVER BULLET & PC OIL TANK FELT ASSEMBLY 7,5,16,5,7
SA1183E	GEMINI SILVER BULLET & PC OIL TANK FELT ASSEMBLY 6,5,17,5,7
SA1183F	GEMINI SILVER BULLET & PC OIL TANK FELT ASSEMBLY 7,4,18,4,7
SA1183G	GEMINI SILVER BULLET & PC OIL TANK FELT ASSEMBLY 8,5,17,3,7
SA1183H	GEMINI SILVER BULLET & PC OIL TANK FELT ASSEMBLY 9,4,17,3,7
SA-3039	OIL SOLENOID ASSEMBLY, 110V
SA-3051	OIL SOLENOID ASSEMBLY, 220V


01-021 (4)
SA-3039
SA-3051
02-125
02-291
01-038
A-0402
A-0403
01-080
A-0674
SA-1183
A-0603
01-033 (4)
01-032 (4)
A-0408
01-033 (2)
01-464 (2)
01-233
01-051
A-5037
01-056
OIL SOLENOID ASSEMBLY
& OIL TANK LINKAGE
REV. SBF00 B

SILVER BULLET 95 OIL TANK LINKAGE

PART #	DESCRIPTION
01-033	#10 EXTERNAL LOCK WASHER, PLATED
01-038	3/16 DIA X 1 1/2 CLEVIS PIN
01-051	1/4-20 NYLON INSERT HEX LOCK NUT, PLATED
01-056	1/4 USS WROUGHT WASHER, TYPE A, PLATED
01-080	1/16 DIA X 1/2 COTTER PIN, PLATED
01-233	3/16 DIA X 1 COTTERLESS HITCH PIN, PLATED
01-464	10-32 X 1/2 HEX SOCKET BUTTON HEAD SCREW, PLATED
A-0403	LINKAGE WASHER
A-0408	SOLENOID MOUNT STIFFENER
A-0603	TANK PULL ROD
A-0885	OIL SOLENOID LINKAGE
A-5037	OIL TANK LINKAGE SPRING
A-5038	OIL TANK RETURN SPRING
SA-0210C	OIL TANK ASSEMBLY, 3"
SA-0210D	OIL TANK ASSEMBLY, 4"
SA-0210E	OIL TANK ASSEMBLY, 5"
SA-0210F	OIL TANK ASSEMBLY, 6"
SA-0210G	OIL TANK ASSEMBLY, 7"
SA-0210H	OIL TANK ASSEMBLY, 8"
SA-0210I	OIL TANK ASSEMBLY, 9"
SA-0210J	OIL TANK ASSEMBLY, 10"
SA-0213	DIP STICK ASSEMBLY
SA-3039	OIL SOLENOID ASSEMBLY, 110 VOLT
SA-3051	OIL SOLENOID ASSEMBLY, 220 VOLT

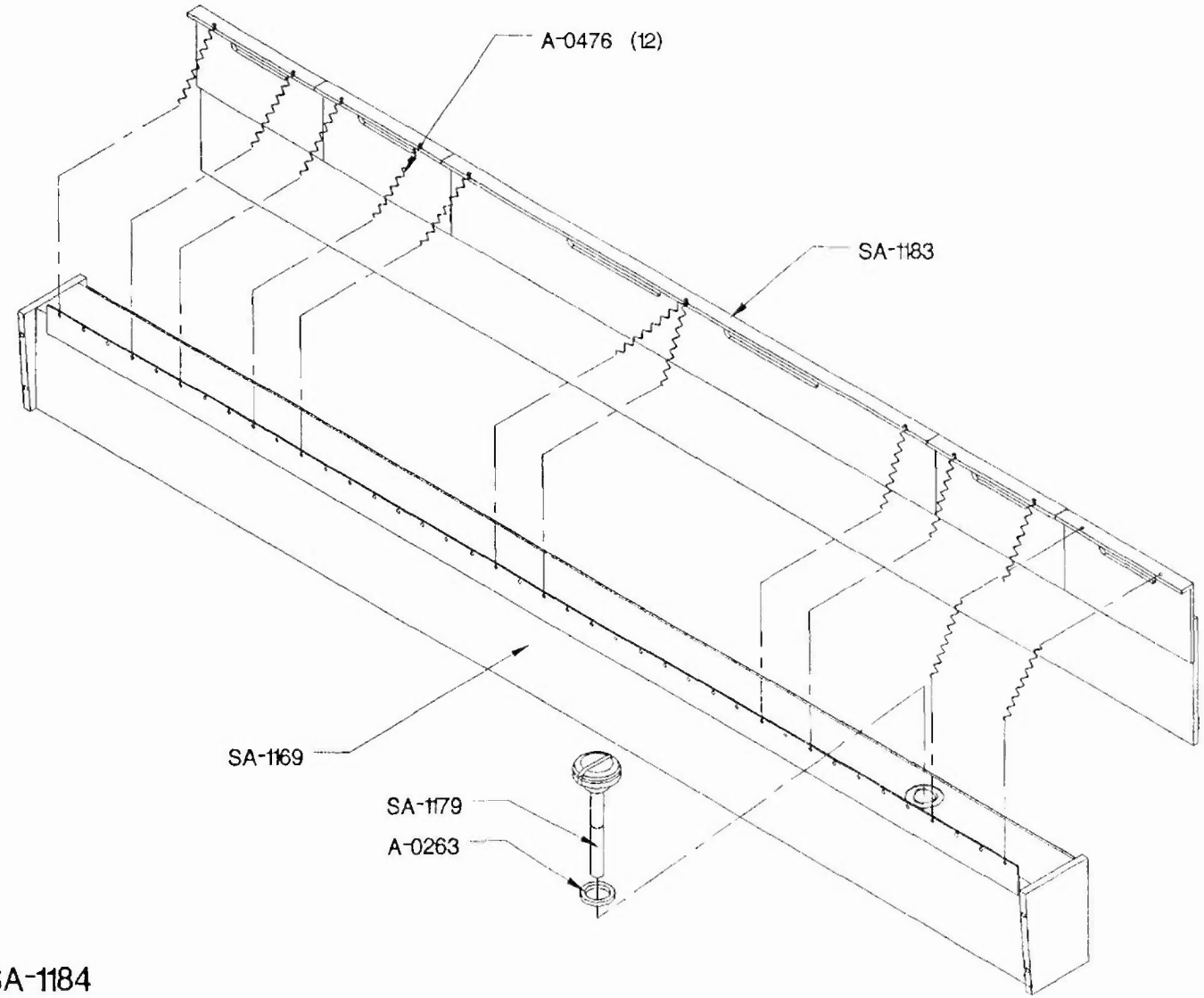


OIL TANK LINKAGE SYSTEM

REV. SBLINK

GEMINI SILVER BULLET OIL TANK ASSEMBLY

PART #	DESCRIPTION
A-0263	FILL PLUG WASHER
A-0476	WICK RETRACT SPRING
SA-1169	GEMINI SILVER BULLET & PC OIL TANK WELDMENT
SA-1179	GEMINI SILVER BULLET & PC OIL TANK DIPSTICK
SA1183A	GEMINI SILVER BULLET & PC OIL TANK FELT ASSEMBLY 5,5,20,5,5
SA1183B	GEMINI SILVER BULLET & PC OIL TANK FELT ASSEMBLY 8,5,14,5,8
SA1183C	GEMINI SILVER BULLET & PC OIL TANK FELT ASSEMBLY 7,3,20,3,7
SA1183D	GEMINI SILVER BULLET & PC OIL TANK FELT ASSEMBLY 7,5,16,5,7
SA1183E	GEMINI SILVER BULLET & PC OIL TANK FELT ASSEMBLY 6,5,17,5,7
SA1183F	GEMINI SILVER BULLET & PC OIL TANK FELT ASSEMBLY 7,4,18,4,7
SA1183G	GEMINI SILVER BULLET & PC OIL TANK FELT ASSEMBLY 8,5,17,3,7
SA1183H	GEMINI SILVER BULLET & PC OIL TANK FELT ASSEMBLY 9,4,17,3,7
SA1183J	GEMINI SILVER BULLET & PC OIL TANK FELT ASSEMBLY 4,7,18,7,4
SA1184A	GEMINI SILVER BULLET & PC OIL TANK ASSEMBLY 5,5,20,5,5
SA1184B	GEMINI SILVER BULLET & PC OIL TANK ASSEMBLY 8,5,14,5,8
SA1184C	GEMINI SILVER BULLET & PC OIL TANK ASSEMBLY 7,3,20,3,7
SA1184D	GEMINI SILVER BULLET & PC OIL TANK ASSEMBLY 7,5,16,5,7
SA1184E	GEMINI SILVER BULLET & PC OIL TANK ASSEMBLY 6,5,17,5,7
SA1184F	GEMINI SILVER BULLET & PC OIL TANK ASSEMBLY 7,4,18,4,7
SA1184G	GEMINI SILVER BULLET & PC OIL TANK ASSEMBLY 8,5,17,3,7
SA1184H	GEMINI SILVER BULLET & PC OIL TANK ASSEMBLY 9,4,17,3,7
SA1184J	GEMINI SILVER BULLET & PC OIL TANK ASSEMBLY 4,7,18,7,4
SA1183K	GEMINI SILVER BULLET & PC OIL TANK ASSEMBLY 6,5,18,5,6
SA-1184k	GEMINI SILVER BULLET & PC OIL TANK ASSEMBLY 6,5,18,5,6

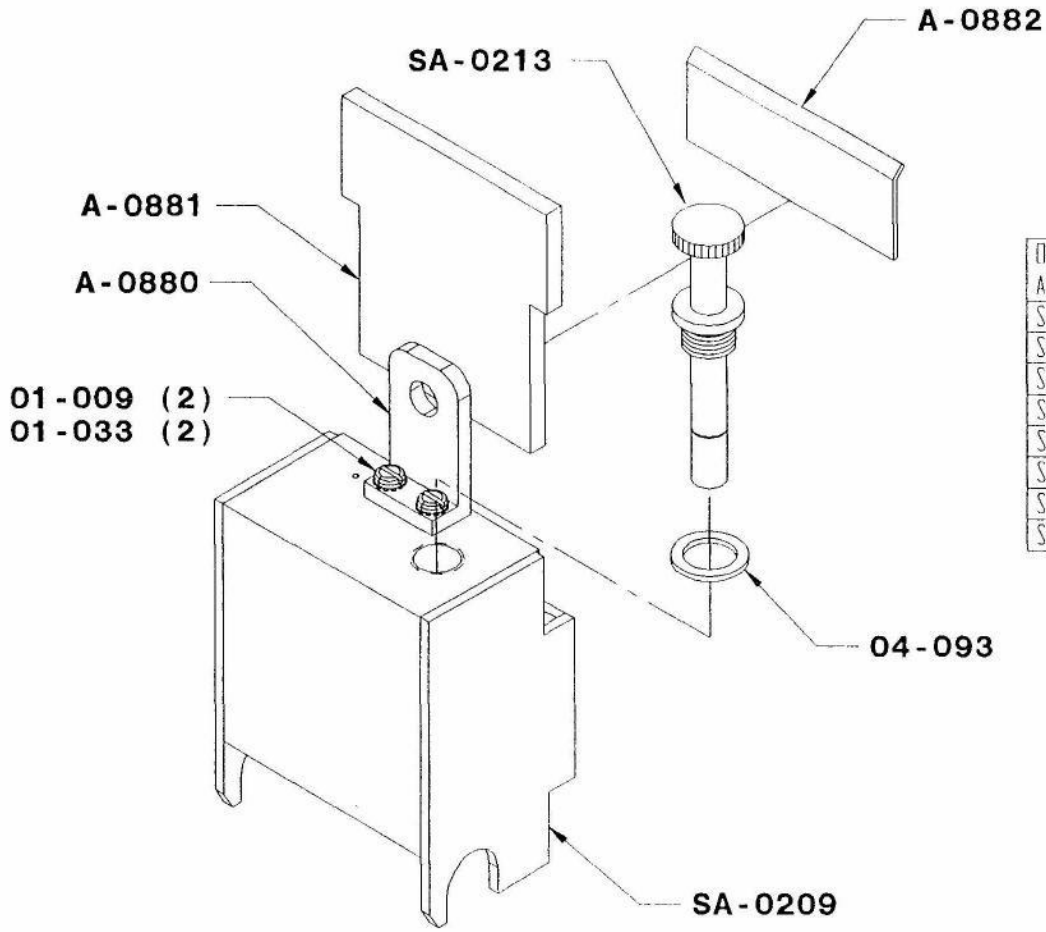


SA-1184
OIL TANK ASSEMBLY

REV. SA1184 B

SILVER BULLET 95 OIL TANK ASSEMBLY

PART #	DESCRIPTION
01-009	8-32 X 3/8 SLOTTED PAN HEAD MACHINE SCREW, PLATED
01-016	#8 EXTERNAL LOCK WASHER, PLATED
04-093	VITON WASHER
A-0880	OIL TANK PULL
A-0881C	WICK, 3"
A-0881D	WICK, 4"
A-0881E	WICK, 5"
A-0881F	WICK, 6"
A-0881G	WICK, 7"
A-0881H	WICK, 8"
A-0881I	WICK, 9"
A-0881J	WICK, 10"
A-0882C	WICK RETAINER, 3"
A-0882D	WICK RETAINER, 4"
A-0882E	WICK RETAINER, 5"
A-0882F	WICK RETAINER, 6"
A-0882G	WICK RETAINER, 7"
A-0882H	WICK RETAINER, 8"
A-0882I	WICK RETAINER, 9"
A-0882J	WICK RETAINER, 10"
SA-0209	OIL TANK WELDMENT
SA-0210C	OIL TANK ASSEMBLY, 3"
SA-0210D	OIL TANK ASSEMBLY, 4"
SA-0210E	OIL TANK ASSEMBLY, 5"
SA-0210F	OIL TANK ASSEMBLY, 6"
SA-0210G	OIL TANK ASSEMBLY, 7"
SA-0210H	OIL TANK ASSEMBLY, 8"
SA-0210I	OIL TANK ASSEMBLY, 9"
SA-0210J	OIL TANK ASSEMBLY, 10'
SA-0213	DIP STICK ASSEMBLY



OIL TANK ASSEMBLY	SIZE	OIL TANK WELDMENT	WICK	WICK RETAINER
SA-0210C	3"	SA-0209C	A-0881C	A-0882C
SA-0210D	4"	SA-0209D	A-0881D	A-0882D
SA-0210E	5"	SA-0209E	A-0881E	A-0882E
SA-0210F	6"	SA-0209F	A-0881F	A-0882F
SA-0210G	7"	SA-0209G	A-0881G	A-0882G
SA-0210H	8"	SA-0209H	A-0881H	A-0882H
SA-0210I	9"	SA-0209I	A-0881I	A-0882I
SA-0210J	10"	SA-0209J	A-0881J	A-0882J

SA-0210
OIL TANK ASSEMBLY

REV. SA0210

OIL TANK ASSEMBLY CONFIGURATIONS

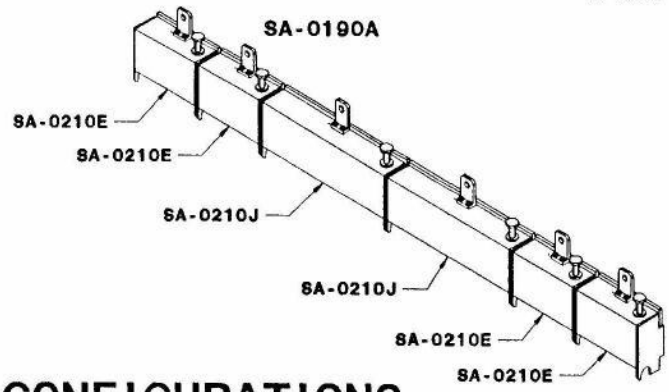
PART #	DESCRIPTION
SA-0190A	OIL TANK ASSEMBLY CONFIGURATIONS 5", 5", 10", 10", 5", 5"
SA-0190B	OIL TANK ASSEMBLY CONFIGURATIONS 8", 5", 7", 7", 5", 8"
SA-0190C	OIL TANK ASSEMBLY CONFIGURATIONS 7", 3", 10", 10", 3", 7"
SA-0190D	OIL TANK ASSEMBLY CONFIGURATIONS 7", 5", 8", 8", 5", 7"
SA-0190E	OIL TANK ASSEMBLY CONFIGURATIONS 6", 5", 7", 10", 5", 7"
SA-0190F	OIL TANK ASSEMBLY CONFIGURATIONS 7", 4", 9", 9", 4", 7"
SA-0190G	OIL TANK ASSEMBLY CONFIGURATIONS 8", 5", 7", 10", 3", 7"
SA-0190H	OIL TANK ASSEMBLY CONFIGURATIONS 9", 4", 7", 10", 3", 7"
SA-0190J	OIL TANK ASSEMBLY CONFIGURATIONS 4", 7", 9", 9", 7", 4"
SA-0190K	OIL TANK ASSEMBLY CONFIGURATIONS 6", 5", 9", 9", 5", 6"
SA-0190L	OIL TANK ASSEMBLY CONFIGURATIONS 4", 6", 10", 10", 6", 4"
SA-0190M	OIL TANK ASSEMBLY CONFIGURATIONS 8", 3", 9", 9", 3", 8"
SA-0190N	OIL TANK ASSEMBLY CONFIGURATIONS 6", 6", 8", 8", 6", 6"
SA-0190O	OIL TANK ASSEMBLY CONFIGURATIONS 3", 8", 9", 10", 6", 4"
SA-0190P	OIL TANK ASSEMBLY CONFIGURATIONS 7", 3", 10", 10", 4", 6"
SA-0190Q	OIL TANK ASSEMBLY CONFIGURATIONS 8", 5", 8", 7", 3", 9"

DWG NO.	TANK ASS'Y	QTY	TANK ASS'Y SIZE FROM LEFT TO RIGHT
SA-0190A	SA-0210E	4	5' 5" 10' 10" 5" 5'
	SA-0210J	2	
SA-0190B	SA-0210E	2	8' 5" 7" 7' 5' 8'
	SA-0210G	2	
	SA-0210H	2	
SA-0190C	SA-0210C	2	7' 3" 10' 10" 3" 7'
	SA-0210G	2	
	SA-0210J	2	
SA-0190D	SA-0210E	2	7' 5" 8" 8' 5' 7'
	SA-0210G	2	
	SA-0210H	2	
SA-0190E	SA-0210E	2	6' 5" 7" 10' 5" 7"
	SA-0210F	1	
	SA-0210G	2	
	SA-0210J	1	
SA-0190F	SA-0210D	2	7' 4" 9" 9' 4' 7'
	SA-0210G	2	
	SA-0210I	2	

DWG NO.	TANK ASS'Y	QTY	TANK ASS'Y SIZE FROM LEFT TO RIGHT
SA-0190G	SA-0210C	1	8' 5' 7' 10' 3' 7'
	SA-0210E	1	
	SA-0210G	2	
	SA-0210H	1	
	SA-0210J	1	
SA-0190H	SA-0210C	1	9" 4" 7' 10" 3" 7"
	SA-0210D	1	
	SA-0210G	2	
	SA-0210I	1	
	SA-0210J	1	
SA-0190J	SA-0210D	2	4" 7' 9" 9" 7" 4"
	SA-0210G	2	
	SA-0210I	2	
SA-0190K	SA-0210E	2	6' 5' 9" 9" 5" 6"
	SA-0210F	2	
	SA-0210I	2	
SA-0190L	SA-0210D	2	4' 6' 10" 10' 6' 4"
	SA-0210F	2	
	SA-0210J	2	

DWG NO.	TANK ASS'Y	QTY	TANK ASS'Y SIZE FROM LEFT TO RIGHT
SA-0190M	SA-0210C	2	8' 3" 9" 9' 3' 8'
	SA-0210H	2	
	SA-0210I	2	
SA-0190N	SA-0210F	4	6' 6" 8" 8' 6' 6'
	SA-0210H	2	
SA-0190O	SA-0210C	1	3' 8" 9" 10' 6" 4"
	SA-0210D	1	
	SA-0210F	1	
	SA-0210H	1	
	SA-0210I	1	
	SA-0210J	1	
SA-0190P	SA-0210C	1	7" 3" 10" 10' 4' 6"
	SA-0210D	1	
	SA-0210F	1	
	SA-0210G	1	
	SA-0210J	2	
SA-0190Q	SA-0210C	1	8" 5" 8' 7' 3" 9"
	SA-0210E	1	
	SA-0210G	1	
	SA-0210H	2	
	SA-0210I	1	

A	1"	H	8"	O	15"	V	22"
B	2"	I	9"	P	16"	W	23"
C	3"	J	10"	Q	17"	X	24"
D	4"	K	11"	R	18"	Y	25"
E	5"	L	12"	S	19"	Z	26"
F	6"	M	13"	T	20"		
G	7"	N	14"	U	21"		

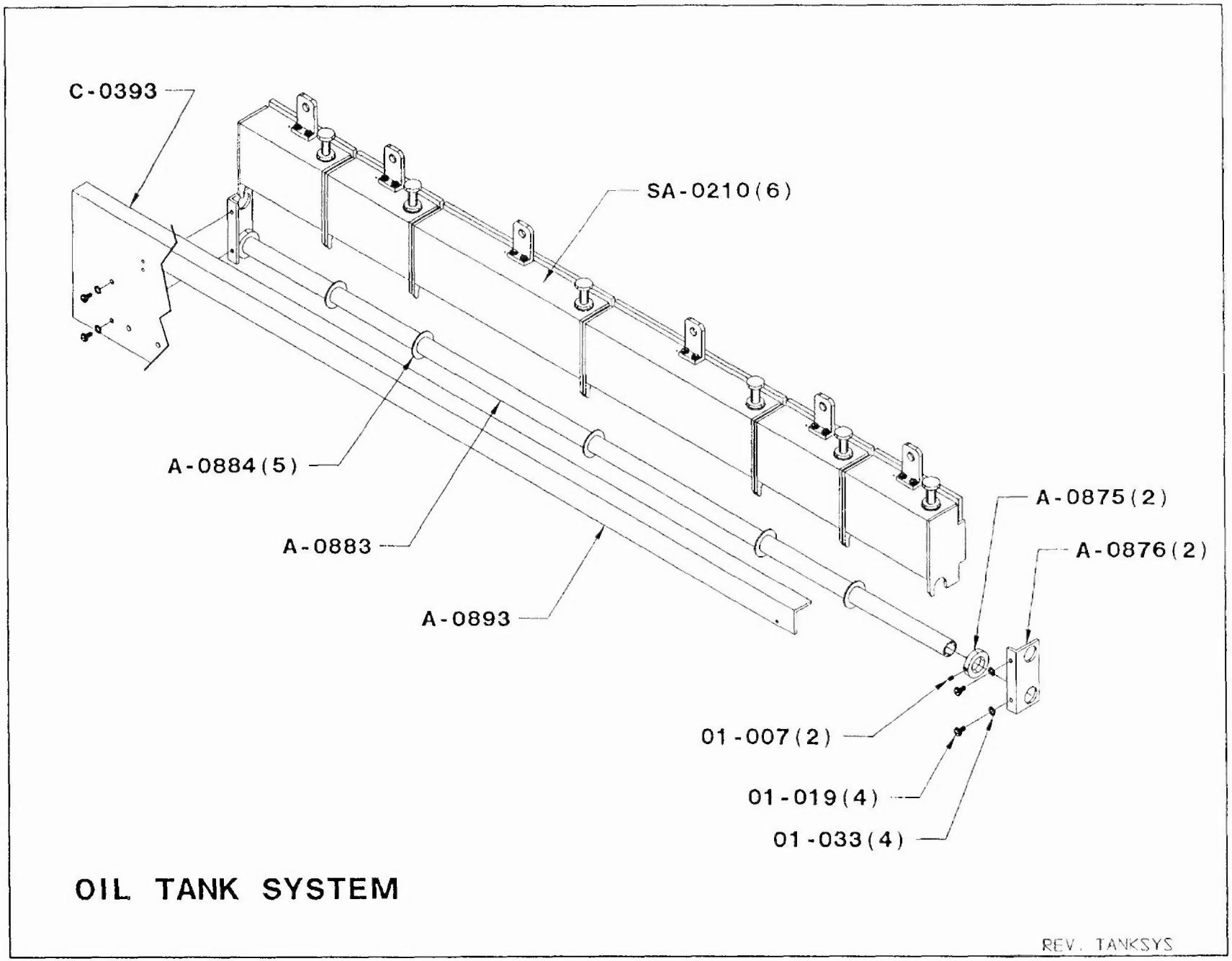


SA-0190
OIL TANK ASSEMBLY CONFIGURATIONS

REV. SA-0190 C

OIL TANK SYSTEM

PART #	DESCRIPTION
01-007	8-32 X 1/4 HEX SOCKET HEAD SET SCREW, CUP POINT
01-019	10-32 X 3/8 SLOTTED PAN HEAD MACHINE SCREW, PLATED
01-033	#10 EXTERNAL LOCK WASHER, PLATED
01-051	1/4-20 NYLON INSERT HEX LOCK NUT, PLATED
A-0875	TANK LOCK
A-0876	TANK MOUNTING TUBE BRACKET
A-0883	TANK MOUNTING TUBE
A-0884	TANK SPACER
C-0393	REAR PLATE
SA-0210C	OIL TANK ASSEMBLY, 3"
SA-0210D	OIL TANK ASSEMBLY, 4"
SA-0210E	OIL TANK ASSEMBLY, 5"
SA-0210F	OIL TANK ASSEMBLY, 6"
SA-0210G	OIL TANK ASSEMBLY, 7"
SA-0210H	OIL TANK ASSEMBLY, 8"
SA-0210I	OIL TANK ASSEMBLY, 9"
SA-0210J	OIL TANK ASSEMBLY, 10"

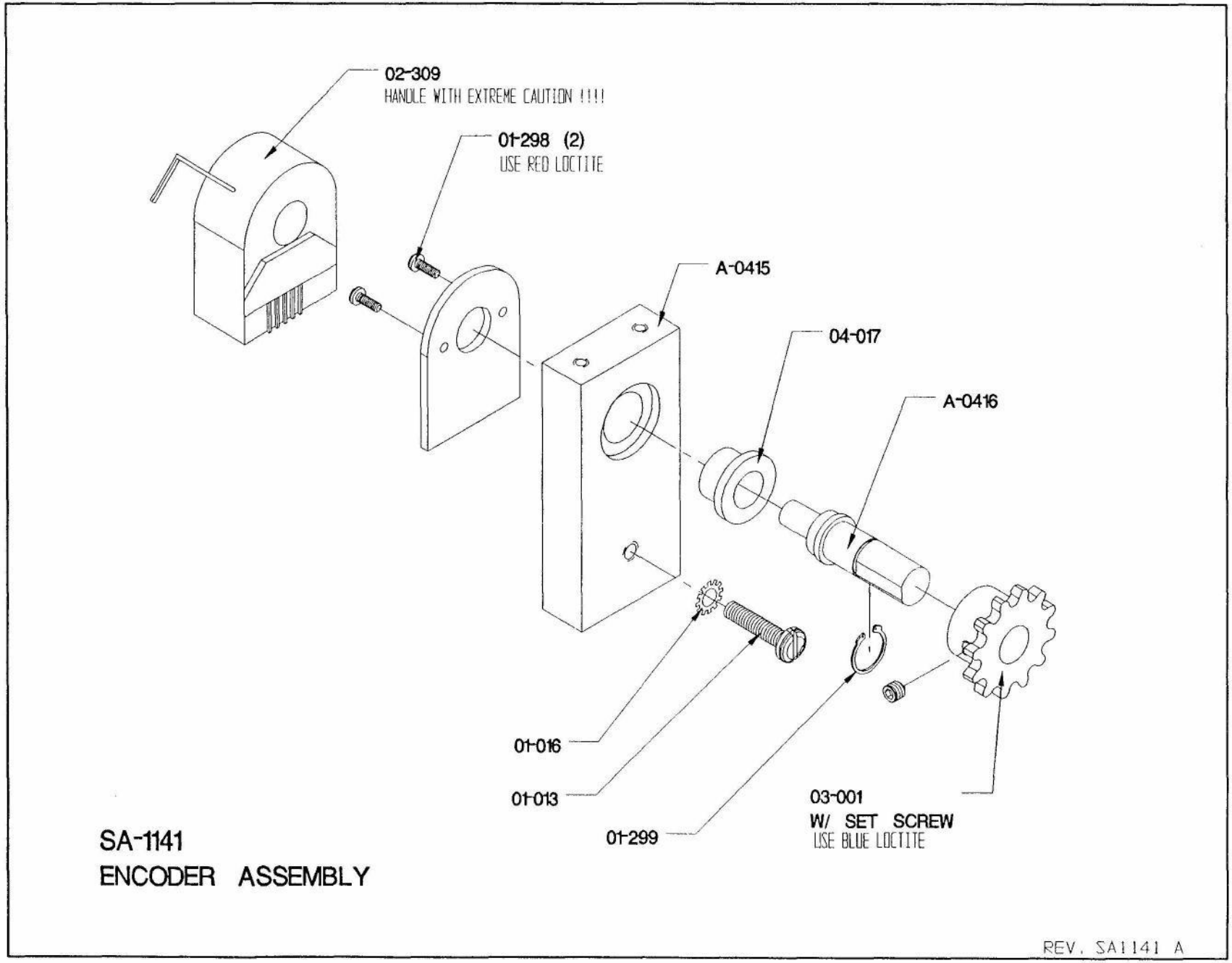


OIL TANK SYSTEM

REV. TANKSYS

GEMINI PLUS AND GEMINI SILVER BULLET DISTANCE ENCODER ASSEMBLY

PART #	DESCRIPTION
01-013	8-32 X 3/4 SLOTTED PAN HEAD MACHINE SCREW, PLATED
01-016	#8 EXTERNAL TOOTH LOCKWASHER, PLATED
01-030	#10 WROUGHT WASHER (NOT SHOWN)
01-033	#10 EXTERNAL LOCK WASHER (NOT SHOWN)
01-298	2-56 X 1/4 SLOTTED PAN HEAD MACHINE SCREW, PLATED
01-299	RETAINING RING
01-464	10-32 X 1/2 BUTTON HEAD SCREW (NOT SHOWN)
02-309	OPTICAL ENCODER
03-001	SPROCKET, 3/8 BORE
04-017	FLANGE BUSHING
A-0415	ENCODER MOUNT
A-0416	ENCODER SHAFT
A-0417	ENCODER COVER (NOT SHOWN)
SA-1141	GEMINI PLUS & SILVER BULLET OPTICAL ENCODER ASSEMBLY

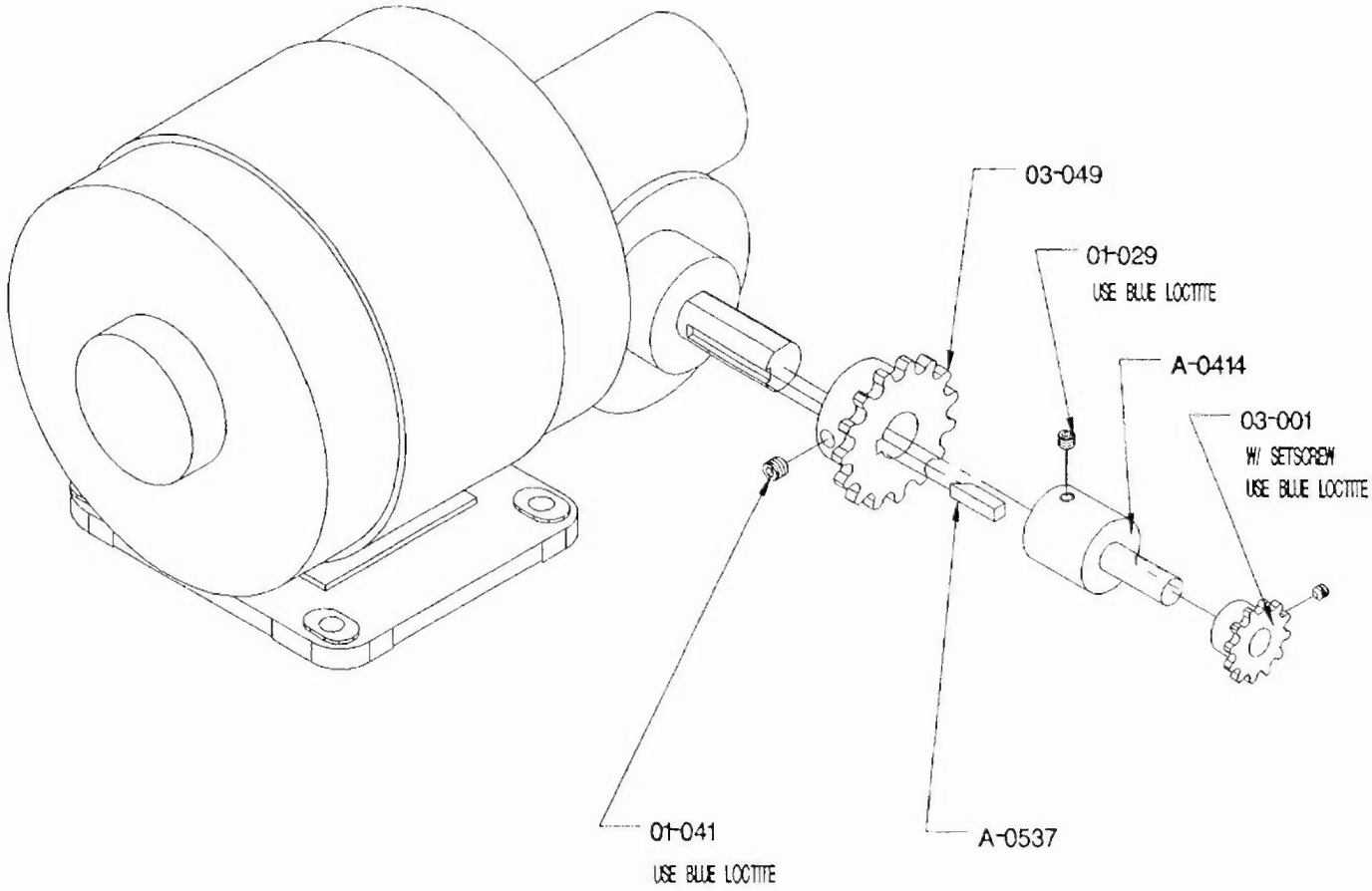


SA-1141
ENCODER ASSEMBLY

REV. SA1141 A

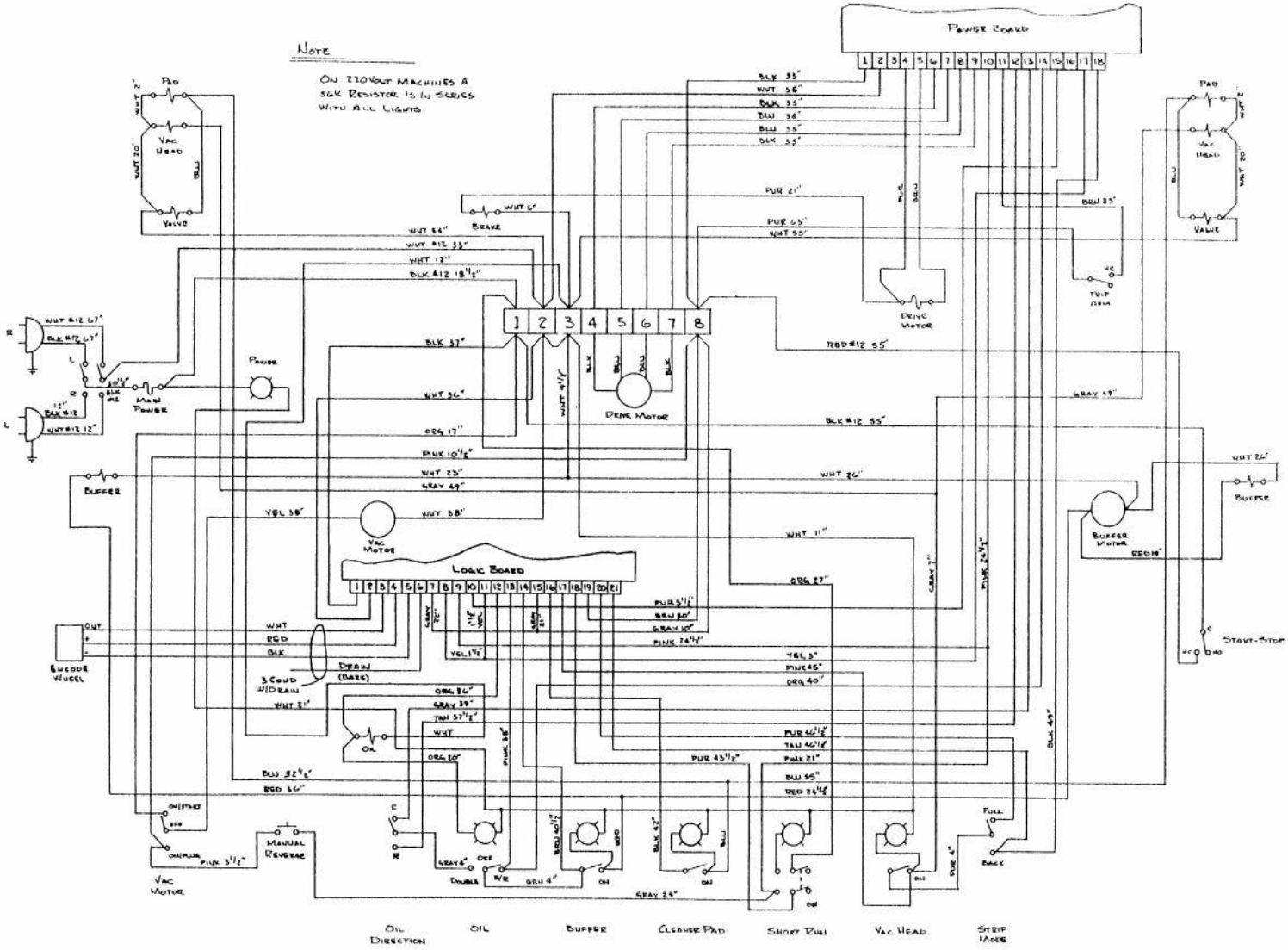
DRIVE MOTOR ASSEMBLY

PART NO.	DESCRIPTION
01-029	10-32 X 3/16 HEX SOCKET HEAD SET SCREW, CUP POINT
01-041	1/4-20 X 1/4 HEX SOCKET HEAD SET SCREW, CUP POINT
03-001	SPROCKET, 3/8 BORE
03-049	SPROCKET, 5/8 BORE
A-0414	REDUCER, MOTOR SHAFT
A-0537	DRIVE SPROCKET KEY
SA-1157	DRIVE MOTOR ASSEMBLY, 110V
SA-1158	DRIVE MOTOR ASSEMBLY, 220V



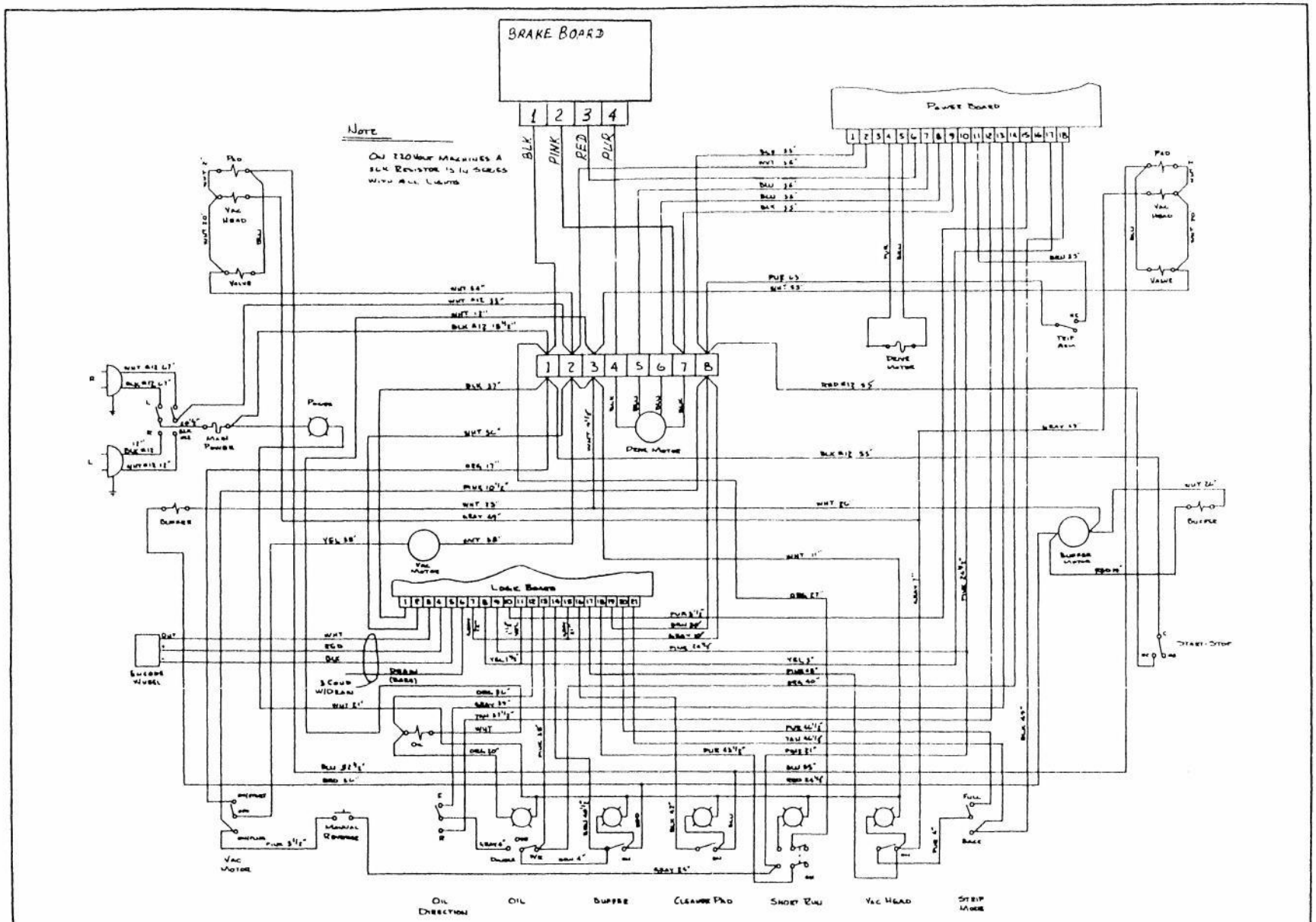
SA-1157, SA-1158
SILVER BULLET
DRIVE MOTOR ASSEMBLY

REV. SA1157 A



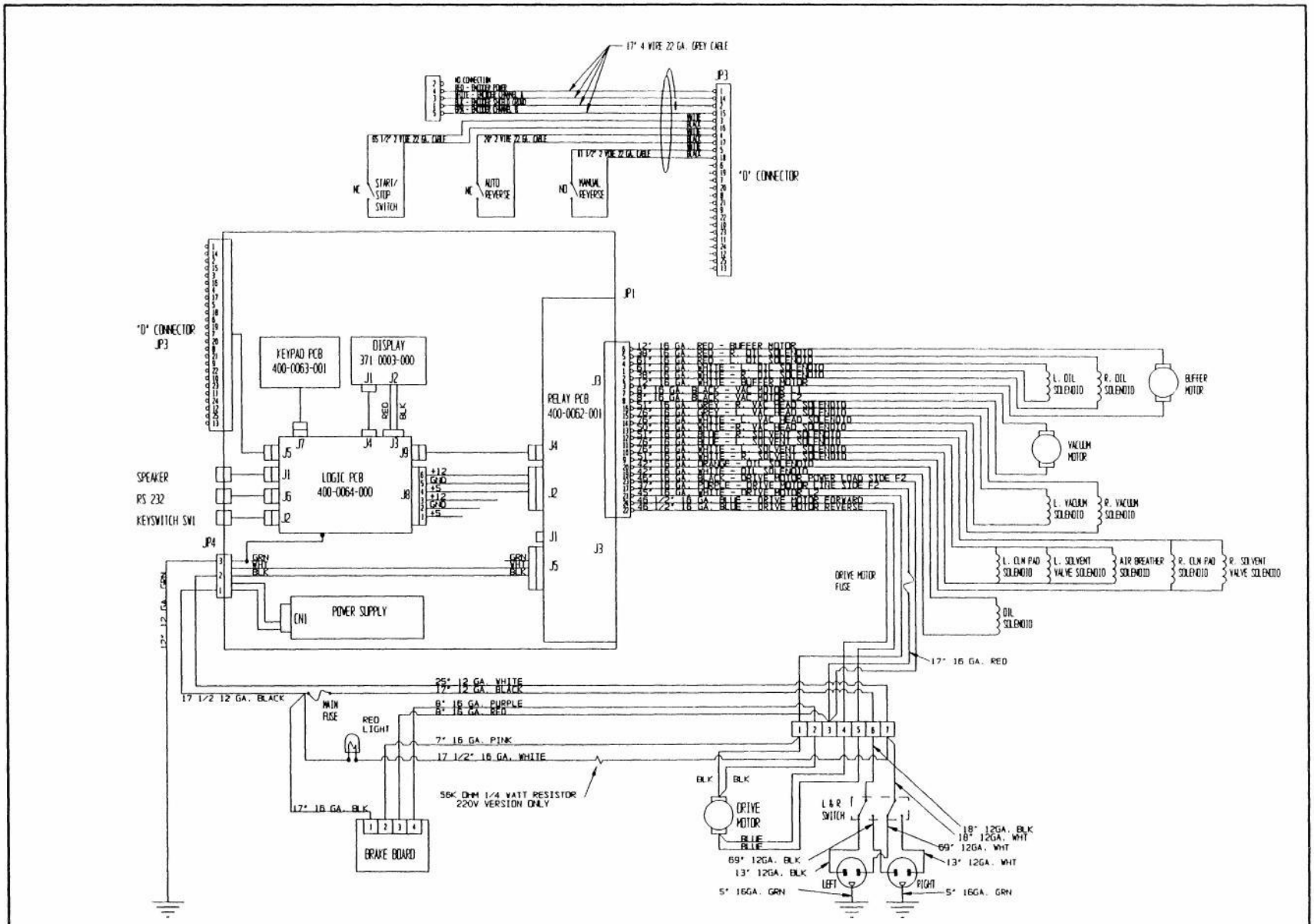
ELECTRICAL WIRING DIAGRAM

REV. GEMWD



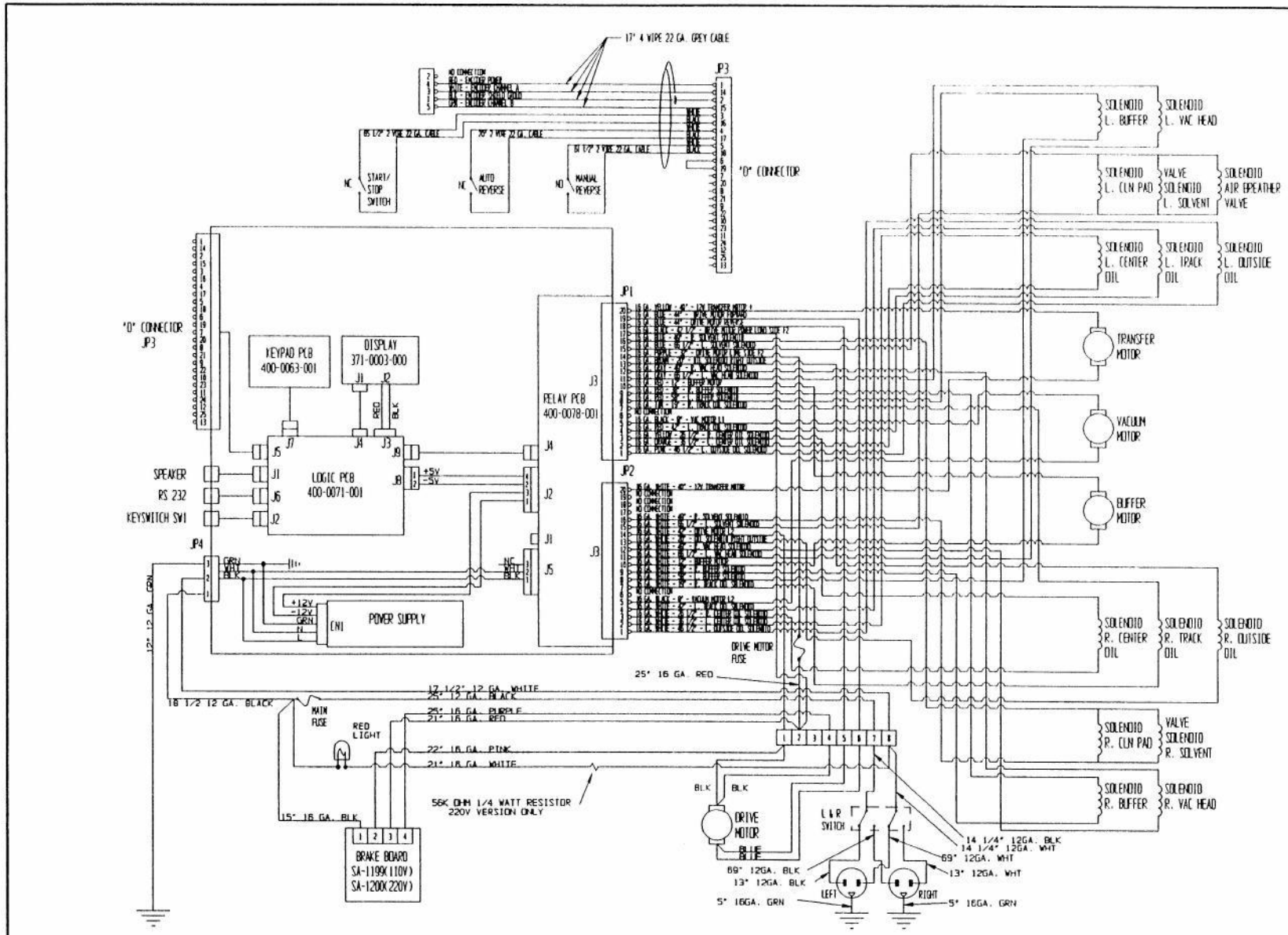
ELECTRICAL WIRING DIAGRAM

REV. GEMWD-C



GEMINI PLUS
WIRING DIAGRAM

REV. GP-WD A



SILVER BULLET WIRING DIAGRAM

REV. SB-WD A