The Finest Vehicle Wash Systems

RADIUS VEHICLE WASH SYSTEM SERVICE MANUAL

Model No. 99125020 99125021
99125022 99125023
99125024 99125025
99125026

Work Order # 7527830

SERIAL #_____

RYKO **Manufacturing Co. • 11600 N. W. 54th Avenue • Grimes, IA 50111 • 515-986-3700**

:

THIS MANUAL IS ASSIGNED TO: _____

INSTALLATION DATE: _____

ELECTRICAL POWER:	_____		**208/230V Three Phase 60 HZ, 120 or 125 AMPS (see Electrical Requirements in manual)**
ACTIVATOR:	_____		**Standard Air Switch**
	_____	*	**Code-A-Wash System Option**
	_____		**Multi-Upgrade Box, Coin Box, or AMTT**

* **THE CODE-A-WASH SYSTEM OPTION MAY APPLY TO PAST (CODE-A-WASH SYSTEM, CODE-A-WASH III), PRESENT (CODE-A-WASH IV), OR FUTURE MODELS/VERSIONS.**

OTHER ACCESSORIES: _____

_____

_____

_____

_____

_____

FOR SUPPLIES, PARTS OR SERVICE CONTACT:

Name _____

Company _____

Address _____

_____

Phone (_____ **)** _____

THIS MANUAL CONTAINS INSTRUCTIONS FOR MAINTAINING, OPERATING AND SERVICING A *RYKO* RADIUS VEHICLE WASH SYSTEM *WITH* OR *WITHOUT* RECLAIM IN A NEW OR EXISTING BAY.

ATTENTION: SAFE WORKING CONDITIONS AND PRINCIPLES MUST BE CARRIED OUT DURING ALL PHASES OF SERVICING AND OPERATION. READ AND ADHERE TO ALL CAUTION, WARNING AND SAFETY NOTES AND PROCEDURES IN THIS MANUAL. *RYKO* MANUFACTURING COULD NOT POSSIBLY KNOW, EVALUATE AND ADVISE THE SERVICE TRADE OF ALL CONCEIVABLE WAYS THAT SERVICE MAY BE PERFORMED OR OF THE POSSIBLE HAZARDS OF EACH. BEFORE USING A MAINTENANCE, OPERATION AND/OR SERVICE PROCEDURE NOT RECOMMENDED IN THIS PUBLICATION, CONSIDER THAT THE SERVICE METHOD SELECTED SHOULD JEOPARDIZE NEITHER PERSONAL NOR VEHICLE SAFETY.

CAUTION! INSTALLATION AND SERVICING OF THIS EQUIPMENT REQUIRES PERSONNEL TO WORK NEAR AND WITH HIGH VOLTAGE WIRING AND TO WORK ABOVE FLOOR LEVEL. EXTREME CARE MUST BE EXERCISED FOR PERSONAL SAFETY. FOLLOW LOCAL CODES AND SAFETY REGULATIONS.

***RYKO* RECOMMENDS THAT A QUALIFIED *RYKO* TECHNICIAN PERFORM ALL SERVICE MAINTENANCE ON THIS EQUIPMENT. SERVICE MAINTENANCE OF THIS EQUIPMENT BY ANY PARTIES NOT VERSED IN ITS INSTALLATION, MAINTENANCE AND OPERATION COULD VOID THE WARRANTY.**

STUDY ALL SPECIFICATIONS AND REQUIREMENTS FOR THE MACHINE AND ANY ASSOCIATED EQUIPMENT CAREFULLY BEFORE PROCEEDING WITH SERVICING.

CONTENTS

DRAWINGS

MANUALS AVAILABLE FOR THIS PRODUCT:

Pre-Installation Installation Service Owner's

GENERAL INFORMATION

FOR YOUR SAFETY

Operators should insist the following safety instructions and all other instructions in this manual be read and adhered to by any personnel maintaining or operating this equipment.

- *RYKO* equipment installations must comply with local, state, and national codes. If in question, consult code authorities for additional information.

- The bay should be kept clean at all times. Proper bay cleaning will reduce the possibility of slipping or similar accident in the car wash bay. Cleaning is the responsibility of the car wash owner.

- **No one should climb or stand on this equipment for any reason.**

- **In an emergency, it is important to know how to stop this equipment quickly.**

AN EMERGENCY STOP CAN BE MADE BY PRESSING THE EMERGENCY STOP SWITCH. THE EMERGENCY STOP SWITCH IS INSTALLED IN A CONVENIENT LOCATION (NORMALLY ON THE WALL), THAT IS COMPATIBLE TO THE WASH OPERATION AND WHICH WILL ALLOW IMMEDIATE ACCESS BY THE CAR WASH OWNER/OPERATOR SHOULD A NEED TO STOP THE ROLLOVER ARISE.

All personnel involved with operation of the rollover should be trained to know when and how to use this switch.

- **Read and become familiar with the "CAUTION" AND "WARNING" decals and labels placed on the equipment and its various parts. Follow directions provided on these decals and labels.**

- **All persons should keep clear of the equipment when it is operating.**

- All shields, guards, nuts, bolts, and screws should be kept in place and securely tightened.

- A padlock with keys is provided for locking each control panel. Lock the electrical panel except when servicing. Only authorized personnel should have access to keys.

- **To prevent undesired movement of the machine on the track, remove the key in the switch that moves the machine manually. This manual drive switch is located on the Communication Interface Box that is installed on the wall. Only authorized personnel should have access to this key.**

- **The machine may have one or two electrical power supplies. Because the power disconnect switch may not completely de-energize high voltage power to the rollover, it is necessary to disconnect all power supplies before servicing. Verify that high voltage has been disconnected by testing each circuit with a volt meter. If a volt meter is not available:**

1. Turn off high voltage at remote electrical panel.
2. Operate manual drive switch
   a. If no "clicking" of contactors is heard, power is off.
   b. If "clicking" of contactors is heard locate the second source for power and shut power off.

- When an area of the equipment to be serviced is above a level which service personnel can conveniently reach, use a sturdy ladder of sufficient height to allow safe, convenient access to the location being serviced.

- **Never place hands in any moving portion of equipment.**

- **To prevent eye and skin injuries use appropriate protective gear (i.e. eye protection and gloves) when handling or working with additives, chemicals, and solvents. Follow directions on container labels of additives, chemicals and solvents.**

- **Always handle and dispose of empty chemical containers properly. Refer to the label on each container for directions.**

- **Follow appropriate safety precautions and fire prevention measures when combustible materials (gas, gas fumes, oil, etc.) may come in contact with electrical equipment.**

- When installing or operating any *RYKO* equipment, adhere to all fire and safety rules/regulations, per local, state, and national authorities.

- Use extreme caution when using tools or equipment with sharp or cutting edges (knives, saws, etc.)

- To prevent back injury, always lift objects from a crouched/squatting position rather than bending from the waist. When raising the machine above the tracks, use a floor service jack to lift.

- **Service personnel are to perform lockout and tag safety requirements, per OSHA regulations, 29 CFR 1910-147.**

- For customer safety and to help prevent damage to vehicles and/or the rollover, the *RYKO* warning sign should be installed at the wash bay entrance. **If the *RYKO* warning sign is to be replaced by a customer designed sign, the following wash instructions should be included:**

⇒ **Do Not Wash Vehicles With Body Damage, Loose Chrome Or Non-Standard Accessories (i.e. loose bug deflector shields, exterior windshield visors).**

⇒ **Do Not Wash Vehicles With Exposed Propane Or Compressed Gas Tanks Or Loose Items In Pickup Beds.**

⇒ **Close Windows And Remain In The Vehicle While Washing.**

⇒ **Retract Aerials, Leave Wipers Off.**

⇒ **Fold In Pickup And Van Mirrors.**

⇒ **Confirm That All Latching Parts (Doors, Hoods, Trunk lids, Tailgates, Etc.) Are Secured.**

⇒ **Drive In Slowly Until STOP/GO Device Indicates STOP Condition.**

⇒ **Place Gear Selector In Park Or Engage Parking Brake.**

⇒ **Drive Out Slowly When STOP/GO Device Indicates GO Condition.**

⇒ **Due To Wide Variety And Conditions Of Vehicles, Operator Is Not Responsible For Damage.**

EMERGENCY STOP PROCEDURES

In an emergency, it is important to know how to stop the wash equipment quickly. The emergency stop switch is a two-position button (usually installed on the bay wall) that allows the car wash site personnel to stop the equipment. When pressed in, the Emergency Stop Switch locks into its 'activated' position and equipment operation remains halted until the switch is manually pulled outward to release the emergency stop. **Note:** It may be necessary to reposition the machine or remove the vehicle from the bay before reactivating the equipment.

Press the Emergency Stop Switch to stop equipment operation immediately.

IMPORTANT: ALL SITE PERSONNEL INVOLVED IN ANY WAY WITH OPERATION OF THE ROLLOVER SHOULD BE TRAINED TO KNOW WHEN AND HOW TO USE THE EMERGENCY STOP SWITCH AND THE PROCEDURES FOR RESTARTING EQUIPMENT OPERATION FOLLOWING AN EMERGENCY STOP.

RECOVERING AFTER AN EMERGENCY STOP

To reset equipment for operation after performing an emergency stop, it will be necessary to remove the vehicle from the wash bay and manually move the machine to the “home” position. When the cause for initiating the emergency stop has been resolved, pull out on the emergency stop switch.

IMPORTANT! Follow the directions below in the order given to achieve the HOME position.

1. Rotate the arm to the right side of the bay (as viewed when in the bay and facing the exit end).
2. Move the trolley completely to the right side of the bay until stopped.
3. Drive the machine gantry to the exit end of the bay until stopped.

Refer to **Switch Operation** in this manual for detailed information regarding moving the machine manually.

CAUTION AND WARNING LABELS

"CAUTION" and **"WARNING"** decals are located at external or internal locations on the machine. All personnel should read; be familiar with, and observe the **"CAUTION"** and **"WARNING"** decals and labels placed on this equipment and its various parts. If these decals become illegible, replace.

RECYCLING / DISPOSAL INFORMATION

When dismantling this equipment or replacing various parts, it is important to recycle or dispose of materials and parts properly in accordance with local ordinances and state and federal regulations.

To assist you, *RYKO* has identified and labeled mercury switches used on tanks, and arm assemblies with the following label.

CONTROL SWITCH WITHIN CONTAINS MERCURY
DON'T PUT SWITCH IN TRASH
RECYCLE OR DISPOSE AS HAZARDOUS WASTE
PART NO. 23842-000 -

GENERAL REQUIREMENTS AND SPECIFICATIONS

For proper operation, customer-provided utilities should meet the minimum requirements.

AIR REQUIREMENTS

Air requirements that follow apply to machines with and without Reclaim.
Minimum 3/8 inch ID line at 100 PSI at 9 SCFM flow.
Maximum pressure of 120 PSI at 9 SCFM flow.

ELECTRICAL REQUIREMENTS

208/230V, 3 Phase, 60 Hz, 100 AMPS ***or***
208/230V, 3 Phase, 60 Hz, 125 AMPS (if presoak heaters will run at the same time as the high impact pump)
and
120V, 1 Phase, 20 AMPS
and
If optional onboard dry is present and additional 205/230V, 3 phase, 60Hz, 125A service is required (3 fan).

Note: Torque values for incoming 3-phase power terminals control box disconnect are 27-pound-inches or 3 newton-meters.

Note: Additional electric service will be required if options such as reverse osmosis, or electric water heater, and electrical wash bay considerations (lighting, air compressor, etc.) are installed on or with the Radius.

IMPORTANT: FOR 115V POWER SUPPLY ALLOW 20 AMP CAPACITY.

OR

460V, 3 Phase, 60 Hz, 60 Amps (will handle either the presoak [gantry] heater or chemical water [pump stand] heater, but not both at the same time as the high impact pump)
and
120V, 1 Phase, 20 Amps

OR

575V, 3 Phase, 60 Hz, 30 Amps
and
208/230V, 3 Phase, 60 Hz, 15 Amps
and
120V, 1 Phase, 20 Amps

WATER REQUIREMENTS

Radius With Reclaim Only and Fresh Water Capabilities	Radius Without Reclaim (Fresh Water Only)
1 inch service Minimum at 20 GPM at 50 PSI for reclaim only unit without TriFoam Wax ***or*** 25 GPM for reclaim only unit with TriFoam ***or*** 45 GPM at 50 PSI for *reclaim units with fresh water capabilities and no Rocker Panel Blaster*.	1 ¼ inch service Minimum at 45 GPM at 50 PSI for *fresh water units*
With Rainmaker III	**With Rainmaker III**
Add 8 GPM to the value listed above.	Add 8 GPM to the value listed above. Add 10 GPM with Stand Alone Rocker Panel Blaster or with Rocker Panel/Fixed UnderCar Combined Manifold.

With Rocker Panel Wheel Blaster or Rocker Panel/Fixed UnderCar Combined Manifold	
Add 10 GPM to the value listed above for *reclaim units with fresh water capabilities*.	Add 10 GPM to the value listed above for fresh water units.

IMPORTANT: A LOCATION ANALYSIS OF WATER SPECIFICS SHOULD BE PERFORMED TO DETERMINE THAT THE WATER LINE SIZING WILL ALLOW THE REQUIRED PSI AND GPM WATER FLOW MINIMUM.

IMPORTANT: WATER USED FOR PRESOAK WITH THE *RYKO* RADIUS VEHICLE WASH SYSTEM SHOULD BE ZERO GRAINS SOFT.

IMPORTANT: THERE SHOULD BE NO RESTRICTIONS IN THE AIR OR WATER LINES.

RECOMMENDED BAY DIMENSIONS

Note: Machine Operations Described In This Manual Pertain To Equipment Installed In Bays Constructed To Recommended Dimensions listed here. Operations May Alter Slightly When Equipment Is Installed In Bays Constructed To Less Than Recommended Dimensions.

		Recommended Minimum	Recommended Optimum
Width:	With or Without On-Board Dry	14’-0” (4267 mm)	15’-6” (4725 mm)
	With ThrustPro Dryer	14’-0” (4267 mm)	15’-6” (4725 mm)
	With Slim Line Dryer	14’-0” (4267 mm)	15’-6” (4725 mm)
Length:	Without On-Board Dry	27’-0” (8230 mm)	30’-0” (9145 mm)
For 25' tracks	With ThrustPro Dryer	34’-0” (10365 mm)	51’-0” (15545 mm)
(see note below)	With Slim Line Dryer	29’-6” (8990 mm)	34’-0” (10365 mm)
Length:	Without On-Board Dry	29’-0” (8840 mm)	32’-0” (9755 mm)
For 30' tracks	With ThrustPro Dryer	36’-0” (10975 mm)	53’-0” (16155 mm)
(see note below)	With Slim Line Dryer	31’-6” (9600 mm)	36’-0” (10975 mm)
Length:	With On-Board Dry	31’-8” (9650 mm)	53’-0” (10060 mm)
For 27' tracks	With ThrustPro Dryer	36’-0” (10975 mm)	53’-0” (16155 mm)
(see note below)			
Height:	84” Machine	11’-2” (3405 mm)	12’-6” (3810 mm)
	90” Machine	11’-8” (3355 mm)	12’-6” (3810 mm)

Note: Length dimensions are indicated separately for 25' ,27' and 30' tracks and allow for full travel spray arm clearance.

MISCELLANEOUS

1. Floor drain and sand trap provided in accordance with local and state regulations/codes.

2. As a precautionary measure, check all bolts for tightness, and gear boxes for proper oil levels when the machine is installed.

3. A hasp on the control panel door allows the operator to insert a padlock and lock the door as a safety precaution. Locking this door locked helps to prevent unauthorized access to the control panel. A padlock with keys is provided with each control panel. The control panel should be locked when required access is completed and only authorized personnel should have access to the padlock keys.

4. The machine may be moved manually to any location on the tracks with the use of a manual drive switch. For information on use of this switch refer to **Manual Drive Switch Operation**.

CAUTION! THE MANUAL DRIVE SWITCH SHOULD BE USED ONLY WHEN THE RADIUS IS IN THE "AT REST" POSITION.

ELECTRICAL TESTING LABORATORIES (ETL) LISTING

A label on electrical industrial control panels indicates compliance with Underwriters Laboratories (UL) standards and listing with Electrical Testing Laboratories.

ELECTRICALTESTING LABORATORIES (ETL)
CONTROL NUMBER 3036523

Listing details are available at www.etlsemko.com

CAUTION: WHEN REPLACING PARTS OR COMPONENTS IN THE ELECTRICAL INDUSTRIAL CONTROL PANEL, USE IDENTICAL OR SIMILARLY RATED PARTS OR COMPONENTS. REPLACEMENT OF ORGINAL EQUIPMENT WITH PARTS OR COMPONENTS *NOT* IDENTICAL OR SIMILARLY RATED MAY VOID THE E.T.L. LISTING AND COULD POTENTIALLY CAUSE ELECTRICAL SAFETY HAZARD.

FCC COMPLIANCE - SPRAY ARM BREAKAWAY RADIO TRANSMITTER

The spray arm break away radio transmitter complies with part 15 of the FCC Rules. Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

FCC ID. QBG RADIUS TX
This device complies with Part 15 of the FSS Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

TERMS AND DEFINITIONS

AT REST
This is the position of the rollover after it completes a wash cycle. All motors are off. The Programmable Controller resets, operational control circuits are deactivated, and the Programmable Controller is ready to be "Armed".

ARMING DEVICES
An arming device is installed at the entrance of the bay and is used by the customer to purchase a wash. Arming devices available include: the Code-A-Wash IV (Code-A-Wash System) with Coin Box, the Accumulator (Coin Box), the Auto Cashier, and the Automated Modular Transaction Terminal (AMTT).

ARMED
When the arming device signals the PLC that conditions for purchasing a wash have been met (correct monetary value has been deposited or the code entered is valid) the machine is armed. When the machine is armed, input signals to the PLC from the activation devices will cause the machine to begin operation.

ACTIVATION DEVICES
Activation devices cause the armed machine to begin actual operation by providing inputs to the Programmable Logic Controller (PLC). These devices include: switches, air switches, sensors, photoelectric eyes, loop activation devices, or push buttons.

FORWARD AND REVERSE DIRECTION
When moving forward the Radius moves toward the exit end of the bay and the front of the vehicle. When moving in reverse, the Radius moves toward the entrance end of the bay and the rear of the vehicle.

LEFT SIDE / RIGHT SIDE
The left side of the bay or of the Radius machine is the side to the driver's left as they enter the bay. The right side is to the right when viewed from the bay entrance.

WASH CYCLE
The wash cycle is a specific vehicle wash a customer will receive via the wash selections available at a given vehicle wash location.

PNEUMATICS
Pneumatics consist of air valves and solenoids that are located in the Pump Stand or on the Gantry. Air pressure adjustments are made in the Pump Stand.

PROGRAMMABLE LOGIC CONTROLLER (PLC)
The programmable logic controller (PLC), is a self-contained, computerized controller located in the Electrical Control Panel. The main control center of the PLC, the Central Processing Unit or CPU, contains the programmed memory chip. The CPU monitors incoming signals from various devices and transmits signals to other devices. The PLC (and CPU) direct the wash equipment functions according to the installed program and machine setups.

ELECTRICAL CONTROL PANEL
Normally located to the right of the Pump Stand, this wall-mounted panel houses the Radius' low and high voltage components and circuitry.

DISCONNECT SWITCH
A disconnect switch is located inside the Electrical Control Panel. It works in conjunction with the actuator on the outside door of the control panel. This door can only be opened when the actuator on the door is placed to the OFF position. When placed in the OFF position, all three phase power to the panel is disconnected through the switch. The door must be closed and the handle turned ON before the Radius will be able to resume operation. If onboard dry is present there will be another disconnect switch located on the dryer control box that is mounted on the wash gantry. This switch is the same as the one on the electrical control panel and remains power to the fan motors only.
NOTE: these disconnect switches remove power from two separate power sources and both must be turned off prior to servicing the dryer gantry.

PUMP STAND
The pump stand houses mechanical hard line components and parts that work in conjunction with the electrical elements to allow proper operation of the machine. These parts/assemblies include, valve assemblies, centrifugal pumps, and the reclaim system (if installed).

CONTROL POWER
This is 24VAC power from the transformer. It is always present unless the Emergency Stop Switch is activated or the separate 115V power supply is turned off.

WASH BAY TERMINAL BOX
Mounted on either side wall, normally the same side the control stand is installed on, all control feeds through this box between the car wash machine and the control box. This box also has a buzzer located on the cover that sounds when a vehicle is in position to start the wash.

PROXIMITY SWITCHES
A proximity switch is an electrical device that detects a target plate. When the target plate is detected the proximity switch then signals the PLC that the condition has been met. For locations and operation of proximity switches that exist on the machine, refer to Proximity Switch Adjustment.

VARIABLE FREQUENCY DRIVE (VFD) UNIT
The Variable Frequency Drive unit controls the operation of the arm rotate motor, the trolley drive motor, and the gantry drive motor.

COMMUNICATION INTERFACE BOX
The Communications Interface Box houses the Emergency Stop switch and the user interface used to manually operate the wash machine, perform test function, set up equipment and perform diagnostics.

OPERATION

STARTUP AND SHUT DOWN INFORMATION

- Perform all daily, weekly, and monthly, etc. maintenance directives according to the Maintenance Schedule in this manual.

- At closing, verify that all exit and entrance doors to the bay are secured.

- During cold weather verify that all heaters in the bay and the equipment room are functioning properly. This would include heaters built in with the equipment, pump stand and hot water heaters as well as contractor installed heating sources

Two heaters are located in the lower back panel of the pump stand (if the frost protect pump stand option is installed). Test the thermostat, located in the Pump Stand Junction Box, by turning the temperature control above the actual temperature in the bay. This will force the heaters to turn on.

IMPORTANT: AFTER TESTING, RESET THE TEMPERATURE CONTROL TO THE ACTUAL RECOMMENDED SETTING.

If in-floor heating has been installed, the antifreeze tank must be maintained. This tank, located in the equipment room, should be checked periodically and filled as indicated by the site level on the tank. The thermostat for this heating is located in the concrete and does not need adjustment.

WASH SEQUENCE INFORMATION

The wash sequences desired and available with this vehicle wash system will depend on the additional options that are installed. Normally these wash combinations are determined by the owner/operator previous to installation, but can be changed to meet changing marketing situations.

While wash sequences may indicate wash combinations that appear very similar, various applications (i.e. the time it takes to complete a wash cycle, the sequence of travel [forward, reverse] and the location on the tracks where the machine begins) may differ with each program and wash combination offered.

The **Description of Operation** gives an overall description of a wash with a machine that has the typical wash options installed (UnderCar, On-Board Dry, Pre-Rinse, etc.).

For information on setting up the machine for specific sequences of presoak and/or high pressure rinse application, see **Machine Setup** information in this manual and refer to the Radius program documentation.

DESCRIPTION OF OPERATION

Wash sequences, and their order in a wash combination, may vary depending on the program, machine setups and options installed. The description below is basic and includes all wash options which may be featured in a machine's wash cycle. Cycles may vary greatly and all possible variations cannot be described in this manual.

IMPORTANT: THE DESCRIPTION OF OPERATION BELOW CONTAINS INFORMATION PERTINENT TO MACHINES WITH *AND* WITHOUT RECLAIM. RECLAIM AND NON-RECLAIM INFORMATION IS PROVIDED SEPARATELY WHEN NECESSARY TO CLARIFY THE DIFFERENCES IN OPERATION. WHEN NOT STATED DIRECTLY, INFORMATION PERTAINS TO BOTH RECLAIM AND NON-RECLAIM MACHINES.

OPERATOR'S CHOICE PROGRAMMING

Operator's Choice Programming allows the operator to adjust the machine's operation speed from the office or kiosk using a key on the Code-A-Wash IV console. This programming is especially convenient as customer traffic varies and seasonal conditions affect vehicles. Also, adjusting the speed specifically for a vehicle according to its condition can ensure customer satisfaction with the wash results. Programming for this feature is completed on the Code-A-Wash IV in the Manager's Mode. For details, refer to the Operator's Choice Programming Instruction document on the FST System . Look under the appropriate program at Info Reference **>** Program Reference **>** Equipment **>** Radius.

OPERATION

STEP 1: ARMING AND ACTIVATION

a) **ARMING -** The customer enters either money or a code at the arming device (coin box type device) to purchase a wash. The arming device determines that the conditions for receiving a wash have been met (the correct monetary value has been deposited or the code entered is valid) and sends

this information to the Programmable Logic Controller (PLC). The PLC determines from this input that the machine may now be "armed" and is ready for activation.

Now that the machine is armed, the customer is directed to enter the bay. An optional green signal light mounted on the Stop-Go-Backup light will light and the Custom Message Display instruction sign presents a "Drive Forward Slowly" message.

b) **ACTIVATION -** Depending on the equipment installed, one or more activation devices (e.g., pressure switches, photoelectric eyes, ultrasonic sensors, etc.) sends input signals to the PLC while the vehicle moves into the bay.

IMPORTANT: MESSAGES DISPLAYED ON THE INSTRUCTION DISPLAY SIGN INDICATE SPECIFIC APPLICATIONS AS THEY OCCUR DURING THE WASH CYCLE (e.g., UNDERCAR WASH, HOT WAX, ETC.). FOR A DETAILED LISTING OF MESSAGES THAT MAY BE PRESENTED ON THE INSTRUCTION SIGN, REFER TO THE CUSTOM MESSAGE DISPLAY INFORMATION.

STEP 2: TIRE CHEMICAL SPRAYER, ROCKER PANEL SPRAYER, FIXED UNDERCAR
If the Tire Chemical Spray option has been installed, the front tire contacts the first air pulse hose while entering the bay. This starts the tire chemical spray through the manifold nozzles. When the rear tire activates the last air pulse hose the tire chemical stops spraying.

If the Rocker Panel Sprayer option is installed and featured with the wash combination selected, the sides of the vehicle will receive an oscillating high pressure spray of water from nozzle assemblies in two pedestals at the bay entrance. As the vehicle enters the bay, the front tire presses the first of two air pulse hoses that are secured to the floor or blocks the photoeye. This activates the oscillating rocker panel sprayers and delivers an oscillating spray to the lower side of the vehicle as it drives into the bay. The sprayers stop after either the sprayer times out or the vehicle reaches the stopping point under the gantry.

If the Fixed UnderCar option is installed, the front tire of the vehicle contacts the first air pulse hose or the photoeye is blocked while entering the bay. This starts the fixed undercar spray from the floor mounted nozzles. When the rear tire activates the last air pulse hose or the photoeye is unblocked the fixed undercar nozzles stop spraying.

If rust inhibitor is desired, the boost pump will inject soft water through a chemical injector to inject rust inhibitor chemical into the inlet of the 25 hp pump during the undercar wash cycle.

STEP 3: STOP-GO-BACKUP LIGHT OR INSTRUCTION SIGN
When the vehicle reaches the correct position, and before the machine begins its cycle, the red (STOP) light comes on and the green light shuts off (if installed). The Custom Message Instruction sign presents the message "Stop".

STEP 4: PRE-RINSE OPTION
If the Pre-Rinse option is installed, it will be the first wash occurrence if the outside temperatures being monitored by a thermostat device indicate that a pre-rinse should be given. (**Note:** The recommended thermostat setting is for 90°, but may vary depending on climate conditions where the wash system is installed.) When the temperature outside in sunlight reaches the thermostat setting, city or soft city water sprays from gantry mounted rinse nozzles to cool the vehicle surface before the wash operations begin.

STEP 5: PRESOAK CYCLE:
The machine drives in reverse until the front ultrasonic sensor detects the front of the vehicle. The trolley drives in until the right trolley ultrasonic sensor locates the right side of the vehicle. Then the arm trolleys to the right for the adjustable data register setting that determines the arm distance from the vehicle side.

The presoak dispenses from the spray arm nozzles while the gantry drives forward to the front of the vehicle. The arm then rotates to face the vehicle front and trolleys to the left across the front. The arm then rotates to face the vehicle's left hand side and the gantry drives in reverse until the front ultrasonic sensor detects the vehicle front. The arm trolleys to the right until the left trolley ultrasonic sensor detects the vehicle.

Then the arm trolleys to the left for the adjustable data register setting that determines the arm's distance from the side of the vehicle.

The gantry drives in reverse until the rear ultrasonic sensor detects the back of the vehicle. The machine then drives forward a short distance to adjust closer to the rear of the vehicle. The arm rotates to face the vehicle and then trolleys across the vehicle rear to the right side.

The arm rotates 90^{o} so that the nozzles dispense toward the right side of the vehicle. The machine gantry drives forward until reaching the right front of the vehicle.

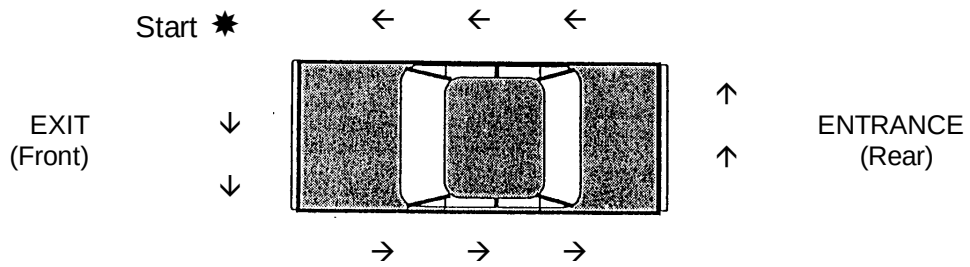
After completely circling the vehicle, the system pauses for a few seconds before continuing to the next wash sequence.

STEP 6: TWO-STEP PRESOAK CYCLE
If the machine is setup to perform a low pH pass of presoak applied to the vehicle followed by a high pH pass of presoak then both the high and low pH presoak passes are similar to the Presoak Cycle operation as described in Step 5 with the exception of an adjustable dwell that occurs between the low pH and the high pH passes.

STEP 7: HIGH IMPACT CYCLE
The High Impact Rinse Pass begins at the front of the vehicle. The trolley spray arm rotates from the rest position at the right of the track to a position within 15” to 18” from the vehicle and stops.

Starting at the vehicle's right front corner, the “L” shaped wash arm (trolley spray arm) completely circles the vehicle while water is disbursed from the spray arm nozzles over the entire surface of the vehicle.

After circling the vehicle, the system pauses for a few seconds before continuing to the next wash sequence. The trolley spray arm movement during this application is described and illustrated below.



When the cycle is activated, the trolley arm rotates 90 degrees and moves across the front of the vehicle from right to left while water is disbursed via the nozzles on the arm. When the trolley arm reaches the left front corner of the vehicle it rotates 90 degrees and applies water over the left side of vehicle while moving toward the rear (**Note:** Water continues to spray from the nozzles during all of the trolley's 90 degree turns.). When the machine reaches the left rear of the vehicle, the trolley arm again rotates 90 degrees then moves across the rear of the vehicle to the right rear while spray continues. When the right rear of the vehicle is detected the arm again turns 90 degrees and water sprays on the right side of the vehicle as the machine moves to the exit end of the bay (toward the front of vehicle). At the right front corner of the vehicle the machine stops and High Impact Rinse application ceases.

a) If desired, the High Impact Rinse can be setup to provide a Double Rear and/or a Double Front rinse on the rear and the front of the vehicle.

b) If a Double Rear rinse on the rear of the vehicle is designated by programming setups, the trolley, on reaching the right rear corner of the vehicle, reverses direction and returns to the left rear corner of the vehicle. It then reverses direction again and returns to the right rear corner of the vehicle. Rinse water sprays from all trolley nozzles during all rinse passes. Depending on Machine Setup programming, this same rinse sequence may apply for a Double Front Rinse. For additional information on specific ways the machine can be setup to operate, see Machine Setup Information in this section of the manual.

c) If rinse-off is desired on a fresh water machine, the boost pump will inject soft water through a chemical injector to inject rinse-off chemical into the inlet of the 25 hp pump during the high impact cycle.

STEP 8: FRESH BEFORE TRIFOAM *(Optional)*
Machine setups allow this fresh water application to occur before TriFoam Wax is applied. Beginning at the front of the vehicle, the spray manifolds disburse fresh water both while traveling to the rear and returning to the front of the vehicle.

STEP 9: TRIFOAM WAX
TriFoam Wax operation usually consists of four passes over the vehicle. Depending on wash cycle arming, some passes may not be performed. During the first pass, the machine drives to the rear of the vehicle while dispensing streams of wax in three colors. The second pass is determined by machine setup programming. The machine drives to the front of the vehicle (forward) and may be set to dispense fresh water or to drive at high speed with no application. During the third pass, the machine drives to the rear while dispensing fresh water over the vehicle. The final pass is a drive to the front of the vehicle and may be set to dispense either fresh water, wax, or clear coat. This operation may vary depending on setup question responses.

STEP 10: FRESH WATER LOW PRESSURE RINSE

With Reclaim
The machine drives to the front and returns to the rear of the vehicle while spraying a low pressure fresh water rinse from the rinse halo.

Without Reclaim
Does not apply to Non-Reclaim wash systems.

STEP 11: HOT WAX OR COLD WAX OR CLEAR COAT CYCLE
Depending on the setups and options provided, the machine will apply either hot or cold wax or clear coat while driving to the rear of the vehicle and returning to the front position.

STEP 12: SPOT FREE RINSE CYCLE
Spot Free Rinse is applied while the machine drives from the front to the rear of the vehicle and from the rear back to the front.

STEP 13: ON-BOARD DRY CYCLE CYCLE
After the last rinse pass air will be forced into the rinse manifold to blow water out so that it will not drip out of the nozzles onto the vehicle during the dry pass. The fans will start and the gantry will drive to the opposite end of the bay. For a 3-fan dryer the center fan will oscillate.

STEP 14: COMPLETION OF WASH CYCLE
When the wash cycle is complete and the machine is returning to the home position, the instruction sign message appears to direct the customer to leave the bay or the optional Green (GO) light mounted on the Stop-Go-Backup Light turns on. The wash is now complete.

MACHINE PROGRAMMING AND SETUP INFORMATION

The Radius machine may be programmed to allow a variety of different wash sequences. Specific PLC setup programming by a *RYKO* Service Technician is required to implement installed options or to provide the desired wash packages.

STANDARD WASH SEQUENCE

The Standard wash sequence, if no other setup programming is entered, provides one presoak pass from the gantry manifold followed by one high pressure rinse pass of the trolley around the vehicle in the sequence below.

Presoak
High Pressure Rinse
Fresh Water Rinse (Reclaim Machines Only)

SETUP OPTIONS

Wash and dry sequences may be altered to meet a variety of location concerns and to enable installed options. Adjustments to setups can allow multiple passes and additional dwell time during phases of the cycle, accommodate longer vehicles, alter the sequence of passes, etc.

Machine setup instructions are different for each program. Refer to the Setups & Timers document for the appropriate Radius program on the FST System or contact *RYKO* Customer Service to obtain this information.

SAVING PROGRAMMING AND SETUP INFORMATION FOR FUTURE USE

Once equipment is operating satisfactorily, record the Radius machine setup information and print any available programming reports for the Code-A-Wash IV and the coin box equipment (Refer to the Service Manuals for these products). Ask the location owner to maintain this information in a secure and convenient location for future service reference. In the event programming is lost due to equipment failure or accidental overwrite, this information will help to get the equipment up and operating more quickly.

***RYKO* Service Note:** Always print all available programming and hardware reports **before** installing a new program chip. When it has been determined that the new chip installation was successful and all programming has been completed to the customer's satisfaction, print new copies of the reports for the location owner / operator to save for future reference.

VARIABLE FREQUENCY DRIVE UNIT INFORMATION

The Variable Frequency Drive (VFD) unit controls the operation of the gantry drive, trolley, and rotate motors. The motor circuitry for each of these motors is connected in parallel to the output of the VFD.

In order for one of these motors to operate, three signals are required from the PLC. These signals consist of the Enable Signal, the Direction Signal and the Speed signal. A description of each signal follows.

Enable Signal:
When the Enable signal is turned off, the VFD is disabled and will not operate.

Direction Signal:
This signal, from the PLC is received by the VFD. The drive forward signal is connected to the VFD at terminal #6. The drive reverse signal is connected to terminal #5 on the VFD.

Note: All inputs use the terminals #3 and #7 on the VFD as input common. These terminals are connected together internally.

Speed Signal:
There are three (3) Speed Signals supplied to the VFD from the PLC. These signals are:

a) Speed Select 1- Connected to terminal #1 on the VFD.
b) Speed Select 2- Connected to terminal #2 on the VFD.
c) Speed Select 3- Connected to terminal #4 on the VFD.

Any input to the VFD from the CPU may be measured using the following criteria:

1. Use a voltmeter capable of measuring DC voltage.
2. Set the meter to measure 12VDC.
3. Place the meter leads per Items a. and b. that follow.
   a) Place positive Lead on the #3 terminal of the VFD.
   b) Place negative Lead on the appropriate input terminal of the VFD.
4. If the meter reads 12VDC, the Input is off. If the meter reads OVDC, the Input is on.

With the exception for the 3 phase, high voltage attached to terminals R, S, and T of the VFD, this information will allow the input circuitry to be checked out. The phases connected to these terminals are significant, only to the degree their presence of all three phases is needed at the Inputs.

The following information will assist you in troubleshooting the remainder of the VFD system.

There are two (2) VFD fault indicators on the High Impact machine; one on the VFD unit and the other on the input to the CPU. The VFD fault input on the CPU is ON in **NORMAL** operation. The **ALARM** light on the VFD unit is **ON** when a fault condition exists within or is detected by the VFD unit.

If the VFD's alarm light is on:

1. Put the PLC RUN/STOP switch in the STOP mode, then the RUN mode.

2. The alarm light should go out. This will re-initialize the VFD and in most cases allow normal operation to resume.

3. If the alarm light does not go out, disconnect the 3-phase power until the VFD Power Light goes out. Then reapply power.

4. If the alarm light does not go out or comes back on when the machine is returned to operation, perform the following:

   a) Ensure that the High voltage input wiring is correct and that all phases are present on the input terminals R, S, and T on the VFD unit.

   b) Ensure all inputs from the CPU to the VFD are working properly as previously mentioned.

   c) Ensure that the output wiring from the VFD is correct (terminals U, V, and W on the VFD).

WARNING! NEVER CONNECT POWER TO THE OUTPUT TERMINALS OF THE VFD. THIS WILL RESULT IN IMMEDIATE AND IRREPARABLE DAMAGE TO THE VFD UNIT.

When measuring the output voltage of the VFD with a voltmeter, you should see some voltage level that is varying. The amount of voltage measured and the variations are due to a number of factors, so specific voltage levels cannot be determined.

If, using the previous procedures, a problem still exists, the VFD unit is probably at fault and should be replaced. **DO NOT** replace the VFD unit until all other possibilities have been explored.

During normal operation, there should be only one direction input and up to three speed inputs to the VFD unit.

OPTIONAL REMOTE ARMING DEVICES

RYKO High Impact Vehicle Wash Systems are controlled automatically by an optional remote arming device. These devices, also referred to as automatic attendants, include the *RYKO* Code-A-Wash IV, the Auto Cashier, the *RYKO* Accumulator (Coin Box), or the Automated Modular Transaction Terminal (AMTT) with the Code-A-Wash IV. Whenever the control power is on, *RYKO* automatic attendants will accept Code-A-Wash IV ticket code numbers, bills, or quarters/tokens, wash club or credit cards (depending on which automatic attendant is installed).

When the Radius is armed by the automatic attendant, a light turns on and/or a prerecorded message plays (depending on the automatic attendant installed), advising the next customer in line that the machine is in use. If a light serves to indicate that the bay is in use, it will remain on until the wash and dry cycles are completed. If the automatic attendant is without lights (for example the Multi-Upgrade Coin Box with Dollar Bill Acceptor that is used with the Code-A-Wash IV only) a prerecorded message will play announcing that the wash is empty and that the customer may enter. During this time the blocking coils in the remote activation device prevent additional coins and/or tokens from being deposited until the wash machine has finished its cycle. An exception to this type of operation is with the installation of the Code-A-Wash IV. If installed, this arming device may be set to allow entry of codes while another vehicle is in the bay. This allows the customer to enter their code number immediately rather than wait until the in-progress wash is complete.

The function of the automatic attendant is to send input signals to an interface device in the Electrical Control Cabinet. The interface device forwards signals to the PLC to arm the Radius for a wash. Aspects of arming occur differently on each of the automatic attendants. When necessary, descriptive information pertinent to a specific attendant's operation as it works in conjunction with the Radius is provided in this manual. **Additional detailed information is shipped with each automatic attendant.**

IMPORTANT! IF THE ARMING DEVICE USED IS AN AUTO CASHIER, THE VEND DURATION TIME MUST BE SET TO 9.9 SECONDS (MAXIMUM). THIS SETTING ENSURES THAT ESCROWED CODES ARE NOT LOST IF A CUSTOMER LEAVES THE WASH BEFORE THE WASH CYCLE IS COMPLETE. REFER TO THE AUTO CASHIER MANUAL INCLUDED WITH THE AUTO CASHIER FOR INSTRUCTIONS ON HOW TO ADJUST THE VEND DURATION TIME.

ADDITIVE SYSTEM

The additive system controls the application of the chemicals used with the Radius and its varied options. The system determines additive dispersal and the blend of water and chemical. Careful setting of the additives is important to achieve optimum wash results.

CAUTION: *DO NOT* USE CLEANING AGENTS OR CHEMICALS CONTAINING HYDROCHLORIC (MURIATIC) ACID TO CLEAN ANY PART OF THIS EQUIPMENT OR ANYWHERE IN THE WASH BAY. HYDROCHLORIC (MURIATIC) ACID MAY CAUSE RUST DAMAGE TO STAINLESS STEEL PARTS.

CHEMICAL INJECTORS

A chemical injector for each additive installed on the Radius draws the additive into a stream of soft or RO water and into the wash system. Each chemical injector chemical port is connected to both a filter and a flowmeter, which are located on a flowmeter panel inside the front door of the pump stand.

The chemical manifold branches off to the different chemical lines. The inlet of the manifold is connected to a 2 horsepower boost pump that draws water from a hot or cold chemical water tank. A solenoid valve on each branch allows the water to flow through the desired injector. When the water flows through the injector valve it creates a suction to pull the additive into the water flow.

Five different chemical injectors are used on the Radius pump stand. These injectors are used to supply specific additives in the wash system. Refer to the table below.

Part No.	Description	Used for Additive
10598-235	1/2" MPT x 1/2" MPT PVC Injector, .057 orifice	TriFoam Wax, Rust Inhibitor
10598-233	1/2" MPT x 1/2" MPT PVC Injector, .083 orifice	Base, Acid Presoak, Tire Chemical
10598-227	1/2" FPT x 1/2 " MPT Brass Injector	Wax, Clear Coat, Rinse-Off (Reclaim)
10598-236	1/2" FPT x 1/2 " FPT Stainless Steel Injector	Surface Sealant
10598-234	1/2" MPT x 1/2" MPT PVC Injector, .063 orifice	Rinse-Off (fresh water), Rust Inhibitor

Pressure and flow are the two main ingredients required for to create sufficient suction for the chemical injectors.

Pressure: All of the chemical injectors are supplied by the chemical water boost pump. For this reason, there should always be adequate and consistent pressure.

Flow: High pressure and an adequate flow velocity through the injector is necessary to create a pressure drop. If the flow through the injector is not adequate, suction will be insufficient and the injector will not draw additive as it should.

CHEMICAL INJECTOR MAINTENANCE
The injectors may become clogged from impurities in the water, If build-up occurs in the chemical injectors, the water through the injector is slowed and the proper pressure drop needed to cause sufficient suction is not achieved. Periodically chemical injectors may need to be removed from the plumbing system and cleaned. Use a pipe cleaner, a torch tip cleaner, or an unfolded paper clip to remove any build-up in the injector.

All of these injectors have a check valve system in the chemical port, consisting of a stainless steel ball and a spring that allows chemical to suck into the injector, but does not allow water or chemical to push back down through. If it looks like water or chemical is pushing back down through, either something is stuck in the spring or the ball is not sealing against the o-ring. Again, this will need to be cleaned out to work properly.

Refer to the Pump Stand Installation drawing for further instructions.

STARTING CHEMICAL FLOW (INJECTOR VALVES)
First, insert the foot valve into the chemical supply container and adjust the water needle valves (Surface Sealant only). Then, when the repressurization system provides a water flow through the valve, the valve automatically pulls the chemical into the line.

CHEMICAL ADJUSTMENT PROCEDURE

Note: The following information is designed for RYKO chemicals only. Other chemicals may provide different results.

The chemical injectors used on this pump stand work on a Venturi Principal. The tunnel through the body of the injector is shaped like an hourglass, which creates a suction effect when fluid is forced through the injector at a high inlet pressure. This suction draws chemical through a port on the side of the injector, mixing it with the fluid being forced through the injector.

There are 2 main ingredients needed for these injectors to draw well. Pressure and Flow.

Pressure: Since ALL of the chemical injectors are supplied by the chemical water boost pump, they should always have adequate pressure.

Flow: Along with high pressure, adequate flow velocity is needed through the injector to create a pressure drop across the injector. Not enough flow through the injector is generally what will cause an injector not to draw chemical adequately.

For the injectors to work well:
- The pump must supply a sufficient supply of water;
- The water should not be contaminated with debris that could clog the injectors and;
- There should be no restrictions in the line upstream of the injectors.

Detailed information pertaining to each chemical additive is provided on the next few pages.

PRESOAK
(SYSTEMS USING RO WATER SUPPLY TO CHEMICAL MANIFOLD ONLY)

IMPORTANT: CHEMICAL ADJUSTMENTS DESCRIBED BELOW PERTAIN TO SYSTEMS USING RO WATER TO SUPPLY THE CHEMICAL MANIFOLD UNLESS OTHERWISE STATED. REFER TO THE PUMP STAND INSTALLATION DRAWING FOR FURTHER INSTRUCTIONS.

BASE PRESOAK *(SOFT WATER SUPPLY TO CHEMICAL MANIFOLD ONLY)*
Base Presoak is available on every machine. A metering tip is used to adjust the chemical flow and a ¼" air needle valve is used to adjust the air for foaming .

When running properly, the pressure gauge on the chemical manifold should read **265 to 275 psi.** This is for reference only, and is non-adjustable. If the pressure achieved is significantly lower than this range, contact Customer Service.

It is recommended that the 1/4" air needle valve is opened 4 full turns from closed. This will vary with customer perception. Four (4) full turns should make the solution the correct consistency to stick to the vehicle and SLOWLY run down the surface.

If the solution is too airy, i.e. 5 full turns open or more, the solution will have too many air bubbles and will not be able to work effectively on the vehicle surface. Sputtering is a sign that the air/water mixture is not adjusted correctly, with too much air in the system.

If the solution is too runny, i.e. 3 full turns or less, the solution will be noticeably watery and run off the vehicle too quickly**. IF THE AIR IS ADJUSTED PROPERLY, WHEN THE SOLUTION MAKES CONTACT WITH THE VEHICLE IT WILL RUN SLOWLY DOWN THE SURFACE, LEAVING A FOAMY COATING ON THE WINDOWS AND PAINTED SURFACES.**

The metering tip must be replaced for pH and titration adjustments. Refer to the Pump Stand Installation drawing for further instructions. Titration is the recommended method for chemical adjustments. Refer to kit 26539-000 for instructions. If pH is preferred then use the following instructions. Depending on softwater quality, this should create a chemical pH of approximately 11.7. (If this is a two-step machine, this should create a pH of approximately 11.8 to 12.0). It is impossible to give an exact setting for the chemical flow, because softwater quality affects pH as much as chemical does. For this reason, start the setting at 4.5 GPH and take a pH reading of the spray. Then adjust the setting as needed until the desired pH is achieved.

Note: If an onboard gantry presoak heater is present, you must run the presoak test for 90 seconds to effectively purge the tank of the lower or higher pH to get an adequate reading at the spray arch nozzles.

It is recommended that base pH be set at 11.7 for one-step applications, and 11.8 to 12.0 for two-step applications. The pH can be increased if desired by increasing chemical; however the higher the pH, the higher the risk that the solution may damage the vehicle's paint. pH set at 11.7 is helpful in removing most road films, but may have to be increased if cleaning is not adequate.

ACID PRESOAK *(SOFT WATER SUPPLY TO CHEMICAL MANIFOLD ONLY)*
Acid Presoak is present only with the 2-step presoak option. A metering tip is used to adjust the chemical flow and a ¼" air needle valve is used to adjust the air for foaming.

When running properly, the pressure gauge on the chemical manifold should read **265 to 275 psi.** This is for reference only, and is non-adjustable. If the pressure achieved is significantly lower than this range, contact Customer Service.

It is recommended that the 1/4" air needle valve is opened 4 full turns from closed. This will vary with customer perception. Four (4) full turns should make the solution the correct consistency to stick to the vehicle and SLOWLY run down the surface.

If the solution is too airy, i.e. 5 full turns open or more, the solution will have too many air bubbles and will not be able to work effectively on the vehicle surface. Sputtering is a sign that the air/water mixture is not adjusted correctly and is probably adjusted for too much air.

If the solution is too runny, i.e. 3 full turns or less, the solution will be noticeably watery and run off the vehicle too quickly**. IF THE AIR IS ADJUSTED PROPERLY, WHEN HITTING THE VEHICLE THE SOLUTION WILL SLOWLY RUN DOWN THE SURFACE, LEAVING A FOAMY COATING ON THE WINDOWS AND PAINTED SURFACES.**

The metering tip must be replaced for pH and titration adjustments. Refer to the Pump Stand Installation drawing for further instructions. Titration is the recommed method for chemical adjustments. Refer to kit 26539-000 for instructions. If pH is preferred then use the following instructions. Depending on softwater quality, this should produce a chemical pH of approximately 2.4. It is impossible to give an exact setting for where to set the chemical flow, because softwater quality affects pH as much as chemical does. Therefore, start the setting at 3 GPH and take a pH reading of the spray. Adjust the setting as needed until the desired pH is achieved.

It is recommended that acid pH be set at 2.3 to 2.4 for two-step applications. You should never have to go below 2.3. Refer to *RYKO* Prep Pro I & II pH Set-Up Recommendations in this manual for recommended set up procedures for 2-step chemical.

Note: If road film appears to be a problem that an acid setting of 2.4 and a base setting of 11.8 can't eliminate, try setting the acid pH to 2.8, and the base pH to 12.0. This will give the base more of a chance to work on the road grime, requiring less of its solution to counteract the acid pH.

WAX

Wax is optional. A metering tip is used to adjust the chemical flow.

When running properly, the pressure gauge on the chemical manifold should read **125 to 150 psi.** This is for reference only, and is non-adjustable. If the pressure achieved is significantly lower than this range, contact Customer Service.

The chemical setting for wax will vary according to customer perception, but 3 GPH should adequately produce beading during a 2-pass wax. If there is only one pass of wax, increase this chemical setting to 4 GPH. If dry spotting seems to be a problem in some areas, the wax may be reduced to 2 GPH for two pass wax, or 3 GPH for one pass wax and still produce beading. The RO (if present) passes may be slowed down via set-up questions to help spotting problems also. Refer to the Pump Stand Installation drawing for further instructions.

CLEAR COAT

Clear Coat is optional. A metering tip is used to adjust the chemical flow.

When running properly, the pressure gauge on the chemical manifold should read **125 to 150 psi.** This is for reference only, and is non-adjustable, if the water screw is wide open. If the pressure achieved is significantly lower than this range, contact Customer Service.

The chemical setting for clear coat will vary according to customer perception, but 3 GPH should adequately produce beading during 2 pass wax. If there is only one pass of clear coat, increase this chemical setting to 4 GPH. If spotting seems to be a problem in some areas, the clear coat may be reduced to 1.5 GPH for two pass clear coat, or 3 GPH for one pass clear coat and still produce beading. The RO (if present) passes may be slowed down via set-up questions if spotting is a problem.

Refer to the Pump Stand Installation drawing for further instructions.

TIRE CHEMICAL

Tire Chemical is optional. A metering tip is used to adjust the chemical flow.

A chemical setting of 1 GPH is adequate for tire chemical.

When running properly, the pressure gauge on the chemical manifold should read **265 to 275 psi.** This is for reference only, and is non-adjustable. If the pressure achieved is significantly lower than this range, contact Customer Service.

Refer to the Pump Stand Installation drawing for further instructions.

RUST INHIBITOR

Rust Inhibitor is optional. A metering tip is used to adjust the chemical flow.

A chemical setting of 2 GPH is adequate for rust inhibitor chemical.

When running properly, the pressure gauge on the chemical manifold should read **265 to 275 psi.** This is for reference only, and is non-adjustable. If the pressure achieved is significantly lower than this range, contact Customer Service.

Refer to the Pump Stand Installation drawing for further instructions.

RINSE OFF

Rinse Off is optional. A metering tip is used to adjust the chemical flow.

A chemical setting of 2 GPH is adequate for rinse off chemical on freshwater machines. For freshwater machines, rinse off is injected directly into the high impact rinse stream, so this setting may be increased or decreased based on how the freshwater sheets off of the vehicle.

The chemical setting for reclaim rinse off will vary according to customer perception, but 2-3 GPH should adequately produce sheeting during 1 pass rinse off. For reclaim machines, rinse off chemical is applied via a rinse pass after the high impact rinse, so this setting may be increased or decreased based on how the rinse water effectively helps to rinse the reclaim water.

When running properly, the pressure gauge on the chemical manifold should read **265 to 275 psi for freshwater machines, and 125 to 150 psi for reclaim machines.** This is for reference only, and is non-adjustable. If the pressure achieved is significantly lower than this range, contact Customer Service.

Refer to the Pump Stand Installation drawing for further instructions.

TRIFOAM WAX

These 3 chemicals are optional. A metering tip is used to adjust the chemical flow. The 3 injectors connect via separate 1/2" polytube to the TriFoam manifolds on the gantry.

TriFoam wax is the most difficult of the chemicals to adjust. The color change should be visible in the polytube once suction begins.

Each TriFoam wax color should be set according to the color and foaminess that is deemed adequate by the customer. The more chemical that is injected, the darker in color and creamier in consistency the foam will appear on the vehicle. The smaller the amount of chemical injected, the lighter in color and runnier the foam will appear on the vehicle.

Generally, each color can be set to 2 GPH to start out. This creates a light, pastel colored foam that is thick and coats the vehicle effectively. As the chemical setting is increased up from 2 GPH, the color of the foam becomes deeper and more impressive, but also begins to require more water to rinse off the foam. If TriFoam wax is available, a setup adjustment can be made to slow down all rinse passes, which helps to rinse the foam off of the vehicle.

The air needle valve for TriFoam wax basically affects the foaminess of the application. More air will create a dry shaving cream stream that begins to break apart at the ends of the stream before it hits the vehicle. This looks very impressive, but thicker foam requires more water to rinse off properly Less air will make the TriFoam more watery on the vehicle. This will not be as impressive, but can be rinsed off easily. Adjust the air as desired by the customer and the speed of the rinse passes.

When running properly, the pressure gauge on the chemical manifold should read **250 to 260 psi.** This is for reference only, and is non-adjustable. If the pressure achieved is significantly lower than this range, contact Customer Service.

SURFACE SEALANT

Surface Sealant is optional. A metering tip is used to adjust the chemical flow.

A chemical setting of 2 GPH is usually a good value for adequate coverage. Set the water flow adjustment screw all the way open (fully counter-clockwise) then turn it clockwise 4.5 turns from wide open. This setting usually gives good coverage.

The air neddle valve for Surface Sealant affects the foaminess of the applicaiton. More air will cause more foam, less air will cause less foam. Adjust the air for the desired foaminess.

Adjust chemical,water and air for the desired Surface Sealant coverage.

When running properly, the pressure guage on the chemical manifold should read 200 to 225 psi. This is for reference only and is non-adjustable. If the pressure achieved is significantly lower than this range, contact Customer Service.

ADDITIVE SETTING CHART

This table is a recap of the information from the preceding pages. Please refer to those pages for details.

CHEMICAL	PUMP STAND VALVE/PORT #	WATER NEEDLE VALVE (SPECS)	AIR NEEDLE VALVE (SPECS)	RECOMMEND CHEMICAL FLOWMETER SETTING (on pump stand flowmeter panel)	COMMENTS
Base Presoak	Y9 (water) Y10 (air)	None	Close fully, then open 4 full turns. (On pump stand air manifold.)	3-6 GPH (adjust to achieve desired pH or titration).	Increase or decrease air needle valve to make stickier or runnier.
Acid Presoak	Y1 (water) Y2 (air)	None	Close fully, then open 4 full turns. (On pump stand air manifold.)	2-4 GPH (adjust to achieve desired pH or titration).	Increase or decrease air needle valve to make stickier or runnier.
Wax	Y30	None	None	3 GPH for 2 pass wax. 4 GPH for 1 pass wax.	If rinse spotting is a problem, reduce to 2 GPH.
Clear Coat	Y13	None	None	3 GPH for 2 pass wax. 4 GPH for 1 pass wax.	If rinse spotting is a problem, reduce to 2 GPH.
Tire Chemical	Y15	None	None	1 GPH	-
RinseOff (FW)	Y16	None	None	2 GPH	-
RinseOff (Reclm)	Y16	None	None	2-3 GPH	-
Rust Inhibitor	Y17	None	None	2 GPH	-
TriFoam Wax Blue	Y21 (water) Y24 (air)	None	Close fully then open 4 full turns. (On pump stand air manifold.)	2 GPH (adjust to achieve desired richness).	Increase or decrease air needle valve for desired foaminess.
TriFoam Wax Yellow	Y21 (water) Y24 (air)	None	Close fully then open 4 full turns. (On pump stand air manifold.)	2 GPH (adjust to achieve desired richness).	Increase or decrease air needle valve for desired foaminess.
TriFoam Wax Red	Y21 (water) Y24 (air)	None	Close fully then open 4 full turns. (On pump stand air manifold.)	2 GPH (adjust to achieve desired richness).	Increase or decrease air needle valve for desired foaminess.
Surface Sealant	Y22 (water) Y23 (air)	Open to wide open then turn down 4.5 full turns. Adjust as desired.	Close fully then open 4 full turns. (On pump stand air manifold.)	2 GPH (adjust to achieve desired richness).	Increase or decrease air needle valve for desired foaminess.

RYKO PREP PRO I & II PH SET-UP RECOMMENDATIONS

IMPORTANT: *RYKO* PREP PRO I & II SHOULD *NEVER* BE USED SEPARATELY AS A ONE-STEP PRESOAK OR BE USED IN CONJUNCTION WITH ANOTHER MANUFACTURER'S PRESOAKS.

Follow the steps below to correctly adjust the Prep Pro I & II for application.

IMPORTANT: SOME STEPS IN THE INSTRUCTIONS BELOW PERTAIN TO EQUIPMENT NOT AVAILABLE ON ALL MACHINES. READ EACH STEP AND ALL NOTES CAREFULLY. SELECT THE INFORMATION IN THESE STEPS WHICH APPLIES TO THE INSTALLED MACHINE.

1. It is very important to calibrate the pH meter using the 7.0 and 10.0 pH buffer solutions (*RYKO* Part Number 18429-002).

2. Run Low pH Presoak test function.

3. Open the acid (Prep Pro I) presoak air needle valve (Y2) slowly until there is adequate fanning coming from the presoak nozzles. Excess air will cause the Prep Pro I to foam too much and might diminish wash quality.

4. Obtain a sample of the presoak / water mixture from one of the nozzles.

5. Using the pH meter, determine the pH of the solution. The pH should read between 2.3 and 2.4 (Note: If wash quality is poor when operating within this range, the Prep Pro I presoak may be adjusted to a pH of 2.8). Adjust and repeat as desired.

6. Run Presoak test function.

7. Open the air needle valve (Y10 if gantry tank is installed, Y9 if not) until the presoak is adequately foamy.

8. Using the pH meter, determine the pH of the solution. The pH should read **11.8**. Adjust and repeat as desired.

POLYTUBE COLOR DESIGNATIONS

The following polytubes from the pump stand to the gantry are designated by different colors to aid in identifying them as needed.

1/2” clear polytube or 3/8" hose (wrapped in black tape)	Base presoak from chemical manifold (Y9) to gantry tank heater of gantry spray arm.
1/2” clear polytube (wrapped in green tape)	Acid presoak from chemical manifold (Y1) to gantry spray arm.
1/2” clear polytube (wrapped in red, blue, & yellow tape)	Three (3) TriFoam Wax polytubes from chemical manifold (Y21) to the TriFoam manifolds.
1/4” red polytube	TriFoam wax air from air manifold (Y24) to TriFoam wax manifolds.
1/4” purple polytube	Presoak air from air manifold (Y10) to gantry.
1/4” green polytube	Cooling water from gantry wheels back to pump stand (drain to floor).
1/4" yellow polytube	Frost Protect air blowout line to spray arm air

PRE-HIGH IMPACT RINSE CYCLE

The Pre-High Impact Rinse is a high impact cycle around the entire vehicle prior to the pre-soak application. This rinse may be used to loosen caked on dirt, snow, or ice.

If desired, the Pre-High Impact Rinse cycle can be enabled to run for every wash cycle via the "Pre-HI pass? Setup question (number 38).

If the machine was ordered with network arming, the pre-high impact rinse cycle can be armed as desired.

If the machine was ordered with a different arming device, the pre-high impact rinse can still be armed if:

1. There is not a pre-rinse thermostat installed with the machine.
2. The "Pre-Rinse?" setup question is answered NO.
3. The "Pre-HI Pass?" setup question is answered NO.
4. An unused arming device output is connected to input X57 of the PLC.
5. The arming device is programmed to turn on that output when the Pre-HI cycle is desired.

PRE-RINSE OPTION INFORMATION

RYKO recommends that a pre-rinse is applied to vehicles when the outside temperature (in sunlight) reaches 90º F. / 30º C.

The Pre-Rinse option, if installed, cools the vehicle's surface temperature prior to additive application by applying city or reclaim water rinse over the entire surface of the vehicle. This Pre-Rinse cycle is automatically activated via an adjustable thermostat that monitors outside ambient (in shade) air temperatures. When the temperature drops below the thermostat setting the Pre-Rinse cycle is discontinued.

Note: The thermostat setting above may vary depending on the climate and other environmental conditions that exist at the installation location.

SWITCH OPERATION

A Communication Interface box installed on the bay wall contains a user interface that allow the operator to stop the machine, move the machine manually on the tracks, position the trolley, rotate the arm, or test the high impact pump.

EMERGENCY STOP SWITCH

If the machine must be stopped immediately, push in on the EMERGENCY STOP SWITCH to halt all machine movement. When this switch has been activated no further codes will be accepted at the coin box and the machine will cease to operate. All 24V power is turned off. **NOTE:** In order for the machine to operate again the Emergency Stop Switch must be pulled out and the machine must be moved manually to the "home" position. Refer to **Start-Up And Shut Down Information** and **Emergency Stop Procedures** elsewhere in this publication.

PROGRAMMABLE LOGIC CONTROLLER OPERATION

The Programmable Logic Controller (PLC) is located in the electrical compartment and contains the Central Processing Unit. The Central Processing Unit is the main control center of the Programmable Controller system and houses the actual programmed memory chips. The programmed chip determines the sequence of operation by monitoring external signals from components such as push buttons, sensors, and relays. On monitoring these signals, the CPU program then transmits signals to the output sections which in turn perform the required external operational functions. These external functions or components would involve mechanical operations such as relays, motor contactors, or indicator lights.

PAGING VIA PLC OPTION

The Paging Via PLC (Programmable Logic Controller) option is designed to notify one or two independent pagers when a fault (equipment error) occurs on the vehicle wash system. This option provides immediate access to equipment status information when personnel are away from the wash location using a modem which works in tandem with the PLC.

PAGER SETUPS

The Paging Via PLC option allows machine set-ups to call one or two pagers. The chart below describes the available configurations and the results of that setup.

If Machine Is Setup To Notify:	When A Fault Occurs:
One Pager	The program is designed to page this pager twice for each fault that occurs.
Two Pagers	The program is designed to page *both* pagers twice for each fault that occurs.

MACHINE SETUPS (PAGING VIA PLC)

In order to operate, the machine setups for the paging option must be programmed by a *RYKO* Service Technician using the Hand Held Program Panel (HPP). Consult with a local *RYKO* Service representative.

DESCRIPTION OF OPERATION (PAGING VIA PLC)

The Paging Via PLC option is designed to call the pager twice for each fault that occurs. The first and second pages are described below.

When a fault occurs, the program generates a first page. The display on the pager displays a 2 digit code indicator of the problem (fault) that has occurred (Refer to the **2 Digit Diagnostic Code Information**). If there has been more than one fault, the pager displays the highest priority 2 digit code that has occurred on the machine. The pager display also shows the wash equipment site identifier that has been designated specifically for the location.

A second page occurs fifteen minutes after the first page. The pager then displays the 2 digit code being displayed or, if the machine has been reset, either a **00** or an **01** code.

If the machine is not reset within 15 minutes of the first call, the program will generate two more pages when the machine is reset with a **00** or **01** code.

A **00** code indicates that the machine is running and everything is OK (This is the same as the "**--**" message that appears on the 2 digit diagnostic display located at the machine site).

An **01** code indicates that the machine is running BUT there is a 2 digit code displayed at the machine site (*Not* the "--" everything is OK code). This indicates that a fault has occurred that will not shut off the machine at this time but requires attention. For example: Chemicals are low or empty or an air switch is inoperative.

ULTRASONIC INFORMATION

The ultrasonic units installed on the Radius provide the vehicle detection information that is required for the machine to operate. They also provide the data used to determine what adjustments are required by the equipment to accommodate the vehicle's position in the bay.

ULTRASONICS SETUP INSTRUCTIONS

Ultrasonics setup instructions for the Radius are provided to ensure the ultrasonics function properly.

RYKO Field Service Technicians should refer to the FST System
Info Reference > Technical Reference > General Information > Ultrasonics > 24712-005.
RYKO Distributors should refer to the Field Service Directory
4-General Information > Ultrasonics > 24712-005.pdf.

INSTRUCTION SIGNS AND MENUS

CUSTOM MESSAGE DISPLAY SIGNS

Custom Message Display (CMD) Signs are necessary when operating the Radius. These programmable message signs are valuable instruction, information and sales tools. Programming on these signs allows the operator to create unique and eye-catching displays to instruct or inform customers. Refer to the Customer Message Display Instructions Sign Programming and Maintenance document on the FST System at Info Reference **>** Technical Reference **>** General Information **>** Custom Message Display.

LIGHTED 8-SEGMENT BAY INSTRUCTION SIGN

The optional 8-Segment Lighted Ladder sign may be used in addition to the Custom Message Display. When used, it is installed on the opposite side of the wash bay from the Custom Message Display sign. This sign has 8 lighted segments with instructional and informational words that are turned on during certain cycles of the carwash.

BULB REPLACEMENT

The light bulbs on the Lighted 8-Segment Bay Instruction sign may be replaced by the owner/operator.

CAUTION: REMOVE ALL POWER TO THE INSTRUCTION SIGN BEFORE SERVICING.

CAUTION: LIGHT BULBS MAY BE HOT TO THE TOUCH. ALLOW BULBS TO COOL BEFORE HANDLING.

.

To replace:

1. Remove the 4 screws from the left or the right front edge trim that holds the graphic in place.

2. Remove the edge trim and carefully slide the graphic out exposing the bulbs.

CAUTION: TO AVOID DAMAGE TO THE EQUIPMENT, REPLACE THE BULBS WITH MAXIMUM 100 WATT ONLY.

3. Carefully slide the graphic back in place, attach the edge trim and restore power to the carwash machine.

LIGHTED MENU SIGN

The optional Lighted Menu sign informs the customer of the available carwash selections. This sign is usually installed where it may be easily seen by the carwash customer as they approach the carwash entrance or near the coinbox or activation device.

BULB REPLACEMENT

The compact fluorescent light bulbs on this sign may be replaced by the owner/operator.

CAUTION: REMOVE ALL POWER TO THE MENU SIGN BEFORE SERVICING.

To replace:

1. Remove the screws from the left, right and top edge trim that holds the graphic in place.

2. Remove the edge trim and carefully slide the white plastic out exposing the bulbs.

CAUTION: TO AVOID DAMAGE TO THE SIGN, REPLACE WITH IDENTICAL STYLE AND WATTAGE BULB ONLY.

3. Carefully slide the graphic back in place, attach the edge trim and restore power to the sign.

FREEZE PROTECT OPTION

The Freeze Protect Option is designed for locations where bay temperatures may fall below 25 degrees Fahrenheit. With this option, components of the Radius system that are exposed to the bay conditions, such as the gantry, are protected by a regulated "weeping" flow of water to prevent freeze of water lines. In addition, the pump stand and other components aside from the gantry, rocker panel pedestals, and undercar manifold are located in a heated equipment room. An in-floor heating system must also be installed to heat the bay floor and to provide heated lines to the rails (tracks) and boom.

The four main components to the freeze protect system protect all facets of the Radius' system. These components include:

- Weeping of main wash lines from the pump stand to the manifolds.
- Weeping of chemical lines at the gantry and heating of chemical lines in the boom.
- In-floor heating of the bay floor, tracks, and boom.
- Heating of the gantry's ultrasonic sensors to prevent ice from forming on their faces.

A weep assembly mounted in the equipment room consists of a solenoid valve and 10 different optional "fingers" or lines to weep the different components of the Radius' system. A thermostat mounted in the bay to monitor bay temperatures cycles a weep assembly solenoid that is connected to a fresh water line on and off to control the weep water flow timing. The amount of time that the solenoid remains on and off during these cycles is adjustable through program setups maintained by the service technician. An adjustable needle valve on each finger controls the actual amount of weep water flow to each component.

The hi impact spray line, the rocker panel line, the undercar line, the rinse halo, the cooling water line, and the tire chemical line are weeped from the pump stand out to the various manifolds in the bay. The needle valves on the weep assembly control how much water is weeped through each individual manifold.

The base presoak line, the acid presoak line, and the three TriFoam wax lines are weeped at the gantry to their respective manifolds on the gantry. Depending upon whether there is a base presoak gantry tank or not, the base presoak line will either be weeped at the same points as the rest of the chemicals or at a point downstream of the gantry tank. The chemical lines from the gantry weep point back to the equipment room are bundled in pipe insulation through the boom to keep them warm and to keep the lines from being flushed with weep water. The needle valves on the weep assembly control how much water is weeped through each individual manifold.

Inside the pipe insulation bundle, along with the chemical lines, is a 3/4" hose that runs the entire length of the pipe insulation, U-turns and returns to the pump room. The hoses are connected to the in-floor heat system, one hose to the discharge manifold and one connected to the return manifold. This hose line, which has the in-floor heating system liquid continuously circulated through it, keeps everything in the pipe insulation bundle warm.

In addition, two more lines run from the in-floor heating system, each to the gantry tracks, in the same manner. Each routes into one end of the track, runs inside the entire length of the track, U-turns and comes back out the same end to route back to the in floor heating system. This line connects to the discharge and return manifolds of the in-floor heating system and helps to warm the tracks enough to prevent ice from forming on them.

Finally, 50 watt pad heaters are attached to the six gantry ultrasonic sensors to warm the sensors enough to prevent ice build-up on their faces. These heating pads also cycle on and off according to the bay thermostat sensor and its set temperature point.

FROST PROTECTION INFORMATION

Frost protection options help to prevent water lines from freezing on machines and associated equipment that have been installed in areas where temperatures drop below freezing, and where sufficient heating conditions for machines may not exist.

IMPORTANT: FROST PROTECTION DEVICES USED WITH *RYKO* PRODUCTS ARE INTENDED TO HELP PREVENT *RYKO* WASH SYSTEMS AND ASSOCIATED EQUIPMENT FROM FREEZING. THIS *DOES NOT* MEAN THAT FROST PROTECTION SYSTEMS SHOULD BE RELIED UPON TO PROVIDE NON-FREEZE CONDITIONS. IN COLDER CLIMATES, AUXILIARY HEATING SYSTEMS MUST BE INSTALLED TO ADEQUATELY PROTECT THE RADIUS, ACCESSORIES, AND ASSOCIATED EQUIPMENT. THIS MIGHT OR WOULD INCLUDE IN-BAY HEAT, DOORS (BI-FOLD STYLE RECOMMENDED), WATER HEATERS, HEAT TAPE, ETC. *RYKO* FROST PROTECTION SYSTEMS ARE INTENDED TO SUPPLY A LIMITED AMOUNT OF PROTECTION FROM FREEZING WHERE TEMPERATURES ARE NEAR FREEZING FOR A LIMITED PERIOD OF TIME.

FROST PROTECTION OPTIONS INCLUDE:

Frost Protection System

If installed, this option purges the water system with an air blow down turns on certain heating elements. It is regulated with an adjustable thermostat that monitors wash bay temperatures and turns on the purge system.

Pump Bench Frost Protection

This system provides a heating element in the pump bench and activates, depending on the setting of a separate thermostat that is located in the pump bench.

Water Softener Frost Protection

Also thermostatically controlled, this frost protection option, when installed with the water softener, provides a heat source to softener.

Frost Alarm Options

Frost Alarm Options give visual and audio warnings when freeze conditions are present. The two *RYKO* Radius Frost Alarm options include:

Wash Bay Frost Alarm -

This frost alarm option consists of an adjustable thermostat which monitors the wash bay temperatures. When the thermostat is activated, a box located in the wash bay flashes a red light and sounds an alarm. If the wash location has a Code-A-Wash System installed, a message is also transmitted to the Code-A-Wash System control unit, notifying personnel of the "Low Bay Temperature" condition. If a Code-A-Wash System is not installed, but notification of a freezing condition must be transmitted to the attendant, a box with a red warning light can be installed in a location visible to the attendant, in addition to the wash bay warning system.

Pump Bench Frost Alarm

This alarm provides a warning, should the pump bench reach a freeze condition. A separate thermostat is provided to monitor temperatures in the pump bench. If the thermostat is activated, it sends a signal to the wash bay frost alarm, initiating visual and audio warnings. If the pump bench frost alarm is installed, the wash bay frost alarm must also be installed.

CHEMICAL DRUM HEATER KIT

The Chemical Drum Heating Option provides freeze protection to the chemical drums in wash locations where bay temperatures may fall below freezing. The bay kit is comprised of a junction box containing a thermostat that activates various the drum heaters that are ordered as part of heater kits. A heater kit is required for each 5, 15, or 55 gallon chemical drum that is used with the vehicle wash system. Each of these heater assemblies is connected to the junction box. Four cable heaters are also connected to the junction box. These cables are wrapped around bundled chemical lines from the drums to the interior of the pump stand. The cable and chemical line bundles are then wrapped with pipe insulation from the drums to the pump stand for additional protection.

OPTIONAL SPRAY ARM BREAK AWAY

The optional Spray Arm Break Away system allows the Radius to shut down in the event that a customer drives their vehicle into the spray arm when it is in front of or behind the vehicle. To prevent damage if this occurs, a shear bolt in the spray arm mechanism breaks to prevent damage to the vehicle or the wash equipment. When this happens a tilt switch activates a small radio transmitter that is mounted on the spray arm. A radio receiver mounted in the machine gantry terminal box signals the machine controls causing the machine to immediately shut down and no longer operate. The machine is in a no-operation condition and can no longer arm for a wash. It remains in this state until it is reset. The machine's 2-digit display will show an 08 diagnostic code and a 4-digit diagnostic code 8608 will be recorded. The bay switch buzzer will sound for 5 seconds and the machine movement beeper alarm will sound continuously.

RETURNING THE MACHINE TO OPERATION

STEP 1: Inspect the spray arm for safe continued operation.

STEP 2: Remove the white screw caps from the heads of the four (4) screws that secure the white plastic cover to the horizontal spray arm. Remove the plastic cover and the mounting clamp with transmitter off of the spray arm by removing the four (4) screws. **Note:** The transmitter assembly will still be connected to the tilt switch and should be kept near enough to the spray arm to prevent interfering with this connection.

STEP 3: Remove and save the existing flat 3/8" (10 mm) washer and nut from the broken shear bolt. Install the new shear bolt into the spray arm where the broken bolt was removed.

CAUTION! USE ONLY THE SHEAR BOLT RECOMMENDED FOR THIS EQUIPMENT. USE OF ANOTHER BOLT WILL NOT ALLOW THE SPRAY ARM BREAK AWAY TO OPERATE PROPERLY AND MAY CAUSE DAMAGE TO THE MACHINE OR TO VEHICLES. WHEN ORDERING REPLACEMENT PARTS, CONTACT THE RYKO PARTS DEPARTMENT IF UNSURE OF THE PROPER PART TO ORDER,.

Install the flat 3/8" (10 mm) stainless steel washer under the nut when replacing a broken shear bolt. Do not install the washer under the head of the shear bolt. Draw the two stainless steel blocks (where the bolt goes through) of the break-away assembly together by tightening the nut. After drawing the two halves together, loosen the nut until the washer under the nut can spin freely (approximately 1/4 turn).

STEP 4: Reassemble the white plastic cover and the mounting clamp with transmitter onto the horizontal spray arm using the four (4) screws previously removed. Reattach the four (4) screw caps previously removed. Refer to the Top Spray Arch Cover Installation drawing in the Installation Manual.

WARNING! NEVER RESET THE MACHINE TO ALLOW FURTHER OPERATION WITHOUT FIRST REPLACING THE SHEAR BOLT AND INSPECTING THE SPRAY ARM AND MACHINE FOR CONTINUED SAFE OPERATION. FAILING TO DO SO MAY RESULT IN DAMAGE TO THE MACHINE OR A VEHICLE. IF IN DOUBT, CONTACT RYKO CUSTOMER SERVICE FOR ASSISTANCE.

STEP 5: The machine will not operate again until it is reset via the Test Function FC "Arm Break Away Reset". Refer to the Test Function Information document included in the Owner's Manual to reset the machine movement beeper alarm and allow the machine to operate normally.

Spray Arm Break away Radio Transmitter information:
This equipment complies with part 15 of the FCC Rules. Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

FCC ID. QBG RADIUS TX
This device complies with Part 15 of the FSS Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

MAINTENANCE -SERVICE

MAINTENANCE SCHEDULE

Daily Servicing:

1. Inspect the bay for cleanliness.
2. Should cover panels of the pump and control stand be removed for any reason and control panels accessed, always be sure to confirm junction box lids are padlocked before replacing covers.
3. Check additive tank levels; fill or replace if necessary.
4. Visually inspect the machine and all associated equipment for damage.
5. Ensure that the entrance and exit doors are functioning properly.
6. Check the bay and equipment room for leaks (water, air, chemical, hydraulic).
7. Examine all switches and indicator lights in the Reclaim System (if installed) to verify proper operation.

Weekly Servicing or Each 1,000 Wash Cycles:

1. Weekly, clean all of the machine's stainless steel covering. Cleaning the covers helps eliminate excessive lime and dirt build up and extends surface appearance. Use of a mild liquid detergent for washing and clear water for rinsing is recommended. **Example:** *RYKO* General Purpose Cleaner (Part No. 13398-002)

CAUTION: *DO NOT* USE CLEANING AGENTS OR CHEMICALS CONTAINING HYDROCHLORIC (MURIATIC) ACID TO CLEAN ANY PART OF THIS EQUIPMENT OR ANYWHERE IN THE WASH BAY. HYDROCHLORIC (MURIATIC) ACID MAY CAUSE RUST DAMAGE TO STAINLESS STEEL PARTS.

2. Lubricate all pneumatic air cylinder swivel joints.
3. Ensure all lights are functional in Stop & Go and Instruction signs. Clean lenses if necessary. Ensure instructions and decals are legible. Replace if necessary.
4. Check the remote activation device, (if present) for correct operation. Check coin/token chute slides for cleanliness and obstructions.
5. Check the pressures on all regulators.
6. Verify settings on additive pump are set for correct increments.
7. Examine the Reclaim System (if installed) for leaks or corrosion.
8. With the spray arm hanging down, pull the arm out to the side so that the tilt is activated. Release the arm and let it fall back down. Do this in both directions. Adjust the spring tension at the top of the arm so that the arm will fall back down when it is released. Lubricate the spray manifold (with the plastic plunger at the top of the spray arm) if the spring adjustment doesn't permit the arm to fall down.
9. Clean the photoelectric sensor lenses using a soft cloth.

Monthly Servicing or Each 5,000 Wash Cycles

1. Tighten all cover screws.
2. Check wheels and track for extreme or improper wear. Replace the wheel if a flat spot is worn on the outside of the wheel. Wipe debris off of the track top to ensure clear operation.
3. Check all bolts for tightness.
4. Check rubber bumpers and stops for tightness. Tighten, if required.
5. Check all air, water, and power lines for abrasions, cracks, or over-tight ties.
6. Check air lines, regulators, and solenoids for leaks. Check air cylinders for proper operation.
7. Check foamer for proper operation. Clean additive system filters.

8. Check for loose or burned wires in Control Panel.
9. Run the machine through several cycles and check general operation.

10. Check the foot valve in the suction pit of machines with reclaim periodically during the month for build up of debris. Clean as required.
11. Periodically, check and, if necessary, clean the tank strainer (Non-Reclaim machines only). This tank strainer is in the tank.
12. Check the above ground strainer (if installed) for clogging and the foot valve and strainer to be certain they are above sediment (Reclaim machines only).
13. Clean the holding compartments and collection pits of all debris (Reclaim machines only). See **Reclaim Tank Care** in this manual.
14. Check the trolley lower set of wheels for tightness against the trolley tracks. Tighten if necessary.
15. Run the machine end to end on the tracks to check whether the gantry moans or squeals during start or end of travel. Lubricate grease fitting on gantry idler rollers, if required.

Every 2 Months

1. Check belt pre-tension and gantry alignment. Refer to Checking Belt Pre-Tension and Gantry Alignment in this manual.

Every 6 Months or 30,000 Wash Cycles

1. Lubricate grease fittings on the high impact pump motor (if present).

IMPORTANT: DO NOT OVER GREASE THE BEARINGS. OVER GREASING WILL CAUSE INCREASED BEARING HEAT AND CAN RESULT IN BEARING/MOTOR FAILURE.

2. Every six months check the inside of the plastic gantry rollers and belt pulleys and the outside of roller/pulley shafts if a machine has been stalling or stopping on the tracks or if the wheels or pulleys moan or squeal during machine travel. Clean and grease the parts to ensure there is no foreign matter and the surfaces are smooth. Refer to Raising the Machine Off the Tracks in this manual for the cleaning and grasing procedure.
3. Perform the *Spray Arm Break-Away Transmitter Test* to ensure this option is operating correctly.
4. Every six months check proper track spacing. The dimension should be 12 ' 4-13/16" (3780 mm) plus or minus 3/32" (2,5 mm). Adjust the track separation as necessary.

5. Clean and wax the covers. Before using one of the over the counter waxes check the product label for recommended surfaces and closely follow the manufacturer's recommendtions for application.

Each 50,000 Wash Cycles

1. Check all **CAUTION** decals for wear. Replace if illegible. (Decal replacement is important to maintaining good machine maintenance and safety procedure practices.)

CLEANING STAINLESS STEEL PARTS

Regular cleaning of the stainless steel parts on the wash equipment is recommended to help prevent lime or dirt buildup and maintain the appearance. Clean using a mild liquid detergent and rinse with clear water.

Recommended Cleaning Agents

RYKO General Purpose Cleaner (Part No. 13398-002)

CAUTION: *DO NOT* USE CLEANING AGENTS OR CHEMICALS CONTAINING HYDROCHLORIC (MURIATIC) ACID TO CLEAN ANY PART OF THIS EQUIPMENT OR ANYWHERE IN THE WASH BAY. HYDROCHLORIC (MURIATIC) ACID MAY CAUSE RUST DAMAGE TO STAINLESS STEEL PARTS.

PROXIMITY SWITCH ADJUSTMENT

Proximity switches on the machine include the End Stop Proximity Switches (total - 2), the Trolley Proximity Switches (total - 2), four Arm Rotation Proximity Switches (total - 4), an Arm Tilt Proximity Switch (total - 1) a gantry wheel encoder position switch (Total - 1) and a 3-fan onboard dry center fan oscillate position switch (Total - 1). Should these switches require adjustment, refer to the procedures (as performed at the factory), that follow.

END STOP PROXIMITY SWITCHES

(Trip Plate Adjustment and Testing Procedures)

Refer to the following information and all instructions provided on the Track and Gantry Installation drawings in the Installation manual.

There are two end stop proximity switches that are standard equipment and are assembled on each machine. Each of these proximity trip plate switches must “read” its corresponding proximity trip plate for proper operation of the equipment.

Should any of the end stop proximity switches require adjustment, refer to the following information.

1. Locate the two (2) proximity switches.

IMPORTANT: TRACK STAYS MUST BE INSTALLED PROPERLY ON THE MACHINE BEFORE ADJUSTING OR TESTING THE ADJUSTMENT OF THE PROXIMITY SWITCHES.

2. Adjust the proximity switches so that the faces of the proximity switches are between 1/8" and 3/8" away from the metal trip plates attached to the track.

   The FRONT END proximity switch on the left side of the machine, is adjusted while the machine is at the entrance end of the track.

3. Drive the machine back and forth on the track a few times to insure that the dimensions are maintained at all times under all conditions. Adjust if required.

TROLLEY PROXIMITY SWITCHES

There are two 18 mm diameter trolley proximity switch located on the exit side of the trolley. There are two (2) stainless steel targets mounted on the exit side of the exit end trolley track. If adjustment of these switches is necessary, adjust as described below.

1. Adjust the Trolley Proximity Switch so the face is between 1/8" and 1/4" away from the stainless steel target plates.

2. Test operation of the switch by running the trolley back and forth a few times. During this operation, check to make sure that the switch is detecting the target plates and sending signals to the PLC. Perform these tests with the high pressure pump test on and off.

ARM ROTATION PROXIMITY SWITCHES

Located under the plate at the top of the arm rotation swivel are four (4) arm rotation proximity switches. Each switch detects when the trolley spray arm is facing perpendicular to the vehicle. The factory adjustment procedures that follow discuss several different types of adjustments that may apply to these switches.

Should the distance between the target plate on any of the proximity switches need to be readjusted because a proximity switch is not detecting the target, adjust the switch according to the procedures below.

1. Adjust these proximity switches so the face of each switch is 1/8" and 1/4" away from the stainless steel target plate.
2. Rotate the arm and make sure all four (4) switches are sending signals to the PLC and that there is still no interference or loss of detection with the high pressure on.

Should the trolley spray arm rotate either over or under 90° (factory setting) at all four (4) corners of the vehicle, adjustment will be necessary. Refer to the Setup document.

ARM TILT PROXIMITY SWITCH

Located at the top of the arm is the arm tilt proximity switch. This is an 18 mm diameter proximity switch. Adjust this switch, per the procedures that follows.

With the arm hanging straight down, adjust the switch horizontally toward the metal target ring so a distance of 1/8" exists between the switch and the ring.

IMPORTANT: FORCE REQUIREMENTS FOR THE FORCE APPLIED TO THE LOWER PORTION (BOTTOM) OF THE ARM ARE DETAILED ON THE SPRAY ARCH OPTION DRAWING IN THE PARTS SECTION OF THE RADIUS SERVICE MANUAL. THE FORCE WILL BE APPLIED TO THE MANIFOLD IMMEDIATELY ABOVE THE BOTTOM NOZZLE. ADJUST BY LOOSENING OR TIGHTENING THE SPRINGS HOLDING THE PLUNGER DOWN.

Next, adjust the proximity switch vertically and horizontally.

Pull the arm out to the side so that the tilt is activated. Release the arm and let it fall back down. Do this at various angles in both directions. Adjust the spring tension at the top of the arm so the arm will fall down to its normal position **under all conditions** when it is activated and then released.

DRYER OSCILLATE PROXMITY SWITCH

Located the dryer gantry in the center is the dryer oscillate proximity switch. This is a 30 mm diameter proximity switch. Adjust this switch per the procedure that follows:

1. Adjust this proximity switch so the face 1/8” to ¼” away from the stainless target ring.
2. Test operation of the dryer and make sure that the switch is detecting the target and sending signals to the PLC. Adjust if required.

WATER SOFTENER

Additive settings provided in this manual pertain to machines using soft water. *RYKO* recommends installation of a water softener with each Radius vehicle wash system to reduce additive usage and lower operating costs. If soft water is *not* used, the additive settings will need to be set higher depending on the hardness of water.

The Model 9000 Water Softener (available through *RYKO*) allows various setting adjustments to meet location requirements. For information on installation, operation, and maintenance of this unit, refer to servicing material included in shipment with the softener. The Repair Parts List below indicates replacement parts available from *RYKO*.

REPAIR PARTS LIST

Water Softener Valve	14153-800	Water Soft Meter Assembly/ 3/4"	14153-818
Water Softener Meter Cable Assy	14153-801	Water Softener Drive Gear	14153-819
Water Softener Coupling	14153-802	Water Soft Drive Motor/ 120V	14153-820
Water Softener O-Ring Kit	14153-803	Water Softener Resin Tank/ 9 x 48	14153-821
Water Softener Hold Down Clip Kit	14153-804	Water Softener Resin Tank/ 13 x 54	14153-822
Water Softener Valve, 80000 Grn	14153-805	Water Softener Resin Tank/ 16 x 65	14153-823
Water Softener Valve, 128000 Grn	14153-806	Water Soft Flint Gravel/ 30 lb.	14153-824
Water Soft Timer Motor/120V	14153-807	Water Softener Resin/ 1 Cu. Ft.	14153-825
Water Softener Meter Impeller	14153-808	Water Soft Boost Pump Switch Kit	14153-826
Water Softener Valve Cover	14153-809	Water Softener O-Ring/ Coupling	14153-827
Water Soft Brine Tank Cover/16"	14153-810	Water Softener Yoke/ 1" Sweat	14153-828
Water Soft Brine Tank Cover/14"	14153-811	Water Soft Brine Tank Assy/ 14"	14153-829
Water Soft Riser w/Diffuser	14153-812	Water Soft Brine Tank Assy/ 16"	14153-830
Water Soft Tube Nut Kit/ 3/8"	14153-813	Water Softener Injector Body	14153-831
Water Softener Meter Body	14153-814	Water Softener Main Drive Gear	14153-832
Water Soft Meter Cover O-Ring	14153-815	Water Softener Power Head/ 120V	14153-833
Water Soft Meter Cover Assy	14153-816	Water Soft Top Piston Assembly	14153-834
Water Soft Bypass Valve/ 3/4"	14153-817		

WATER HEATER

Natural or LP gas, and electric water heaters in various sizes are available from *RYKO* for your hot water needs. For information on installation, operation, and maintenance of this unit, refer to servicing material included in shipment with this product.

NOZZLE REPLACEMENT

At such time any nozzles on the High Pressure Manifold (Arm), the Rinse Halo Manifold, Rocker Panel/Wheel, UnderCar, or the Tire Chemical Sprayer need to be replaced, replace according to the part numbers indicated on the applicable drawings provided in this manual.

IMPORTANT: WHEN REPLACING A NOZZLE, INSTALL THE SAME TYPE OF NOZZLE AS THE NOZZLE BEING REMOVED. REPLACING WITH A NOZZLE THAT PROVIDES DIFFERENT GALLONS PER MINUTE VOLUME COULD CAUSE PROBLEMS IN OPERATION AND VOID THE WARRANTY.

BUILT-IN RECLAIM SYSTEM OPTION

The purpose of the Built-in Reclaim System Option is to provide a quality vehicle wash which requires a lower consumption of fresh water. This system filters and holds in storage previously used vehicle wash or rinse water which can then be reused during specified segments of a future vehicle wash.

The information that follows concerns operation of the built-in reclaim system option, its components and related options. Also explained are the operation procedures and maintenance necessary for optimal operation.

RECLAIM SYSTEM GENERAL INFORMATION

The information below explains commonly used terms and provides basic information regarding the built-in reclaim system option and its components, parts, and related options. Also included are terms describing machine components which relate to and assist in reclaim system operation.

FRESH WATER SOLENOID WASH VALVE
This solenoid supplies fresh water for the fresh water rinse cycle.

PRIME SOLENOID VALVE
This valve serves as a back up for priming the pump. Should the pump not automatically prime when required, this valve, after waiting a 5 second period for the pump to automatically self prime, will open and supply fresh water to prime the pump.

PURGE SOLENOID VALVE
This valve opens to allow drainage of sludge from the separator.

WASH PUMP
The 3 HP, 3 phase wash pump pulls reclaim water from Compartment II and pumps it through the separator to the high impact pump and then to the wash manifold.

RINSE PUMP
The 2 HP, 3 phase rinse pump is located in the pump stand and supplies the rinse halo and all chemical manifolds.

PRESSURE SWITCH (0-10 PSI)
The pressure switch measures the reclaim wash pump head pressure. If adequate pressure is not reached, the auto prime is enabled. **Note:** The pressure switch is factory set, but may be adjusted to meet location requirements.

SEPARATOR: 45 - 70 GPM
Located in the left of the Pump Stand, the centrifugal separator separates particles from the water being reclaimed. See **Reclaim Separator Operation**.

RINSE HALO
This manifold is a part of the rollover wash assembly and works in conjunction with the reclaim system to spray Hot or Cold Wax, Clear Coat or R.O. on the vehicle during the wash cycle, or apply fresh water during the rinse cycle, pre-rinse or emergency rinse.

COLLECTION (Drainage) PIT (provided by customer)
This pit is used to collect wash and rinse water during wash cycles. It also traps larger debris and allows water to flow to the first of two settling tanks (Compartment I).

SETTLING COMPARTMENT I (provided by customer)

This is a 1500 gallon (suggested size) tank that allows debris entering it to settle, after which it allows the water to flow into the second settling tank (Compartment II).

SETTLING COMPARTMENT II (provided by customer)
This tank is also a 1500 gallon settling tank (suggested size). It provides for the additional settling of debris and acts as a constant reservoir for the reclaim system to draw from.

FOOT VALVE
The foot valve keeps the suction line to the reclaim wash pump full of water between wash cycles. It is located above ground.

ABOVE GROUND STRAINER
The strainer is positioned around the foot valve. It prevents larger foreign particles from entering the line and damaging the pump, clogging the line, or causing the foot valve to malfunction.

OVERFLOW TO SANITARY SEWER (provided by customer)
Keeps water level balanced.

ACCESS COVERS (provided by customer)
It is recommended that each of the two settling tanks, Compartment I and Compartment II, have a manhole to allow access for the periodic removal of clogs, debris, and particles which have settled to the bottom of the tanks. One access cover is needed for each compartment.

AUTO-RECIRCULATION
The auto-recirculation feature recirculates water in the settling compartments. This recirculation process helps to prevent the water in the holding compartments from becoming stagnant and creating undesired scents.

The auto-recirculation sequence begins when the wash pump starts and then runs continuously for a specified time (55 minutes - default setting) drawing water from the Settling Compartment II. On Reclaim machines that have the fresh water option, the reclaim holding tank becomes full, water then flows into the overflow pipe located in the holding tank. The overflow pipe diverts the water onto the bay floor where it flows back into the tanks.

Note: During auto-recirculation the high float switch in the holding tank becomes non-functional in the detection sense, which allows water to flow into the overflow pipe.

WASH PUMP
The 3 HP, 3 phase wash pump pulls reclaim water from Compartment II and pumps it through the separator to the High Impact pump wash manifold of the wash unit.

IMPORTANT: FOR WIRING PROCEDURES AS THEY PERTAIN TO ITEMS THAT FOLLOW, REFER TO THE ELECTRICAL SCHEMATIC DRAWING AND ALL OTHER DRAWINGS THAT MAY PERTAIN TO HIGH IMPACT RECLAIM, IN THIS AND / OR THE HIGH IMPACT INSTALLATION MANUAL.

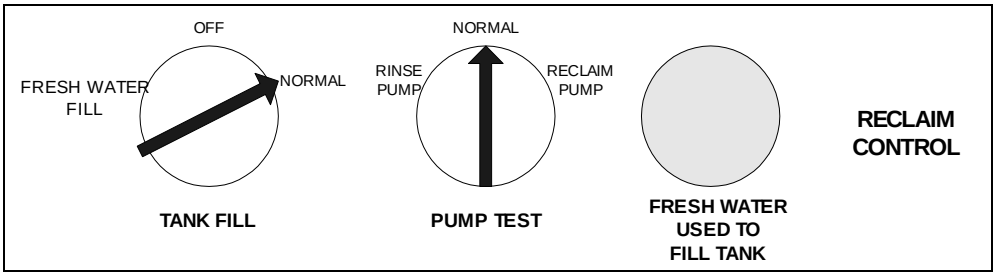
PROGRAMMABLE LOGIC CONTROLLER (PLC)
Operation of the Reclaim System is controlled by the Programmable Controller.

HIGH VOLTAGE
The main power to the Reclaim System is the Radius' 208V/230V, 60 HZ, three phase supply that is connected to the disconnect switch in the Electrical Control Cabinet. For onboard dryoption a separate 208/230V, three phase supply is connected to the dryer boom cable. The other end of the boom cable connects to the disconnect switch located on the dryer control box that is mounted on the wash machine.

CONTROL SWITCHES AND DEVICES

Switches to control specific operation of a vehicle wash machine with reclaim are located on the front of the Electrical Control Cabinet. These switches apply only to machines with reclaim.

Note: Reclaim control switches do not exist on the Control Cabinet if the machine installed is a machine *without* reclaim capabilities (Non-Reclaim).



TANK FILL SWITCH

This switch selects the mode of operation for the Reclaim.

If the switch is placed in the "Off" position, the machine will not operate. This switch does not disconnect the high or low voltage power to the unit.

The "Normal" switch position is the standard and regular setting. When in this position all wash / rinse operations will occur automatically.

PUMP TEST SWITCH

If the PUMP TEST switch is placed to the Rinse Pump position, the rinse valve will open and the rinse pump (if present) will start. Operation will occur as noted in the Description of Operation for Normal Mode. If the PUMP TEST switch is placed to the "Reclaim Pump" position, operation of the Reclaim should occur as described in the Description of Operation for Normal Mode.

The test switch is spring loaded to the center "Normal" position for automatic operation. Automatic priming of the pump will occur when the switch is placed to the setting designated "Reclaim Pump".

CIRCUIT PROTECTOR

Should the pump motor (wash or rinse) circuit protector trip a 2 digit code that pertains to this occurrence will appear on the user interface. Reset the circuit protector by pressing the circuit protector button that has tripped. Circuit protectors are located in the control cabinet.

IMPORTANT: SHOULD THE PUMP MOTOR CIRCUIT PROTECTOR BE TRIPPED, ALWAYS CHECK THE UNIT AND CORRECT POSSIBLE CAUSES FOR THIS OCCURRENCE BEFORE RESETTING.

FRESH WATER USED DURING WASH CYCLE

Labeled "Fresh Water Used ", this white lens light turns on when the pump fails to prime once. Then, if the prime fails 5 consecutive washes, this light will flash. The light will remain on or flashing until the Fresh Water Light reset button is pressed.

DESCRIPTION OF OPERATION - RECLAIM SYSTEM

1. As the vehicle wash machine operates, wash and rinse water collect in the wash bay drainage pit.

2. From the drainage pit, water flows through a 4 inch pipe to the first of two 1500-gallon (recommended size) underground settling tanks/compartments. As the water sits in the first of these two tanks (Compartment I), heavier dirt particles in the water settle at the bottom of the tank. Lighter particles float to the surface. Water then flows into the second tank (Compartment II) where additional dirt particles are removed in the same method as with the first tank.

3. A pump pulls the water from the second underground tank (Compartment II) by way of a foot valve and strainer. The foot valve helps prevent the pump suction line from draining and losing its prime between wash cycles. The strainer filters larger dirt particles from the water, thus helping prevent damage and premature wear of the pump.

4. After the water has passed through the foot valve and strainer, the pump boosts it to a separator where remaining small particles of debris are removed. See **Separator Operation**. The Separator is equipped with an automatic purge, which discharges excess water and debris into the return pipe and back to the collection pit or Compartment I.

5. From the separator the recycled water goes to the High Impact Pump or fills the reclaim holding tank (if supplied). The reclaim signal starts a sequence of events that allows reclaim water to be used with the wash via the PLC programming. See steps a. through c. that follow.

   a) First the wash pump starts and the purge solenoid valve opens so sediments in the separator will be flushed back into the reclaim drainage pit.

   b) When the high impact pump turns on, the purge valve closes. The wash pump continues to pump water through the separator. **Note:** If the pressure switch is not ON the high impact pump will not start.

   c) If the high impact (HI) pump starts and the pressure switch is lost for five seconds, the HI pump turns off and an automatic pump priming occurs. When the system detects that no water is being supplied by the reclaim pump, the prime valve opens and allows fresh water into the reclaim suction line. After the prime valve closes, if water is still not being supplied, a prime failure has occurred.

   On Radius machines with Reclaim only, the first time the pump fails to prime the Fresh Water Used light illuminates. If the pump fails to prime five (5) consecutive washes, the Fresh Water Used light flashes and an emergency rinse occurs. The machine will not operate until the reclaim system is serviced.

   On Radius machines with a Fresh Water tank, the first time the pump fails to prime the Fresh Water Used light illuminates. If the pump fails to prime five (5) consecutive washes, the Fresh Water Used light flashes.

   Then, <u>if machine setups allow</u>, the system reverts to all fresh water usage. The tank fill valve opens allowing fresh water use.

   <u>If machine setups do ***not*** allow</u> the machine to revert to fresh water, the cycle ends. The machine is now inoperable until the reclaim system is serviced.

6. Recycled water is used only during the wash portion of the UnderCar Wash, the Rocker Panel Wheel Blaster, and/or the High Pressure rinse.

7. When the wash is complete, fresh rinse water supplied from the municipal water system, is pumped to the Rinse manifold on the rollover where it flows through nozzles and sprays on the vehicle.

Occasionally, after a system has been in use for a while, the underground tanks may emit an unpleasant odor. Each reclaim system includes a standard automatic recirculation system which helps to prevent water from becoming stagnant and emitting undesirable odors. Refer to **Reclaim Adjustment Instructions**, Auto Recirculation for additional information.

RECLAIM ADJUSTMENT INSTRUCTIONS

The only reclaim adjustments that may be necessary are on the circuit protectors, the pressure switch, and the auto-recirculation. The information that follows describes possible adjustments.

CIRCUIT PROTECTORS

The circuit protectors are factory set at the full load amperage as stated on the motors. These circuit protectors should not need to be reset, but if they do, set them at the full load amperage marked on the pump motor name plates.

PRESSURE SWITCH

The pressure switch is factory set at 10 to 15 PSI. This setting should allow the system to operate properly. If the pressure switch allows the system to switch to fresh water when the wash pump seems to be working, the pressure may be set too high. To set the switch lower, turn the cut-in adjustment screw clockwise to increase both cut-out and cut-in pressure. The cut-in adjustment screw is the metal adjustment screw in the pressure switch.

IMPORTANT: IF RECLAIM WATER PRESSURE IS SATISFACTORY, BUT NOT ENOUGH TO ALLOW THE PRESSURE SWITCH TO OPEN, ADJUST THE PRESSURE SWITCH UNTIL PRESSURE REQUIREMENTS ARE MET FOR PROPER UNIT OPERATION.

AUTO RECIRCULATION

The auto-recirculation feature comes preset from the factory for a 55 minutes on, 5 minutes off, recirculation cycle. This means that for 55 continuous minutes after a 5 minute delay, automatic recirculation of the water in the holding compartments will occur. Adjustment for increasing or decreasing the time depends on the number of vehicles washed, the climate in a given area, and/or the amount of additives in the reclaim tanks. A *RYKO* service representative may adjust settings to alter recirculation time. Refer to **Auto Recirculation** under the **Built-In Reclaim System Option General Information** heading in this section for sequence information.

Set Auto Recirculation Timer to an "OFF" time of 5 minutes.
Set Auto Recirculation Timer to an "On" time of 55 minutes.

Note: The timer settings listed above are "Standard" and recommended settings for all *RYKO* equipment that utilizes the Auto Recirculation feature.

RECLAIM MAINTENANCE

1. Daily, examine all switches to verify they are functioning properly, and that all indicator lights are operative. Failure of a switch to operate normally indicates a burnt out light bulb or a loose wire.

2. Weekly, examine the Reclaim System for leaks, corrosion, etc., and to confirm operation.

3. Each month, check the foot valve and strainer to be sure they are above sediment. The strainer should also be checked to make sure it is not clogged.

4. Clean the holding compartments and collection pits of all debris. See Reclaim Tank Care that follows.

RECLAIM TANK CARE

It is important that the reclaim tanks receive care/cleaning periodically. While the automatic recirculation system does help in eliminating septic odors emitted from the tanks, other variables do exist which will require the tanks be cleaned physically. These variables are: the number of vehicles washed, the size of the reclaim tanks, the type of rollover or vehicle wash installed, ambient temperature, and the quality of the water.

The information for cleaning tanks that follows is based on the number of vehicles washed, and the use of 1500 gallon reclaim tanks. As ambient temperature and water quality may vary, cleaning recommendations may deviate from information listed on a case by case basis.

Vehicles Washed Per Year	Reclaim Tanks Cleaned
30,000 or less	Yearly
30,000 to 70,000	Semi-Annually
70,000 and above	Quarterly

RECLAIM SEPARATOR OPERATION

The steps that follow are provided to acquaint the owner/operator with basic operation of the separator. Use of this information is not intended for any form of servicing.

1. Liquid/solids enter the top of the separator. These liquid/solids enter tangentially, allowing a circular flow.

2. Liquids/solids are drawn through tangential slots and accelerated into a separation chamber. This chamber area is located in the center area of the separator.

3. Centrifugal action tosses particles that are heavier than liquid to perimeter (outer area) of the separation chamber.

4. Solids gently drop along the perimeter and into the separator's collector chamber (lower portion of separator).

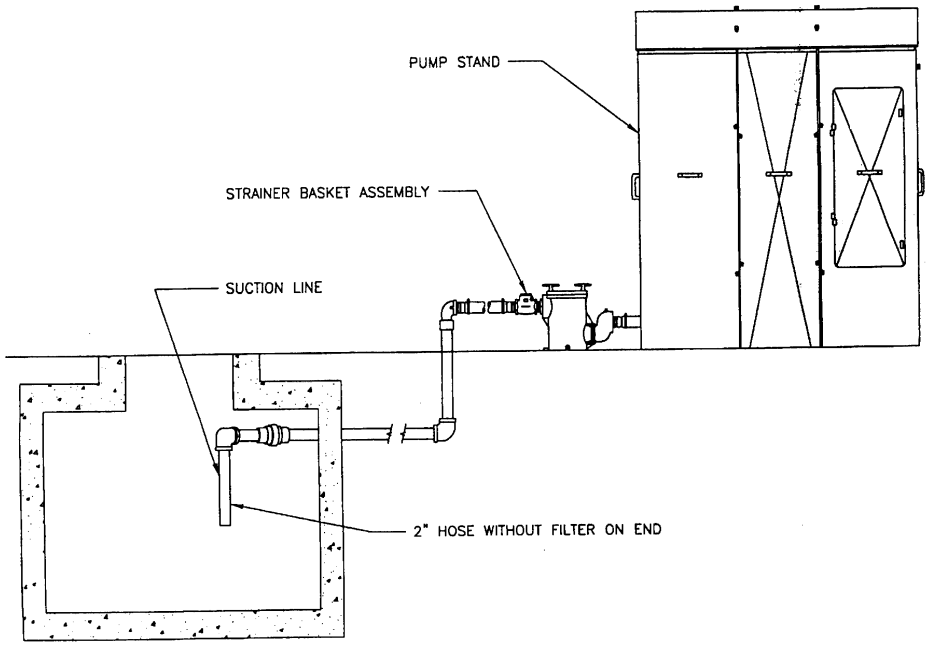
5. Solids-free liquid is drawn into the separator's low pressure area (lower portion of separator) and then up through the separator's outlet.

6. Solids are either periodically purged or continuously bled from the separator as necessary with appropriate valve system.

Note: The separator allows particles less than 74 microns to pass.

ABOVE GROUND STRAINER

The Above Ground Strainer for reclaim operations is an accessible and easy to maintain filtering device which removes larger particles from reclaimed water that may be reused during a vehicle wash. Available in new installations and as a field retrofit kit, the above ground strainer provides an alternative to installation of the foot valve and strainer in the reclaim pit. The illustration below shows the location of the above ground strainer basket assembly in relation to the reclaim pit and the pump stand and how the reclaimed water is drawn to the strainer.



Note: The suction hose between the floor outlet and the strainer basket must not be more than five feet (5') long.

ABOVE GROUND STRAINER OPERATION

The strainer basket assembly is located between the reclaim holding tank (compartment II) and the separator and serves to restrict larger, foreign particles which could cause damage to the pump, clog the line or cause the foot valve to malfunction should these particles get into the line.

A swing check valve located between the strainer basket and the floor outlet helps to maintain reclaim system prime. When water flows from the reclaim pit the swing check valve is forced open to allow the flow. When the water flow ceases, the valve swings shut.

During operation the reclaim wash pump pulls the water from the second underground tank (Compartment II) through the above ground strainer basket (rather than by way of a foot valve and strainer located in the reclaim tank). From there the water is boosted by the pump to the separator where remaining small particles are removed. See **Separator Operation**.

ABOVE GROUND STRAINER MAINTENANCE AND REPAIR

Regular maintenance is required for the above ground strainer to function properly as part of the reclaim system and to avoid unnecessary down time. The operator can perform the simple maintenance without technical assistance because of its accessibility.

Check ***daily*** for leaks between the reclaim pump and the floor outlet.

Each month check the above ground strainer to make sure it is not clogged.

CAUTION: TURN THE RECLAIM PUMP SWITCH TO *OFF* BEFORE MAINTAINING THE STRAINER.

Cleaning Procedure

The above ground strainer can be easily cleaned without losing prime and causing additional operation 'down' time. Follow the procedure below.

1. Turn the reclaim pump switch to OFF.
2. ***Remove the four (4) thumb screws on the top of the strainer slowly*** to allow built up pressure (if any) to dissipate. **Note:** This is important to prevent water from spraying inappropriately on sensitive electronic or electrical equipment.
3. Lift out the strainer basket.
4. Discard debris collected in the basket and spray the basket with water from a hose to rinse clean.
5. Replace the basket and **fill it with water** (if it does not refill spontaneously).
6. Reinsert and tighten the four thumb screws.
7. Reset the reclaim pump switch to ON.

Troubleshooting and Repair

In the event either the above ground strainer basket or the swing check valve is not functioning properly, refer to the symptoms and solutions information below.

CAUTION: TURN THE RECLAIM PUMP SWITCH TO *OFF* BEFORE SERVICING THE STRAINER.

Symptom	*Possible Solution*
Loss of reclaim system prime	Check that there are no obstructions inside the swing check valve to impede operation. Clear if necessary as described below. 1. Turn Reclaim Switch to OFF position. 2. Remove the four (4) thumb screws which secure the strainer cover. Remove the cover. 3. Lift out the strainer basket. 4. Using a length of wire, verify that the valve is closed. 5. Replace the strainer basket and **fill it with water** (if it does not refill spontaneously). 6. Replace the cover and secure with the thumb screws. 7. Return reclaim switch to ON position. **NOTE:** If the valve does not appear to be operating correctly, it will be necessary to remove it by disassembling the strainer from the system. Turn Reclaim Switch to OFF position. Refer to the installation drawing in the Installation Manual when disassembling.
Reclaim system switches completely to fresh water operation (if present).	Check the strainer basket for clogging. Clean if necessary (See **Cleaning Procedure**).
Water does not flow from wash nozzles during the wash cycle.	Check the strainer basket for clogging. Clean if necessary (See **Cleaning Procedure**). Check for leaks between the reclaim pump and the floor outlet.

MOTORS - GENERAL INFORMATION

CAUTION! BE SURE TO DISCONNECT ALL SUPPLIES BEFORE SERVICING.

CIRCUIT PROTECTOR INFORMATION

IMPORTANT: SET MOTOR CIRCUIT PROTECTORS AT FULL LOAD AMPERAGE (FLA) RATING. REFER TO THE MACHINE'S NAMEPLATE ON EACH OF THESE PUMPS FOR HORSEPOWER (HP), AMPERAGE, RPM AND MAXIMUM LOAD SPECIFICATIONS. ALSO REFER TO THE CIRCUIT PROTECTOR AND OVERLOAD SETTINGS LABEL AFFIXED TO THE INSIDE OF THE RADIUS' CONTROL PANEL DOOR.

***RYKO* Service Note:** There are two buttons on some circuit protectors. The green button is the START button and the red button is the STOP/RESET button. On other circuit protectors a lever serves as an indicator. When the lever points *toward* the contactor it is ON. If the lever points *away* from the contactor it is OFF.

WASH QUALITY BASIC INFORMATION

A high quality vehicle wash is achieved when adjustments to equipment meet both basic and individual location requirements. The following wash quality basic information pertains to High Impact machines ***with*** and ***without*** **reclaim**.

- Refer to Chemical Adjustment Procedure in this manual for pH levels.
- Water from the water softener should test "0" grains hardness.
- There should be an adequate flow of fresh water to rinse the vehicle.
- Brine from the softener must flow directly to the sewer and not into reclaim pits.
- Nozzles should be adjusted to adequately cover the vehicle with Presoak, Rinse or Wax.

HIGH IMPACT PUMP MOTOR LUBRICATION

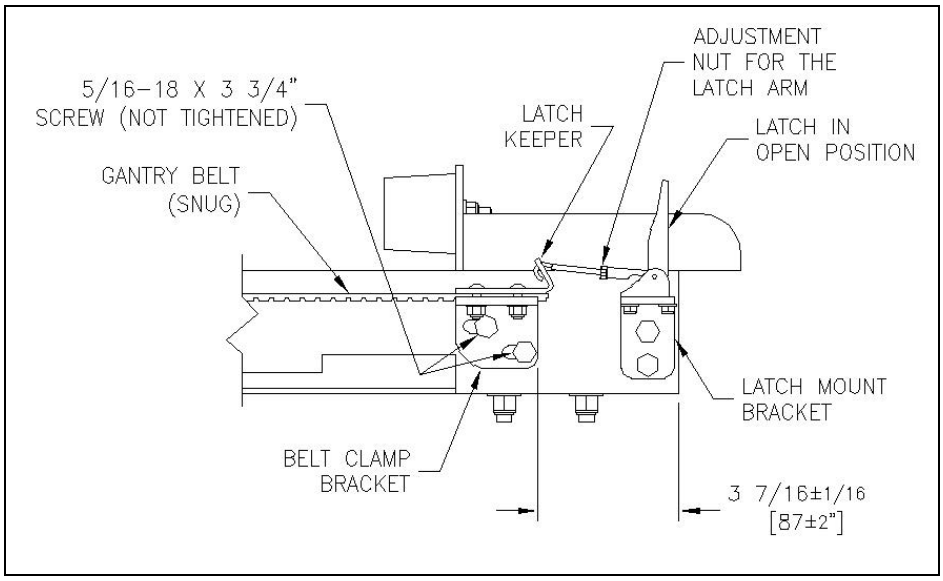
Electric motors are pre-lubricated at the factory and do not require additional lubrication at start-up. Motors with grease fittings should ***only*** be lubricated with a lithium based grease. Note the approved grease types in the greasing schedule below.

MOTOR USAGE	GREASING FREQUENCY	APPROVED GREASE TYPES
INTERMITTENT	**SEMI-ANNUAL**	Shell Dolium R FSSO Beacon 3 BP-XRB2 Shell Alvania 3 Mobil Grease 2 Texaco Regal Starfos Premium

IMPORTANT: *DO NOT* OVER-GREASE THE BEARINGS. OVER-GREASING WILL CAUSE INCREASED BEARING HEAT AND CAN RESULT IN BEARING/MOTOR FAILURE.

DRIVE BELT INSTALLATION

1. On the entrance end of both tracks, install a belt clamp bracket weldment to the insides of the bumper mount brackets using two (2) 1/2-13 jam nuts and 1/2-13 nylon nut as shown.



2. Mount the gantry drive belt to the underside of the belt clamp bracket using the stainless belt clamp and 1/4-20 nuts and washers.

3. Move the machine manually on the tracks to the entrance end so that the track wheels bump the rubber end stops..

4. Wrap the gantry belts under the entrance end plastic idler pulleys, over the cogged drive pulleys, and under the exit plastic idler pulleys. Do not fit belts loosely or force them over the pulley flanges.

5. Next, install the latch on the latch bracket mounted on the inside of the exit end of the tracks as shown in the Track Installation drawing and the illustration below.

6. Install the latch keeper on the belt clamp bracket mounted on the inside of the track and insert the end of the gantry between the latch keeper end belt clamp as shown.

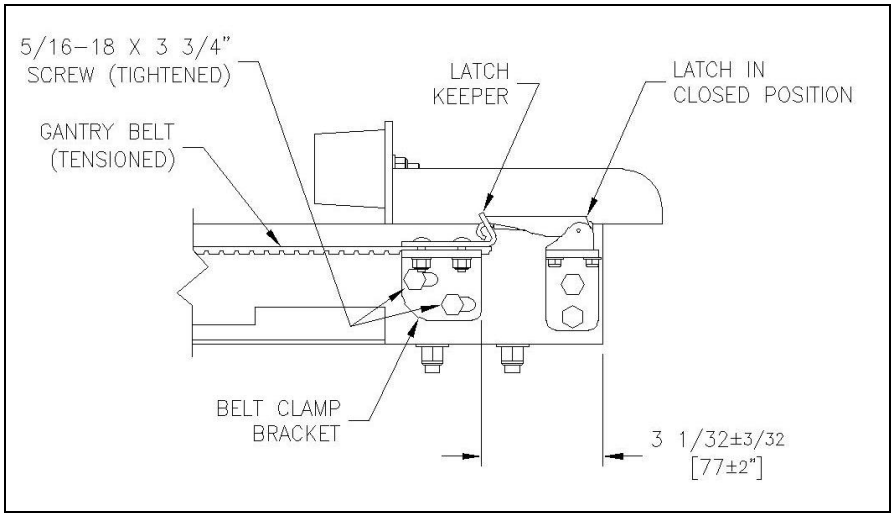
7. Loosen the 5/16"-18 x 3-3/4" long bolts going through the belt clamp and track (if needed) and pull the belt manually through the opening between the keeper and the clamp. Clamp the bottom belt clamp onto the belt teeth and attach the keeper to the belt with the 5/16" nuts. Leave the 5/16" bolts through the track loose to perform belt tensioning.

8. Hook the latch keeper with the latch arm by adjusting the arm over the notch in the keeper. Make sure the belt clamp is located 3 7/16 inches +/- 1/16" from the end of the track before hooking the keeper with arm. The belt is now ready to be pretensioned as described in the next section.

SETTING BELT PRE-TENSION

1. Tighten the drive belt with the latch (located on the inside of the track at the exit end). Move the latch handle from the open position to the closed position so that the belt clamp with keeper is pulled in the direction of the exit end of the bay.

2. Ensure the belt has been stretched 5/16 to 3/8 inches (8mm-10mm) so that the belt clamp is approximately 3 1/16" from the end of the track as shown below. If the dimension is not obtained, readjust the latch arm nut and repeat closing the clamp.



3. Ensure the belt fits over the idler and drive pulleys correctly and tighten the 5/16" bolts going through the belt clamp and track.

4. Move the gantry back and forth from end to end. Observe the motion of the belts as the machine moves. The pre-tension is set correctly when the slack side of the belt remains even with, or slightly above the belt trays. Any sag below the trays indicates that pre-tension is too low. There will be some flapping of the belt onto the belt trays that are the furthest away from the machine.

5. Conversely, the pre-tension is too tight when the ends of the drive shaft are pulled down and the middle is bowed up excessively.

6. Adjust the belt tension brackets accordingly to set the correct tension, if required.

CHECKING THE BELT PRE-TENSION AND GANTRY ALIGNMENT

1. Check the belt pretension after the first **250-500 washes** and regularly every two to three months or 3500 cycles.

2. Move the machine to the exit end of the tracks and turn off the machine power. Verify the machine alignment by measuring the gap between the front wheel and the rubber bumper stop or mount bracket on both sides. The gap on both sides should match within 3/4" (20 mm) to properly align.

3. Loosen the entrance drive belt tension brackets and, if necessary, readjust the machine to align properly. Place the belts on the drive pulleys. Do not pry or force belts over the aluminum drive pulley flanges. Press the belts with your hand to engage the belt teeth with the pulley teeth and position the slack of each belt on the entrance side of the machine.

4. Take up slack until the belts fit snugly. Check the alignment of each belt with the flat idler pulleys and the drive pulleys. Wipe away any existing mark on the top of the belts. Follow the steps in Setting Belt Pre-Tension to complete checking of the belt pretension.

IMPORTANT: PROPER BELT PRE-TENSION AND GANTRY ALIGNMENT WITH THE TRACKS ARE CRITICAL IN PREVENTING PREMATURE WEAR TO THE GANTRY WHEELS AND BELT IDLER PULLEY.

GANTRY DRIVE PULLEY REPLACEMENT

If either drive pulley assembly on the gantry drive shaft assembly needs to be reinstalled or replaced, refer to instructions and part numbers on the Drive Addition drawing provided in the this manual and to the following information.

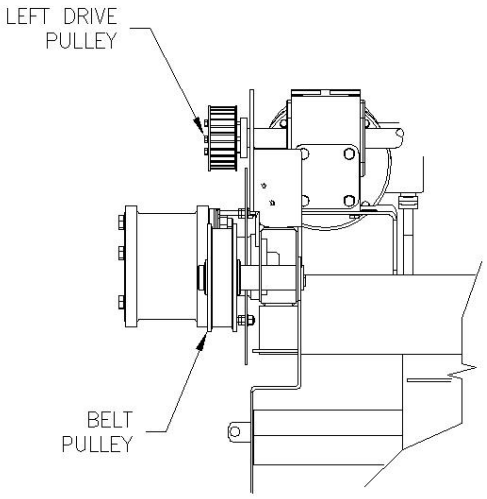
IMPORTANT: PROPER ALIGNMENT OF THE DRIVE PULLEY WITH THE BELT FLAT PULLEYS IS CRITICAL IN PREVENTING PREMATURE BELT WEAR. REFER TO THE ILLUSTRATIONS BELOW TO CHECK ALIGNMENT.

LEFT DRIVE PULLEY (Bushing Flange Toward Reducer)

1. Align tapped screw holes in the bushing flange with the drilled holes in the pulley.

2. Insert No. 10 24 x 2" Lg Stainless Allen Screws through the drilled holes in the pulley and thread them loosely into the tapped holes in the bushing flange.

3. Position the pulley over the center line of the belt idler pulleys. Refer to the illustration at right.



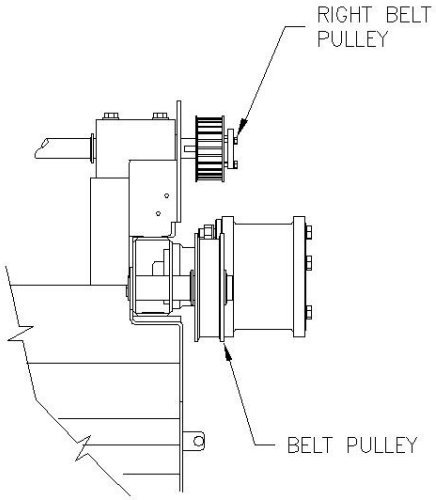
Tighten the screws with lockwashers progressively using a torque wrench and socket. When the screw torque is at 60 to 65 lbs., make two more rounds of tightening to ensure all screws are uniformly tightened.

RIGHT DRIVE PULLEY (Bushing Flange Away From Idler Bearing)

1. Align the drilled holes in the bushing flange with the tapped holes in the pulley.

2. Insert No. 10 24 x 1" Lg Stainless Allen Screws with lockwashers through the drilled holes in the bushing flange and thread them loosely into the tapped holes in the pulley.

3. Position the pulley over the center lines of the idler pulley as shown in the illustration at right.



4. Tighten the screws with lockwashers progressively using a torque wrench and socket. When the screw torque is at 60 to 65 lbs., make two more rounds of tightening to ensure all screws are uniformly tightened.

RAISING THE MACHINE (GANTRY) OFF THE TRACKS

To maintain proper gantry movement, the gantry may occasionally need to be raised from the tracks to inspect, clean, or replace worn parts. Perform inspection / cleaning procedures according to the **Maintenance Schedule** in this manual or if the gantry begins to stall or skid on the tracks or the wheels begin squeaking.

CAUTION!! CLOSE THE BAY TO VEHICLE TRAFFIC BEFORE BEGINNING THIS PROCEDURE.

1. Position the machine in the middle of the overhead tracks, and move the trolley to the middle of the trolley tracks. **SHUT OFF ALL POWER TO THE MACHINE.** Remove the side and bottom covers.

2. Remove the track stay weldments, and disconnect the gantry, if present, from **right** side of the machine.

3. Position a floor service jack (minimum 2 ton capacity) under the 11 gauge stainless Right End Cover in a center position between the trolley tracks.

4. Place a 2"x 4" board on the jack and under the End Cover.

5. Raise the jack with the 2" x 4" until the board contacts the End Cover.

CAUTION!!! BEFORE RAISING THE MACHINE OFF THE TRACKS, ENSURE THE 2" X 4" BOARD IS VERTICAL, THE JACK IS DIRECTLY UNDER THE END COVER, AND IT IS CENTERED BETWEEN THE TROLLEY TRACKS.

6. Raise the machine 1/2" to 3/4" above the track.

CAUTION!! CLAMP 2" X 4" BLOCKS TO THE TRACK IN FRONT AND BACK OF THE RIGHT, REAR WHEEL IN ORDER TO KEEP THE MACHINE FROM MOVING.

CAUTION!! TAKE CARE NOT TO PINCH HANDS OR FINGERS UNDER THE WHEEL.

CAUTION!! NO ONE SHOULD STAND DIRECTLY UNDER THE RAISED EQUIPMENT UNNECESSARILY.

7. Inspect/replace the wheel and/or hub assembly, or bolt pulley whichever pertains to the problem/inspection.

8. Carefully lower the macine cover onto the track and reinstall track stays and covers. Reconnect the dryer, if present.

9. Go to the left side of the machine and repeats 2 - 8.

10. Carefully lower the machine down onto the left track and reinstall the left track stay weldments. Ensure that the track stays are not touching the underside of the track, but are no more than 1/8" from touching.

11. Turn the power back on and move the machine back and forth on the tracks to verify that the machine stops and starts precisely and the wheels roll smoothly. When finished, return to the machine home position.

Reopen the wash bay to vehicle traffic. The equipment is now ready for wash operation.

DIAGNOSTIC CODES

If an event occurs that could hinder proper operation of the machine, the digit numeric code will display on the user interface. This code normally indicates an equipment condition that requires attention to ensure proper machine operation. The 2-Digit Diagnostic Code Information document in the explains each 2-digit code and the appropriate action for resolving the situation. This document also explains how to reset the display after an event.

Note: When contacting the local service center, be sure to explain any 2-Digit Codes appearing on the equipment display. This will help to determine if the event can be resolved by on-site personnel or if a technical service visit is required.

Additional 2-digit displays can be ordered for convenient placement in the kiosk or in the bay.

WASH COUNTS AND PUMP HOURS

The user interface display is also used to determine the total number of washes and the total pump hours the equipment has performed in its lifetime.

TEST FUNCTIONS

The user interface display is also used when performing equipment tests.

PUMP TROUBLESHOOTING PROCEDURES

(MULTI-STAGE CENTRIFUGAL PUMPS)
Refer to the correction procedure appropriate for equipment conditions.

Problem: The Pump Does Not Run

	Troubleshooting Procedure
Motor is defective -	Turn off the power and disconnect the wiring. Measure the lead to lead resistances with an ohmmeter (RX-1). Measure lead to ground values with an ohmmeter (RX-100K). Record the measured values. If an open or grounded winding is found, remove the motor and repair or replace.
Pump is bound -	Turn off the power and manually rotate the pump shaft. If the shaft does not rotate easily, check the coupling setting and adjust as necessary. If shaft rotation is still tight, remove the pump and inspect. Disassemble and repair.

Problem: The Pump Runs At Reduced Capacity Or Does Not Deliver Water.

	Troubleshooting Procedure
Wrong rotation -	Check wiring for proper connection. Correct wiring.
Strainers, check or foot valves are clogged -	Remove the strainer, screen ore valve and inspect. Clean and replace. Reprime pump.
Pump has leaks -	Replace seals or gaskets.
Suction and/or discharge piping leaks -	Air in the suction pipe. Suction pipe, valves and fittings must be airtight. Repair any leaks and retighten all loose fittings. Check the tank for proper water level.
Pump impeller or guide is clogged -	Disassemble and inspect pump passageways for debris. Remove any foreign materials.

Problem: Fuses Blow Or Circuit Breakers Or Overload Relays Trip

	Troubleshooting Procedure
Low voltage -	Check voltage at the starter panel and motor. If voltage varies more than +/- 10%, contact the power company. Check the wire sizing.
Motor overloads are set too low -	Cycle the pump and measure the amperage. Increase the heater size or adjust the trip setting to a maximum of the motor nameplate (full load) current.
Three-phase current is imbalanced -	Check the current draw on each lead to the motor (must be within +/- 5%). If not within range, check the motor and wiring. Rotating all leads may eliminate this problem.
Motor is shorted or grounded -	Turn off the power and disconnect the wiring. Measure the lead to lead resistances with an ohmmeter (RX-1). Measure lead to ground values with an ohmmeter (RX-100K). Record the measured values. If an open or grounded winding is found, remove the motor and repair or replace.
Wiring or connections are faulty -	Check for proper wiring and loose terminals. Tighten loose terminals. Replace damaged wire.
Pump is bound -	Turn off the power and manually rotate the pump shaft. If the shaft does not rotate easily, check the coupling setting and adjust as necessary. If shaft rotation is still tight, remove the pump and inspect. Disassemble and repair.
Bad overload -	Measure the amp draw versus the setting.
Too much water flow -	Check for leaks or wrong nozzles which would cause the pump to pump more water than the motor can handle.

INSTALLING A NEW PROGRAM CHIP - COINBOX OR CODE-A-WASH

***RYKO* Service Note:** Before installing a new program chip in the Code-A-Wash IV or the coinbox, it is a good idea to print any available programming and hardware reports. If the printing option is not available, make a few notes of basic settings. Having this information available for reference can considerably shorten the time necessary to complete the new setups and programming. Refer to the Code-A-Wash IV and coin box service manuals for printing instructions.

When the chip has been installed and programming is complete, reprint the reports and save them for future reference in the event of equipment failure or accidental overwrite.

SPRAY ARM BREAK AWAY TRANSMITTER TEST

Periodically test the optional spray arm break away transmitter to ensure proper operation. (See the Maintenance Schedule in this Manual. Performing this test requires two people.

IMPORTANT: PERFORM THIS TEST WHEN THE MACHINE IS NOT ARMED AND IS NOT WASHING A VEHICLE.

STEP 1: Remove four white screw caps from the head of the screws that secure the white plastic cover to the horizontal spray arm. Remove the plastic cover and the mounting clamp with transmitter off of the spray arm by removing the four (4) screws. **Note:** The transmitter assembly is connected to the tilt switch and should be kept with the spray arm.

STEP 2: Remove the shear bolt, nut and washer. Allow the spray arm to swing out and trigger the arm break away transmitter. The RF receiver mounted in the machine gantry terminal box will signal the machine controls causing the bay switch buzzer to sound for 5 seconds and the machine movement beeper alarm to sound continuously. Keep the arm tilted for ten (10) seconds. During that time, the RED LED on the RF Receiver will light continuously and the GREEN LED should flash on only once then go off.

CAUTION! IF THE RED LED DOES NOT LIGHT CONTINUOUSLY AND THE BAY SWITCH BUZZER DOES NOT SOUND THE TRANSMITTER MUST BE REPLACED. FAILING TO REPLACE THE TRANSMITTER MAY CAUSE THE BREAK AWAY SIGNAL TO MALFUNCTION, CAUSING DAMAGE TO THE MACHINE OR A VEHICLE.

CAUTION! IF THE GREEN LED STAYS ON CONTINUOUSLY WHILE THE ARM IS TILTED THEN THE TRANSMITTER BATTERY IS LOW AND THE TRANSMITTER MUST BE REPLACED. FAILING TO REPLACE THE TRANSMITTER MAY CAUSE THE BREAK AWAY SIGNAL TO MALFUNCTION, CAUSING DAMAGE TO THE MACHINE OR A VEHICLE.

The machine is now in a no-operation condition and can no longer arm for a wash. It remains in this condition until it is reset. The user interface display shows an 08 diagnostic code and a 4-digit diagnostic code 8608 is recorded.

STEP 3: Reinstall the shear bolt. Install the flat 3/8" (10 mm) stainless steel washer under the nut when replacing the shear bolt. ***Do not*** install the washer under the head of the shear bolt. Draw the two stainless steel blocks (where the bolt goes through) of the break away assembly together by tightening the nut. After drawing the two halves together, loosen the nut approximately 1/4 turn until the washer under the nut can spin freely.

CAUTION! USE ONLY THE SHEAR BOLT RECOMMENDED FOR THIS EQUIPMENT. USE OF ANOTHER BOLT WILL NOT ALLOW THE SPRAY ARM BREAK AWAY TO OPERATE PROPERLY AND MAY CASUE DAMAGE TO THE MACHINE OR TO VEHICLES. WHEN ORDERING REPLACEMENT PARTS, CONTACT YOUR AUTHORIZED RYKO SERVICE CENTER IF UNSURE OF THE PROPER PART TO ORDER,.

STEP 4: Reassemble the white plastic cover and the mounting clamp with transmitter onto the horizontal spray arm using the screws previously removed. Reattach the four (4) screw caps previously removed.

WARNING! NEVER RESET THE MACHINE TO ALLOW FURTHER OPERATION WITHOUT FIRST REPLACING THE SHEAR BOLT AND INSPECTING THE SPRAY ARM AND MACHINE TO ENSURE CONTINUED OPERATION WILL BE SAFE. FAILING TO DO SO MAY RESULT IN DAMAGE TO THE MACHINE OR A VEHICLE. IF IN DOUBT, CONTACT YOUR AUTHORIZED RYKO SERVICE CENTER FOR ASSISTANCE.

STEP 5: The machine will not operate again until it is reset via the Test Function FC "Arm Break Away Reset". Refer to the Test Function Information document included in the Owner's Manual to reset the machine movement beeper alarm and allow the machine to operate normally.

TWO SPRAY ARM BREAKAWAY UNITS AT ONE SITE - TESTING / REPLACEMENT

When two machines are installed at the same site with the Optional Spray Arm Breakaway testing procedures should be performed on both units to verify that the transmissions do not interfere with operations of either machine.

CAUTION! WHEN TWO RADIUS MACHINES WITH THE OPTIONAL SPRAY ARM BREAKAWAY ARE INSTALLED AT THE SAME LOCATION, THE SPRAY ARM BREAKAWAY TRANSMITTER AND RECEIVER ON ONE MACHINE MUST BE MODIFIED TO USE CODE 2 OPERATION TO AVOID INTERFERENCE BETWEEN THE MACHINES DURING OPERATION.

REPLACEMENT OF A MODIFIED CODE 2 UNIT

IMPORTANT: IF A MODIFIED CODE 2 RECEIVER OR TRANSMITTER MUST BE REPLACED THEN THE REPLACEMENT UNIT MUST ALSO BE MODIFIED.

When multiple machines with the spray arm breakaway option are installed at one site, one transmitter and receiver pair should have been modified for code 2 operation as described in the steps below. When testing or repairing, a spray arm breakaway receiver unit in the gantry junction box with a "2" written on the face of the receiver enclosure indicates that the transmitter and receiver for that machine have been modified for code 2 operation. When installing a new or replacement code 2 receiver or transmitter, perform the following modifications pertinent to the unit replaced. When finished, complete the Spray Arm Breakaway Transmitter Test and verify there is no interference with the other on-site machine.

Step 1: Trim off the small loop of wire extending from the spray arm breakaway transmitter module mounted to the spray arm under the white cover.

Step 2: Using a permanent marker, write "**2**" on the transmitter label and reassemble.

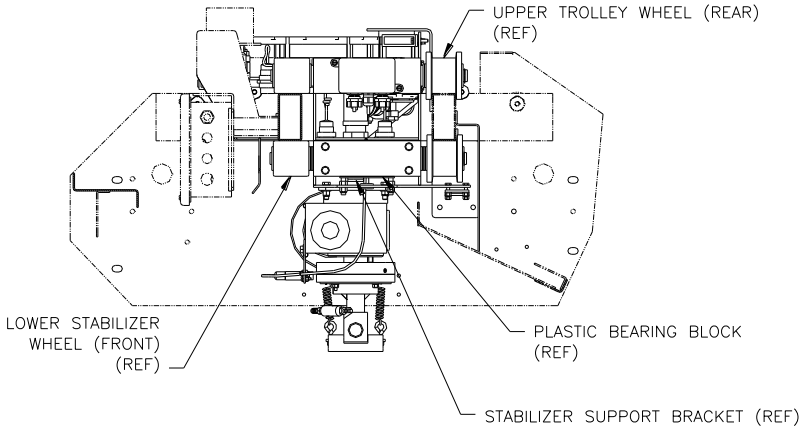
Step 3: Carefully open the spray arm breakaway receiver enclosure located in the gantry junction box and carefully cut the printed circuit board trace between the two **A0** designations.

Step 4: Reassemble and, using a permanent marker, write “2” on the face of the receiver enclosure below the antenna.

Step 5: Test the breakaway transmitters on both machines to be certain they perform properly and that they do not interfere with each other.

TROLLEY ROLLER AND STABILIZER WHEEL INFORMATION

The lower sets of stabilizer wheels must make contact with the underside of the trolley tracks. This contact prevents the trolley end stop prox gap from increasing and prematurely losing contact with the trip plate. Also, proper wheel tightness prevents lateral play of the trolley on the tracks that can result in trolley timing problems. Raise the lower wheels, if necessary, to ensure this contact.



RAISING THE LOWER STABILIZER WHEELS

Loosen the 5/16-18 x 2-3/4 stainless steel screws holding the rectangular plastic bearing block onto the right side of the trolley, and the 3/8" nuts on the underside of the trolley base plate holding the stabilizer bracket. Raise the rectangular plastic bearing block with stabilizer wheel assembly up to contact the track. Turn the 3/8" nuts on the top side of the trolley weldment base plate an additional 1/4 turn after contact to ensure proper tension. Repeat the procedure for the left side of the trolley. Ensure that the upper trolley wheels do not rise up off the top of the track during actual high pressure spraying, or simulate spraying by pulling on the lower spray arch.

PANELS AND COVERS - CLEANING AND WAXING

Refer and adhere to the procedures that follow when cleaning and waxing panels and covers of the machine.

- Dust and clean the panels/covers with a soft, clean, damp cloth or chamois. Wipe the surface gently when performing this procedure. **DO NOT** use cloths containing grit or abrasive particles, or kitchen scouring type compounds to clean (wash, wax, polish, etc.) or dust the machine covers or panels.

- **For light build-up of dirt and grime,** use pure liquid soap and lukewarm water. **For heavy build-up of dirt, grime, or lime,** wash down with lukewarm water and, while still wet, follow with full strength *RYKO* General Purpose Cleaner. See Recommended Cleaning Agents. **NEVER** use boiling water, strong solvents or other materials (see Cleaning and Waxing Agents Not Recommended), to clean the covers or panels, as they will soften the plastics.

- When washing is complete, rinse the surface with lukewarm water.

- Use a clean, damp cloth or chamois and dry the panels/covers after rinsing. When performing this procedure, ***blot*** **dry the surface**. ***Do Not Wipe The Surface*****.**

- To obtain the best protection and highest degree of polish, wax the panel / cover surfaces sparingly. See **Recommended Waxing Agents**.

- Use a soft, clean cloth and apply wax sparingly in a thin, even film over the entire surface of each panel or cover. If required, let the wax dry before polishing the cover or panel surface. Refer to directions on the wax container to determine how long wax should remain on the surface before polishing.
- Use a clean, cotton flannel or jersey cloth and polish the waxed surfaces lightly. After polishing, use a damp, clean cloth and gently wipe the surfaces. This helps to ground any electrostatic charges that may attract dust particles.

- **NEVER** subject covers or panels to hard, direct blows.

- Light scratches and abrasions might be removed by waxing with Simonize paste wax. Deeper scratches or abrasions might be removed by lightly buffing the cover/panel with a fine grade of rubbing compound.

RECOMMENDED CLEANING AGENTS

For light build-up: *RYKO* Detergent, Fantastic, Mr. Clean, 409, Joy, Cascade. All cleaning agents must be in liquid form.

For heavy build-up: *RYKO* Cleaner/General Purpose (Part No. 13398-002).

RECOMMENDED WAXING AGENTS

Simonize, Aero Wax, and Glo-Coat.

CLEANING AND WAXING AGENTS *NOT* RECOMMENDED

Wisk, Liquid All, Dynamo, Cold Power Liquid, Endust, Lestoil, Pine-Sol, Gain, Halogenated Hydrocarbons, Ketones, Cellosolve Acetate, Aromatic Hydrocarbons (Amsoc G, Solvesso 100, Solvesso 150), Tetrahydrofuran, Butyl Cellosolve, Methanol, Ethanol, Isopropanol (90% & 70% Commercial), Gasoline, Brake Fluid, Kerosene, Isopar K, Hexane, Spot Cleaner (Trichlorethane, Trichlorethylene,

Perchlorethylene), Abrasives (cleaners, example "Comet"), Plasti Shine, Carnu, Turtle Wax, Body Sheen, Johnson's Pride, Dupont No. 7 (rubbing compound), and Lighter Fluid.

WARRANTY INFORMATION

WARRANTY PARTS RETURN

All *RYKO* machines and accessories are built for longevity and reliability. Engineering designs are thoroughly tested and only the highest quality parts and components are used in the manufacture of *RYKO* equipment. Occasionally, however, a part or component may be defective. If a part on your rollover equipment should fail under the conditions set forth in the *RYKO* Radius Limited Warranty, it should be returned.

If your equipment was installed by a *RYKO* distributor, return the part freight prepaid to your authorized distributor. If you are located in the factory-direct sales and service area, return the part prepaid to *RYKO*. Be sure to contact the distributor or factory before returning any part to insure correct procedure is followed to receive a replacement part.

A *RYKO* Return Material Tag must be completely filled out and attached to each part returned.

Effective 8/94

SITE INFORMATION LOG

The Site Information Log is intended as a record of changes from the “standard” electrical schematic or when mechanical changes are made to equipment which significantly modify the performance of the car wash machine.

DATE = Date of change.

MACHINE AFFECTED = Product Name

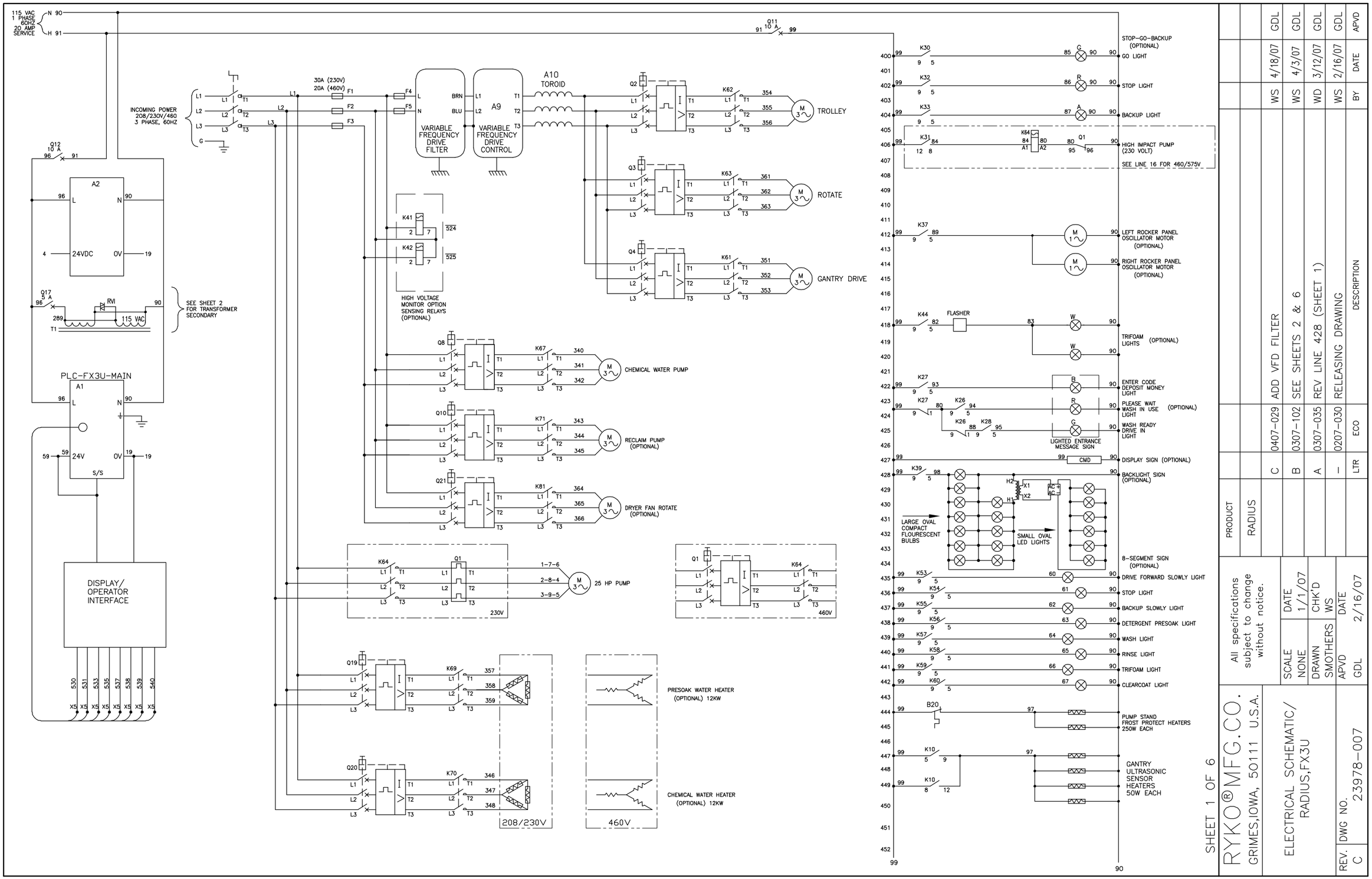
CHANGE MADE = How machine operation was changed.

CHANGE REQUESTED BY = Owner, Technician or *RYKO* Customer Service / Engineering.

CAR ID# = If CAR submitted.

TECHNICIAN INITIALS = Initials of Technician making change

DATE	MACHINE AFFECTED	CHANGE MADE	CHANGE REQUESTED BY	CAR ID#	TECHNICIAN INITIALS



REV.	DESCRIPTION	DATE	BY
C	0407-029 ADD VFD FILTER	4/18/07	WS
B	0307-102 SEE SHEETS 2 & 6	4/3/07	WS
A	0307-035 REV LINE 428 (SHEET 1)	3/12/07	WD
–	0207-030 RELEASING DRAWING	2/16/07	WS
LTR	ECO	APVD	GDL

FORM #19477-039 REV B 1/21/97

PRODUCT: RADIUS

All specifications subject to change without notice.

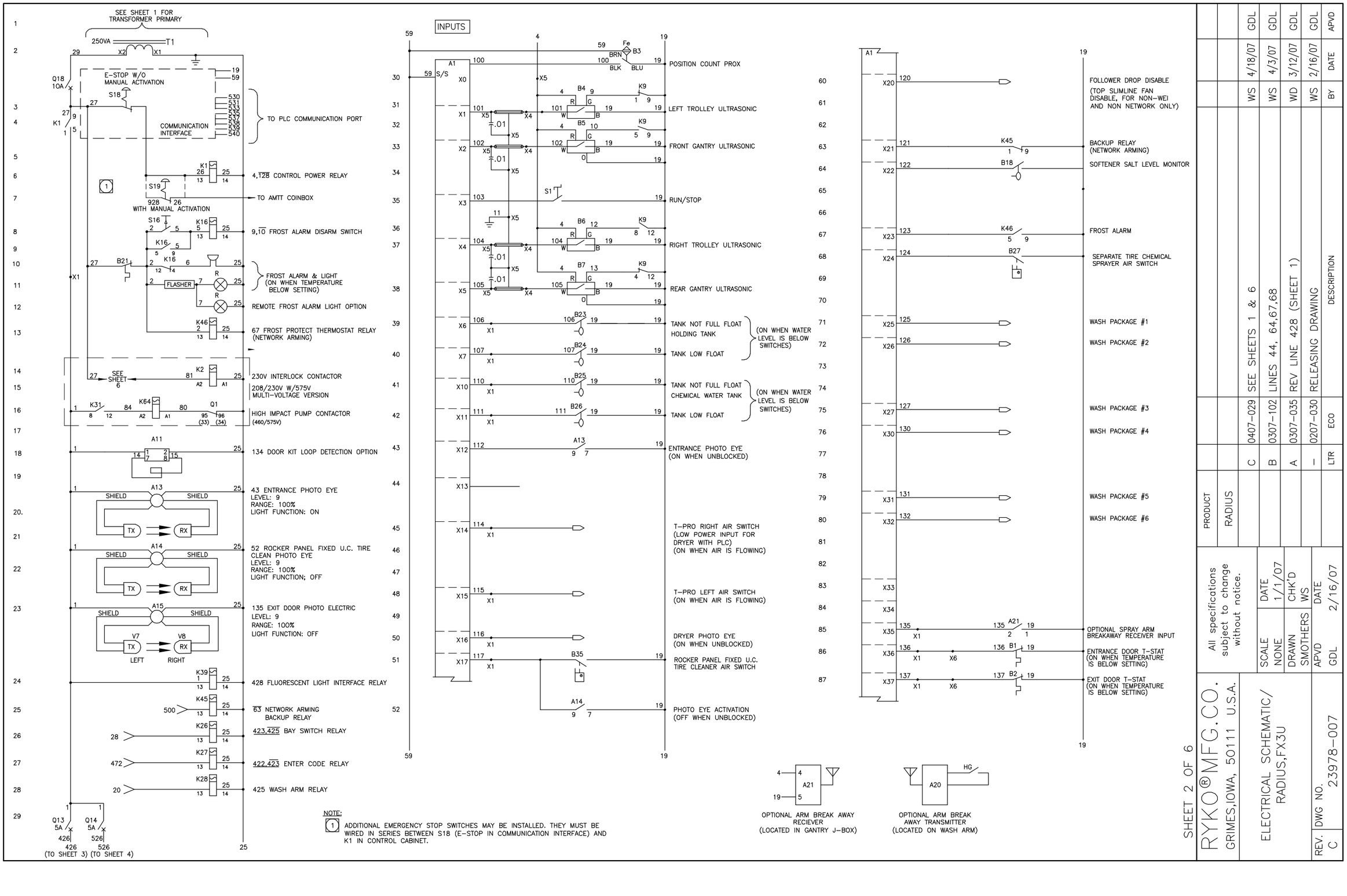
SCALE NONE | DATE 1/1/07
DRAWN SMOTHERS | CHK'D WS
APVD GDL | DATE 2/16/07

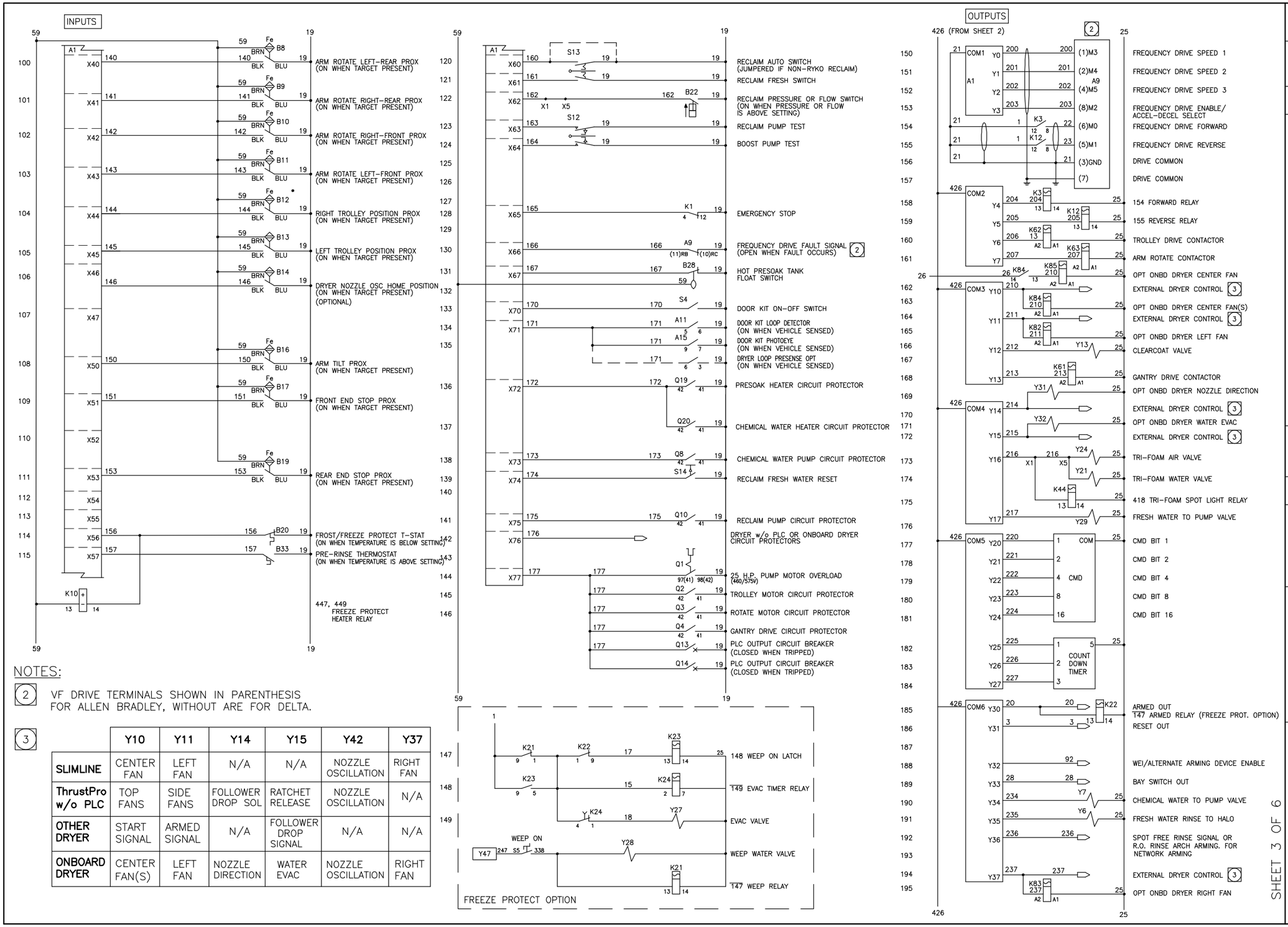
RYKO® MFG. CO.
GRIMES, IOWA, 50111 U.S.A.

ELECTRICAL SCHEMATIC/ RADIUS,FX3U

SHEET 1 OF 6

REV. C
DWG NO. 23978-007


SEE SHEET 1 FOR TRANSFORMER PRIMARY
250VA T1
E-STOP W/O MANUAL ACTIVATION
Q18 10A
S18
COMMUNICATION INTERFACE
TO PLC COMMUNICATION PORT
4,128 CONTROL POWER RELAY
S19
928 WITH MANUAL ACTIVATION
TO AMTT COINBOX
9,10 FROST ALARM DISARM SWITCH
FROST ALARM & LIGHT (ON WHEN TEMPERATURE BELOW SETTING)
FLASHER
REMOTE FROST ALARM LIGHT OPTION
67 FROST PROTECT THERMOSTAT RELAY (NETWORK ARMING)
230V INTERLOCK CONTACTOR
208/230V W/575V MULTI-VOLTAGE VERSION
HIGH IMPACT PUMP CONTACTOR (460/575V)
134 DOOR KIT LOOP DETECTION OPTION
43 ENTRANCE PHOTO EYE
LEVEL: 9
RANGE: 100%
LIGHT FUNCTION: ON
52 ROCKER PANEL FIXED U.C. TIRE CLEAN PHOTO EYE
LEVEL: 9
RANGE: 100%
LIGHT FUNCTION; OFF
135 EXIT DOOR PHOTO ELECTRIC
LEVEL: 9
RANGE: 100%
LIGHT FUNCTION: OFF
LEFT
RIGHT
428 FLUORESCENT LIGHT INTERFACE RELAY
63 NETWORK ARMING BACKUP RELAY
423,425 BAY SWITCH RELAY
422,423 ENTER CODE RELAY
425 WASH ARM RELAY
(TO SHEET 3)
(TO SHEET 4)
INPUTS
POSITION COUNT PROX
LEFT TROLLEY ULTRASONIC
FRONT GANTRY ULTRASONIC
RUN/STOP
RIGHT TROLLEY ULTRASONIC
REAR GANTRY ULTRASONIC
TANK NOT FULL FLOAT HOLDING TANK
TANK LOW FLOAT
(ON WHEN WATER LEVEL IS BELOW SWITCHES)
TANK NOT FULL FLOAT CHEMICAL WATER TANK
TANK LOW FLOAT
(ON WHEN WATER LEVEL IS BELOW SWITCHES)
ENTRANCE PHOTO EYE (ON WHEN UNBLOCKED)
T-PRO RIGHT AIR SWITCH (LOW POWER INPUT FOR DRYER WITH PLC) (ON WHEN AIR IS FLOWING)
T-PRO LEFT AIR SWITCH (ON WHEN AIR IS FLOWING)
DRYER PHOTO EYE (ON WHEN UNBLOCKED)
ROCKER PANEL FIXED U.C. TIRE CLEANER AIR SWITCH
PHOTO EYE ACTIVATION (OFF WHEN UNBLOCKED)
FOLLOWER DROP DISABLE (TOP SLIMLINE FAN DISABLE, FOR NON-WEI AND NON NETWORK ONLY)
BACKUP RELAY (NETWORK ARMING)
SOFTENER SALT LEVEL MONITOR
FROST ALARM
SEPARATE TIRE CHEMICAL SPRAYER AIR SWITCH
WASH PACKAGE #1
WASH PACKAGE #2
WASH PACKAGE #3
WASH PACKAGE #4
WASH PACKAGE #5
WASH PACKAGE #6
OPTIONAL SPRAY ARM BREAKAWAY RECEIVER INPUT
ENTRANCE DOOR T-STAT (ON WHEN TEMPERATURE IS BELOW SETTING)
EXIT DOOR T-STAT (ON WHEN TEMPERATURE IS BELOW SETTING)
OPTIONAL ARM BREAK AWAY RECIEVER (LOCATED IN GANTRY J-BOX)
OPTIONAL ARM BREAK AWAY TRANSMITTER (LOCATED ON WASH ARM)
NOTE:
1 ADDITIONAL EMERGENCY STOP SWITCHES MAY BE INSTALLED. THEY MUST BE WIRED IN SERIES BETWEEN S18 (E-STOP IN COMMUNICATION INTERFACE) AND K1 IN CONTROL CABINET.
SHEET 2 OF 6
RYKO® MFG. CO.
GRIMES, IOWA, 50111 U.S.A.
ELECTRICAL SCHEMATIC/ RADIUS, FX3U
PRODUCT RADIUS
All specifications subject to change without notice.
SCALE NONE
DRAWN SMOTHERS
DATE 1/1/07
CHK'D WS
APVD
DATE GDL 2/16/07
REV. C
DWG NO. 23978-007
C 0407-029 SEE SHEETS 1 & 6 WS 4/18/07 GDL
B 0307-102 LINES 44, 64,67,68 WS 4/3/07 GDL
A 0307-035 REV LINE 428 (SHEET 1) WD 3/12/07 GDL
- 0207-030 RELEASING DRAWING WS 2/16/07 GDL
LTR ECO DESCRIPTION BY DATE APVD
FORM #19477-039 REV B 1/21/97



NOTES:

2 VF DRIVE TERMINALS SHOWN IN PARENTHESIS FOR ALLEN BRADLEY, WITHOUT ARE FOR DELTA.

3

	Y10	Y11	Y14	Y15	Y42	Y37
SLIMLINE	CENTER FAN	LEFT FAN	N/A	N/A	NOZZLE OSCILLATION	RIGHT FAN
ThrustPro w/o PLC	TOP FANS	SIDE FANS	FOLLOWER DROP SOL	RATCHET RELEASE	NOZZLE OSCILLATION	N/A
OTHER DRYER	START SIGNAL	ARMED SIGNAL	N/A	FOLLOWER DROP SIGNAL	N/A	N/A
ONBOARD DRYER	CENTER FAN(S)	LEFT FAN	NOZZLE DIRECTION	WATER EVAC	NOZZLE OSCILLATION	RIGHT FAN

		C	0407-029	ECO
		B	0307-102	
		A	0307-035	
		–	0207-030	LTR
PRODUCT	RADIUS			

		WS	4/18/07	GDL
		WS	4/3/07	GDL
		WD	3/12/07	GDL
		WS	2/16/07	GDL
		BY	DATE	APVD
		SEE SHEETS 1 & 6		
		SEE SHEETS 2 & 6		
		REV LINE 428 (SHEET 1)		
		RELEASING DRAWING		
		DESCRIPTION		

FORM #19477-039 REV B 1/21/97

All specifications subject to change without notice.

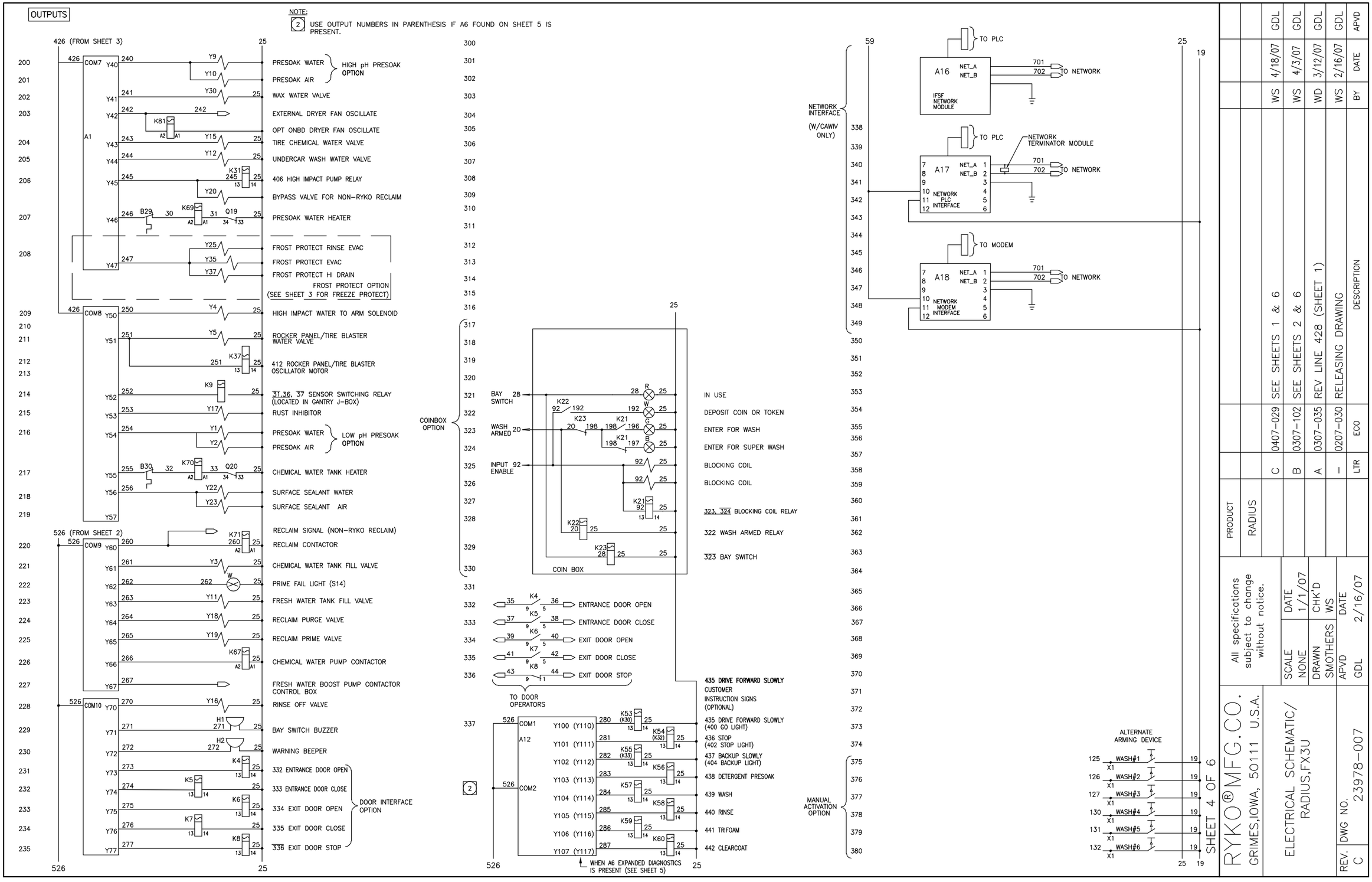
SCALE NONE	DATE 1/1/07
DRAWN SMOTHERS	CHK'D WS
APVD GDL	DATE 2/16/07

RYKO® MFG. CO.
GRIMES, IOWA, 50111 U.S.A.

ELECTRICAL SCHEMATIC/ RADIUS, FX3U

SHEET 3 OF 6

REV. C	DWG NO. 23978-007



REV.	DESCRIPTION	DATE	APVD
C	0407-029 SEE SHEETS 1 & 6	4/18/07	GDL
B	0307-102 SEE SHEETS 2 & 6	4/3/07	GDL
A	0307-035 REV LINE 428 (SHEET 1)	3/12/07	GDL
–	0207-030 RELEASING DRAWING	2/16/07	GDL
LTR	ECO	BY	DATE

FORM #19477-039 REV B 1/21/97

PRODUCT: RADIUS

All specifications subject to change without notice.

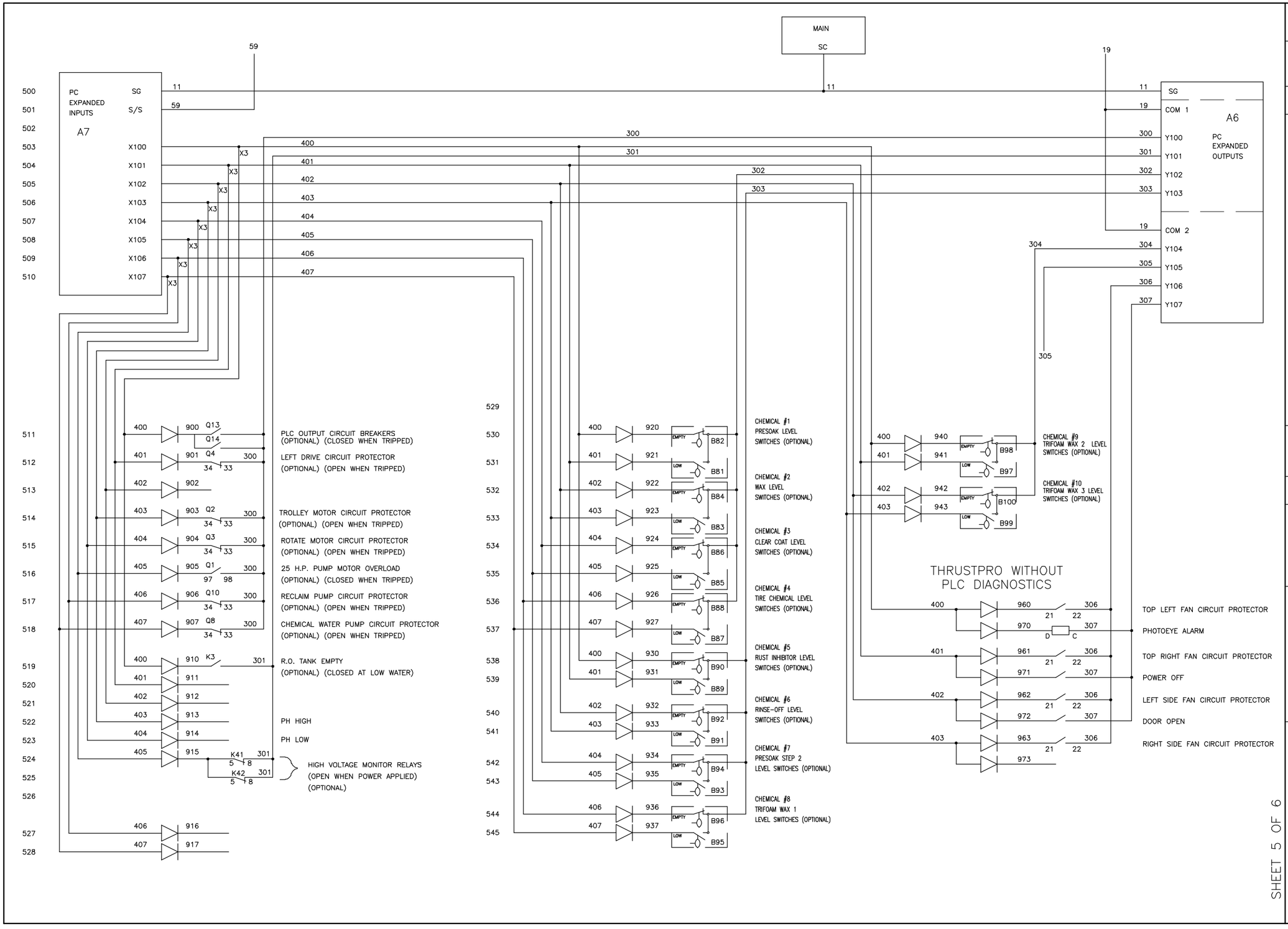
SCALE NONE | DATE 1/1/07
DRAWN SMOTHERS | CHK'D WS
APVD | DATE 2/16/07
GDL

RYKO® MFG. CO.
GRIMES, IOWA, 50111 U.S.A.

ELECTRICAL SCHEMATIC/
RADIUS, FX3U

REV. C
DWG NO. 23978-007

SHEET 4 OF 6



SHEET 5 OF 6

RYKO® MFG. CO.
GRIMES, IOWA, 50111 U.S.A.

ELECTRICAL SCHEMATIC/
RADIUS, FX3U

REV. C | DWG NO. 23978-007

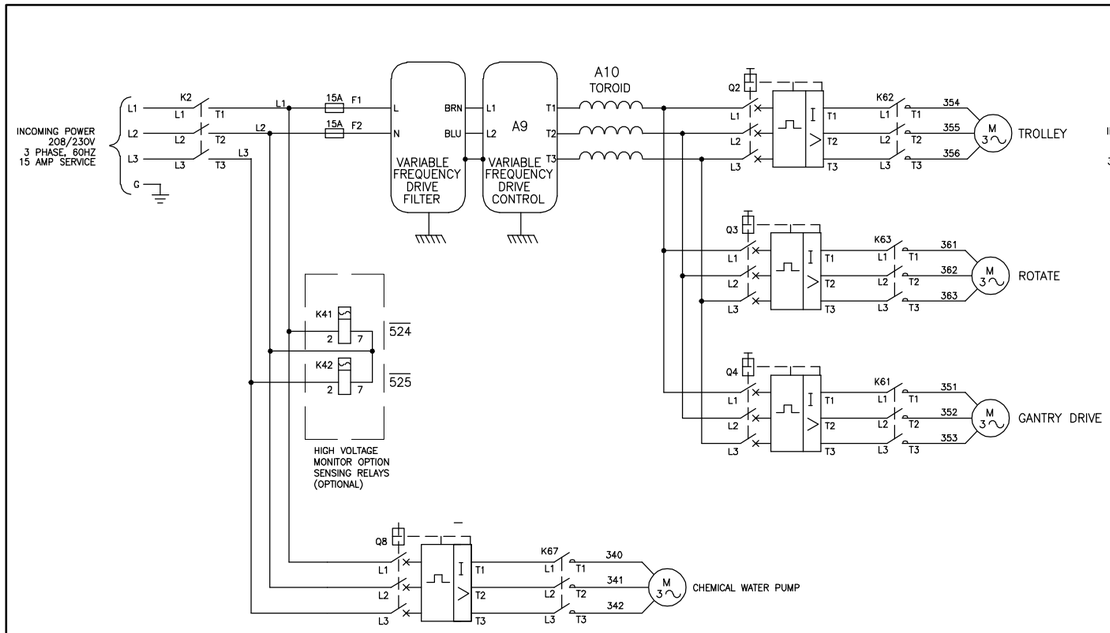
LTR	DESCRIPTION	DATE	APVD
C	0407-029 SEE SHEETS 1 & 6	4/18/07	GDL
B	0307-102 SEE SHEETS 2 & 6	4/3/07	GDL
A	0307-035 REV LINE 428 (SHEET 1)	3/12/07	GDL
–	0207-030 RELEASING DRAWING	2/16/07	GDL

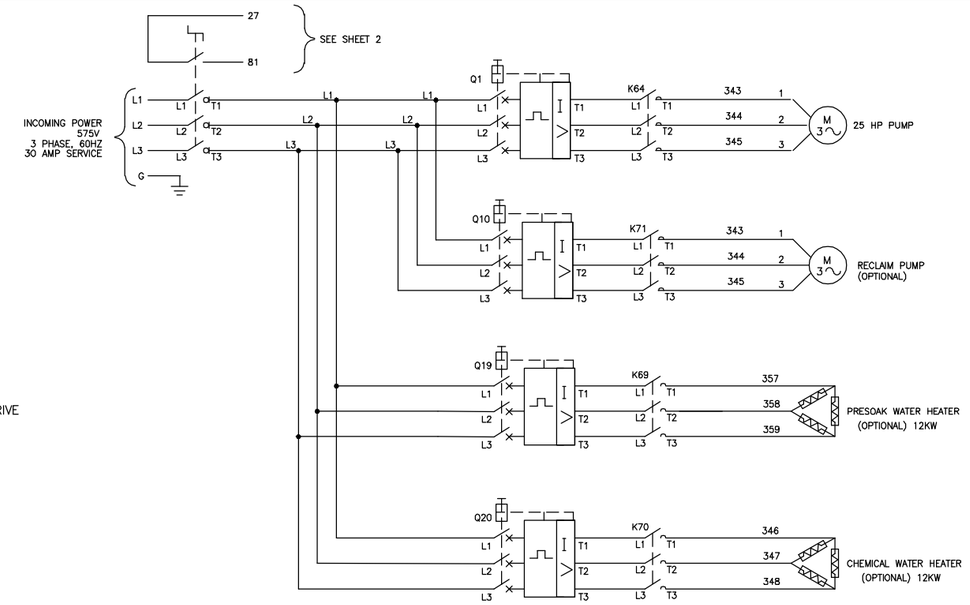
PRODUCT: RADIUS

All specifications subject to change without notice.

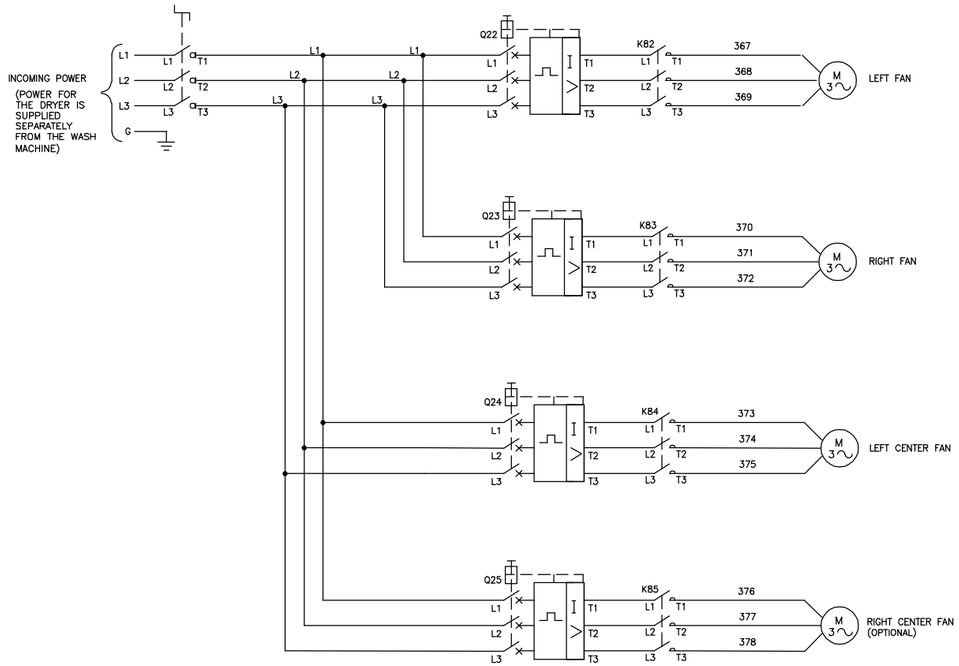
SCALE NONE | DRAWN SMOTHERS | DATE 1/1/07 | CHK'D WS | APVD GDL | DATE 2/16/07

FORM #19477-039 REV B 1/21/97





MULTI–VOLTAGE 208/230V WITH 575V



ONBOARD DRYER OPTION

LTR	ECO	DESCRIPTION	DATE	BY	APVD
C	0407–029	ADD VFD FILTER	4/18/07	WS	GDL
B	0307–102	CHANGE K74 TO K64	4/3/07	WS	GDL
A	0307–035	REV LINE 428 (SHEET 1)	3/12/07	WD	GDL
–	0207–030	RELEASING DRAWING	2/16/07	WS	GDL

PRODUCT: RADIUS

All specifications subject to change without notice.

SCALE NONE | DRAWN SMOTHERS | DATE 1/1/07 | CHK'D WS | APVD | DATE GDL 2/16/07

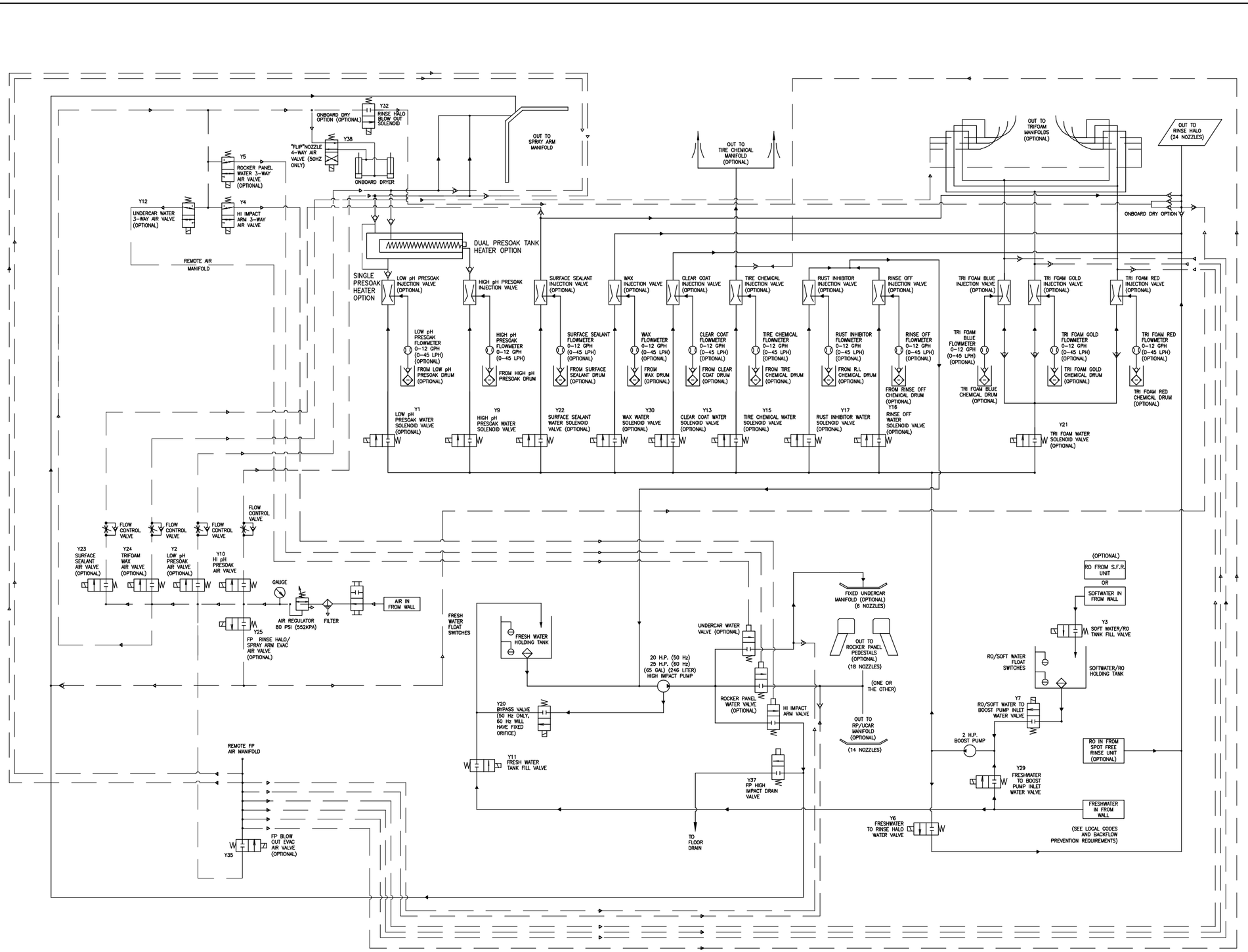
SHEET 6 OF 6

RYKO® MFG. CO.
GRIMES, IOWA, 50111 U.S.A.

ELECTRICAL SCHEMATIC/
RADIUS, FX3U

REV. C | DWG NO. 23978–007

FORM #19477–039 REV B 1/21/97



LTR	ECO	DESCRIPTION	DATE	BY
B	0707-090	REV Y37 TO FLOOR DRAIN	7/23/07	GDL
A	0607-023	ADD ONBOARD DRY "FLIP" NOZZLE CONTROL	6/28/07	GDL
–	0207-062	RELEASING DRAWING	3/1/07	GDL

FORM #19477-039 REV B 1/21/97

PRODUCT: RADIUS

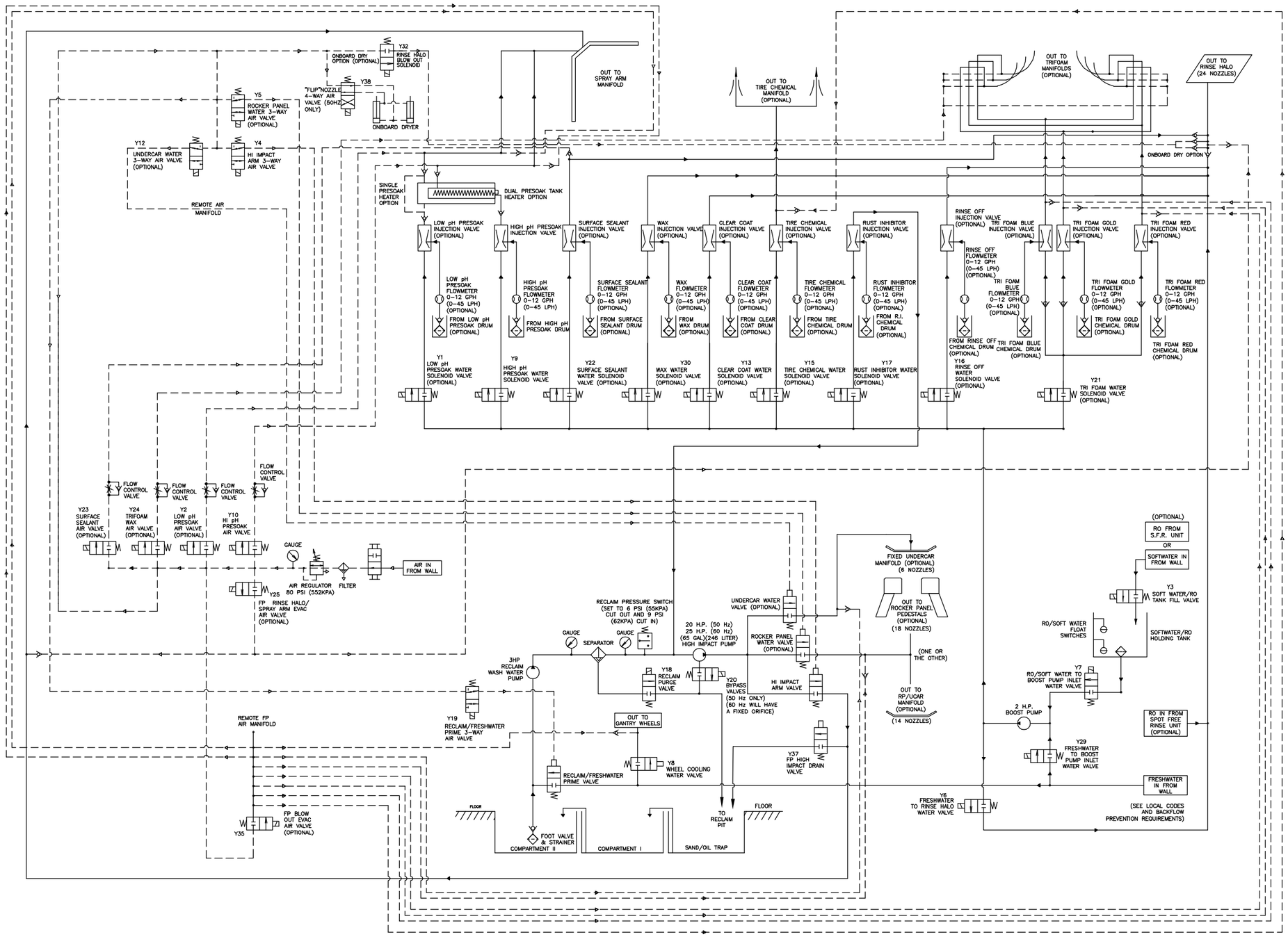
All specifications subject to change without notice.

SCALE	NONE	DATE 2/19/07
DRAWN	GA	CHK'D GA/KS
APVD	GDL	DATE 3/1/07

RYKO® MFG. CO.
GRIMES, IOWA, 50111 U.S.A.

PNEUMATIC AND HYDRAULIC SCHEMATIC/FRESHWATER PUMP STAND, RADIUS

REV. B | DWG NO. 24382-006



BY	DATE	DESCRIPTION
GA	6/28/07	ADD ONBOARD DRY "FLIP"NOZZLE CONTROL
GA	3/1/07	RELEASING DRAWING
GDL	APVD	

LTR	ECO
A	0607-023
–	0207-062

PRODUCT: RADIUS

All specifications subject to change without notice.

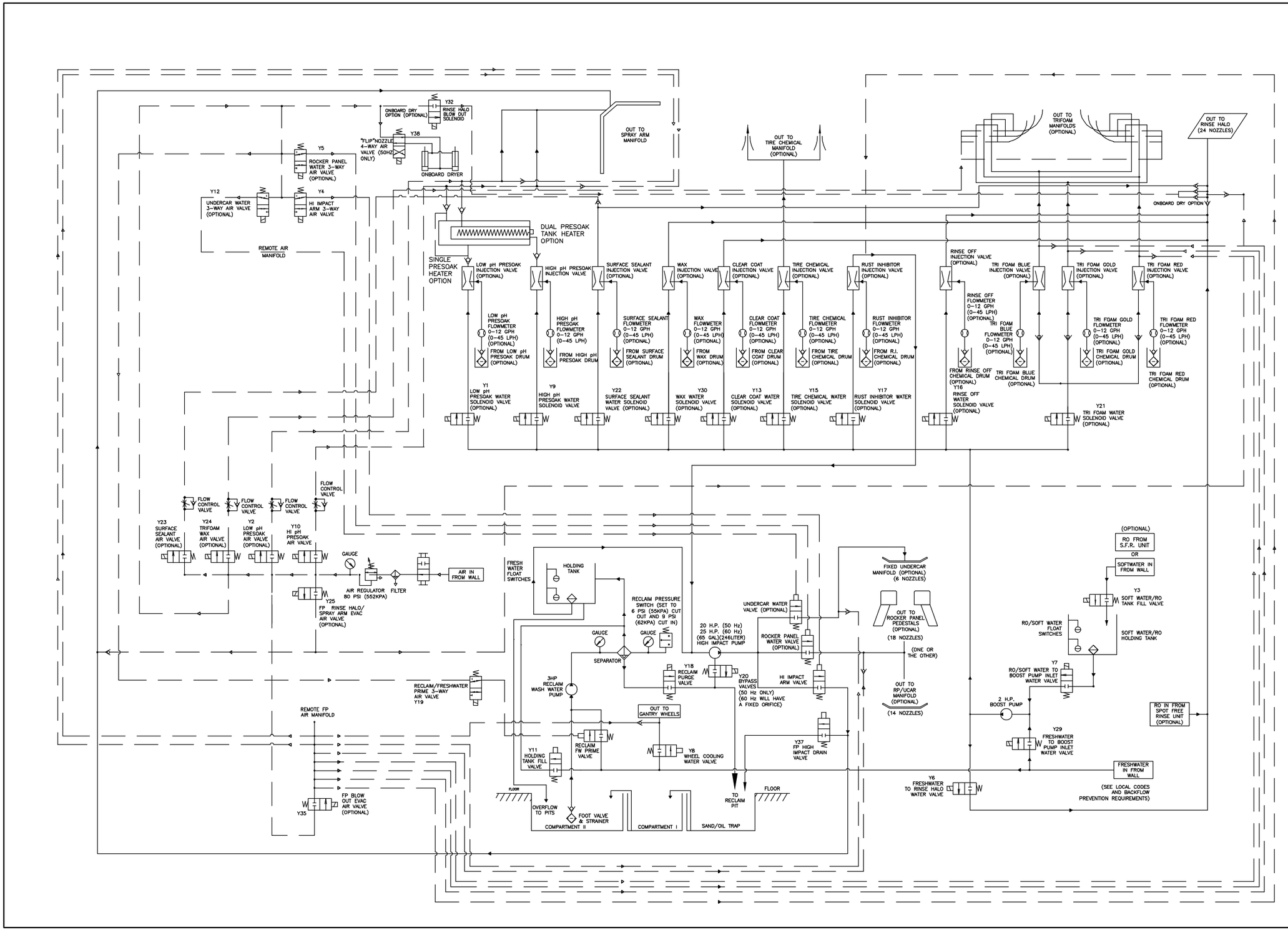
SCALE	NONE
DRAWN	GA
CHK'D	GA/KS
APVD	GDL
DATE	2/19/07
DATE	3/1/07

RYKO® MFG. CO.
GRIMES, IOWA, 50111 U.S.A.

PNEUMATIC AND HYDRAULIC SCHEMATIC/RECLAIM PUMP STAND, RADIUS

REV. A
DWG NO. 24382-007

FORM #19477-039 REV B 1/21/97



BY	DATE	DESCRIPTION
GA	6/28/07	ADD ONBOARD DRY "FLIP" NOZZLE CONTROL
GA	3/1/07	RELEASING DRAWING
GDL	APVD	

LTR	ECO
A	0607-023
–	0207-062

PRODUCT: RADIUS

All specifications subject to change without notice.

SCALE	DATE
NONE	2/20/07
DRAWN	CHK'D
GA	GA/KS
APVD	DATE
GDL	3/1/07

RYKO® MFG. CO.
GRIMES, IOWA, 50111 U.S.A.

PNEUMATIC AND HYDRAULIC SCHEMATIC/RECLAIM WITH FRESHWATER CAPABILITIES PUMP STAND, RADIUS

REV. A
DWG NO. 24382-008

FORM #19477-039 REV B 1/21/97

CUSTOM MESSAGE DISPLAY SIGNS

These programmable message signs are valuable instruction, information and sales tools. Programming the signs allows the operator to create unique and eye-catching displays to instruct or inform customers. Freestanding floor and wall mount signs are available. The Select-A-Wash can have onboard Fascia Sign, Arm Signs as well as the freestanding sign.

All Machines
FREESTANDING INSTRUCTION SIGN (16 Characters in 2 lines)
Default message sets include English, Dutch, French, French-Canadian, Spanish, Portuguese (generic machine), Select-A-Wash (English), VT-2000 Tunnel (English, Dutch, French, Spanish), US2001 Overhead or Liberty (English, Dutch, French, Spanish, German, Italian), Soft Gloss XS Squared (English).
The freestanding CMD Instruction Sign is an optional unit mounted either on the wall or on a pedestal and installed in the bay separate from the machine. This display provides a 16-character message screen in a 2-lined format. Eight characters are displayed on each line.

Premier XL and Voyager APC
FASCIA SIGN (12 Characters displayed on 1 line)
Default message sets include English, Dutch, French, French-Canadian (generic machine).
The optional fascia CMD sign is installed on the gantry and provides an overhead LED screen for messages. This feature is especially effective with customers waiting in line for a wash. While giving instructions, it may also be used to explain each wash function as it occurs during the wash that the customer sees while they wait. This display presents the message in a 12 character, 1 line format.

Select-A-Wash Only
FASCIA SIGN (16 Characters displayed on 1 line)
Default message set is Select-A-Wash (English).
The optional fascia CMD sign is installed on the gantry and provides an overhead LED screen for messages. This feature is especially effective with customers waiting in line for a wash. While giving instructions, it may also be used to explain each wash function as it occurs during the wash that the customer sees while they wait. This display presents the message in a 16 character, 1 line format.

Select-A-Wash Only
ARM LED INSTRUCTION SIGNS (8 Characters displayed on 1 line)
Default message set is Select-A-Wash (English). French and Spanish are also available.
The Arm LED Instruction Signs are installed on the front arms of the Select-A-Wash and provide the customer an LED screen for messages. While giving instructions, it also explains each wash function as it occurs during the wash that the customer getting the wash can view. This display presents the message in an 8 character, 1 line format.

Note:
Changing the message set will delete all custom messages. After changing the message set only default messages for the current set will be displayed. After the new message set is loaded specific message(s) can be changed if needed. The sign memory is battery backed up to save the current message set when power is switched off. The battery has an expected life of 5 years.

CUSTOM MESSAGE DISPLAY SIGN MAINTENANCE

The Custom Message Display (CMD) may be cleaned using soap and water followed with a water rinse. The CMD sign is supplied with 3 sheets of static cling covers that are attached to the display window. It is not necessary to remove the static cling covers during cleaning. The static cling covers protect the acrylic window from water stains.

In the event the top static cling cover becomes difficult to clean or the surface begins to peel off, remove the top cover sheet. Start by pulling up a corner. Make sure that the top sheet is the only sheet you start to remove. Slowly pull off the sheet and discard. If the last sheet is removed, a new static cling sheet can be applied. Make sure the acrylic window of the sign is clean before applying a new static cling sheet.

Clear Static Cling Cover Part Numbers:

22639-000	2 Lines by 8 Characters
22639-001	1 Line by 8 Characters (use 2 for 1 Line by 16 characters)
22639-002	1 Line by 12 Characters

To apply a new static cling sheet:

1. Mix two tablespoons of RYKO High Foam Detergent with one gallon of water.

2. Apply a generous amount of the above solution to the display window.

3. Remove static cling sheet from paper backing and center on the display window.

4. Use a squeegee (short plastic straight edge or equivalent) to remove the excess solution and air bubbles.

CUSTOM MESSAGE DISPLAY PROGRAMMING

The Custom Message Display Instruction Sign provides visual instructions to the customer using the vehicle wash. Each message may contain one or more screens of information depending on the message length. The following procedures describe how to program a CMD sign.

PREPARATION FOR PROGRAMMING FREESTANDING MESSAGE DISPLAY	
Item 1:	A Code-A-Wash III/IV Programming Keyboard is required for programming. **Note:** "T" shaped Programming Keyboard part number 15590-001 will not work with CMD signs.
Item 2:	Remove the small cover on the left hand underside of the CMD sign to reveal the connector plug in receptacle. Insert the programming console connector. (Go to Item 3 to continue).
PREPARATION FOR PROGRAMMING FASCIA/ARM DISPLAY	
Item 2:	Open the right side electrical cabinet to reveal the connector plug receptacle for the fascia display in the upper left hand corner. Insert the programming keyboard connector into the plug receptacle. (Go to Item 3 to continue).
PROGRAMMING (BASIC INSTRUCTIONS)	
Item 3:	Press the ENTER key on the programming console.
Item 4:	When the ENTER key is pressed, the message "MSG# ?" should appear on the screen. A flashing cursor will also appear.
Item 5:	Enter the letter for one of the functions (**X**, **L**, **C**, **R, S** or **T**) described below.
	X – displays the program chip part number then returns the sign to normal operation. No additional characters need to be entered with the X function. Press the Enter key to start the option.
	b) **L#** - loads a message set into the sign. The English default message set is loaded at the factory. The letter **L** must be followed by a number (0-16) to select the message set to load. **Note:** Omitting the message set number causes the English default set (0) to load. 0 - English default message set 1 - Dutch default message set 2 - French default message set 3 - French-Canadian default message set 4 - Spanish default message set 5 - Portuguese default message set 6 - Select-A-Wash default (English) 7 - VT 2000 Tunnel default (English) 8 – Radius, US2001-OHD, or Liberty default (English) 9 - VT 2000 Tunnel default (Dutch) 10 - VT 2000 Tunnel default (French) 11 - VT 2000 Tunnel default (French-Canadian) 12 - VT 2000 Tunnel default (Spanish) 13 - US2001-OHD or Liberty default (Dutch) 14 - US2001-OHD or Liberty default (French) 15 - US2001-OHD or Liberty default (French-Canadian) 16 - US2001-OHD or Liberty default (Spanish) 17 - US2001-OHD or Liberty default (German) 18 - US2001-OHD or Liberty default (Italian) 19 - Soft Gloss XS Squared (English) Press the Enter key to start the option.
	c) **C##** - allows a specific message to be changed. The letter **C** must be followed by the 2-digit message number (00-31) that will be edited. A correct entry would be C00 or C05 or C14, etc. When the entry is correct the beginning of the requested message is displayed when the Enter key is pressed. The message is ready for editing. An incorrect selection returns the display to the "MSG #?" message. See **Message Entry** for message entry instructions and tips. Press the Enter key to start the option. To save the message and return to the MSG# ? prompt make sure you are in the normal edit mode then press the Enter key.
	d) **R##** - will run the message as it would be seen in normal operation. The letter **R** must be followed by a 2-digit message number (e.g., R00, R05, R14, etc.). Press the Enter key to start the option. Press the Enter key to stop running the message and return to the MSG# ? prompt.

	e) **S** - Performs a burn-in test of the LED panel. A block of LEDs are illuminated (on both lines). The block will scroll to the right. When the block moves off the sign the block will start over on the left side of the sign. Use this to test LEDs that may fail when a small percentage of LEDs are on. Press ENTER to return the display to the "MSG#?" prompt. Press the Enter key to start the option. Press the Enter key to stop the test and return to the MSG# ? prompt.
	f) **T** - Performs a test of the LED panel. All the LEDs are illuminated. Use this to test for bad LEDs. Press ENTER to return the display to the "MSG#?" prompt. Press the Enter key to start the option. Press the Enter key to stop the test and return to the MSG# ? prompt.

EDIT MODES

When editing messages the upper left character on the sign is reserved as an edit mode indicator. After entering the C## to change a specific message the (upper) left character is blank.

Normal Mode:
Default mode when entering the change message function. The (upper) left character will display a blank to indicate the Normal mode. In this mode the blue letters and numbers on the Programming Keyboard are active.
Press the Enter key to save and exit.

Shift Mode:
Press the Shift key to enter the Shift edit mode. The (upper) left character will display an up arrow (↑) to indicate the Shift mode. In this mode the Control Characters can be entered. To delete the character the cursor is on press the Space key.
Press the Shift key to exit the Shift edit mode and return to the Normal edit mode.

Special Mode:
Press the Special key to enter the Special edit mode. The (upper) left character will display an asterisk (*) to indicate the Special mode. In this mode the scroll keys are active to move right or left through the message. To scroll right press the **Z** key. To scroll left press the **V** key. To toggle between insert and type over mode press the **Y** key.
Press the Special key to exit the Special edit mode and return to the Normal edit mode.

CONTROL CHARACTERS

Control characters provide functions that assist in programming or are required to determine how the message is displayed during operation. These characters are entered on the Code-A-Wash III/IV Programming Keyboard by pressing the **Shift** key before entering the desired character. The **S** control character must begin every message and the **X** control character must end every message. All default messages will start with an **S**, even the blank message. Other control characters provide instructions for the display movement, character size and more. In order to program the message, it is necessary to understand the various control characters and their functions.

Note: Control characters are not included in the total number of characters displayed.

Control Character Chart

SHIFT MODE ?	RESULT	SHIFT MODE ?	RESULT
B	Preceding text displays as if it were being stacked piece by piece onto the screen.	**P**	Pauses the display. **P** must be followed by a 2-digit time factor (time is in 1/10 second increments). A pause command (**P**) is required between screens so that text is visible long enough to be read. If no pause is entered, the next portion of text is displayed immediately.
C	The screen clears. Can be used to clear the display before new text is displayed.	**R**	Characters between **R**'s display in reverse screen format (all lit background with a dark character).
D	The screen full before the **D** scrolls down onto the screen.	**S**	**S** must be the first character entered at the start of any message or the message will not run. **Note:** If a message is stored without a start character, the message is replaced with the default factory message when the display power is first turned on, or after exiting the function screen.
E	The text following is displayed in an expanded format. The display stays in this mode until another **E** is processed in the message or until the end of the message is reached.	**T**	The following text is displayed as though it is being typed. The display stays in this mode until another **T** is processed in the message or until the end of the message is reached.
G	The previous screen glitters off.	**U**	The screen before the **U** scrolls up onto the display.
H	A half-space is inserted into the message. Typically used to center text on the display that have an odd number of characters.	**V**	Text preceding the **V** commands displays as though a set of blinds are opening to reveal the message.
J	The displayed text is scrolled off the screen to the right. The display will be blank when the scrolling is complete.	**W**	All characters between **W**'s are displayed doublewide. Note that only eight (8) characters can be displayed on the screen in this mode on the 16 character sign and only 4 characters on the 8 character arm signs.
K	Causes a "curtain" effect. A "curtain" of LEDs will cover the previous displayed screen, and then the "curtain" opens to display the new message text preceding the **K** command. The **K** command must be followed by a 2-digit time factor that controls the amount of time the "curtain" is closed. The time is in 1/10 second increments (e.g., 01 = 1/10 second).	**X**	This is the last character entered for a message. When entered, the **X** informs the program that the message is complete.
M or **Special Enter**	Text displayed on the screen scrolls off to the left. The display will be blank when the scrolling is complete.	**Space**	Deletes space or character and moves remaining characters to the left.
N	This controls the count down timer. The character is followed by one of 2 commands. To set the timer to count down for 20 seconds the command is "S20". The second command will pause and update the timer count. To display the current timer value for 1 second the command is "D10".		

SPECIAL CHARACTERS

To enter spaces or special characters (i.e. dollar signs, periods, commas, blank space, etc.) in a message, the **SPECIAL** key is required. The (upper) left character will display an asterisk (*) when in the Special edit mode. Unlike the **SHIFT** key, the **SPECIAL** key remains "on" until another edit mode key is pressed again.

SPECIAL KEY	WHAT APPEARS ON SCREEN		SPECIAL KEY	WHAT APPEARS ON SCREEN	
0	l	Bottom 1/2 Vertical Line	I	(	(Left Parenthesis Sign)
1	\	Bottom 1/2 Back Slash	J	)	(Right Parenthesis Sign)
2	/	Bottom 1/2 Slash	K	"	(Double Quotation Marks
3	<	Greater Than Sign	L	+	(Plus Sign)
4	>	Less Than Sign	M	=	(Equals Sign)
5	¦	(Checkerboard Pattern)	N	-	(Negative Sign)
6	`	Top 1/2 Back Slash	O	/	(Per or Division Sign)
7	'	Top 1/2 Vertical Line	P	?	(Question Mark)
8	I	Full Vertical Line	Q	'	(Single Quote Mark)
9	\	Full Back Slash	R	:	(Colon)
Space Key	Reverses the screen space (All Lit)		S	;	(Semi-colon)
A	Checkerboard Pattern		T	,	(Comma)
B	!	(Exclamation Point)	U	.	(Period)
C	@	(At Sign)	**V	Move Cursor to Left	
D	#	(Number/Pound Sign	W	Left Half of Vehicle	
E	$	(Dollar Sign)	X	Right Half of Vehicle	
F	%	(Percentage Sign)	***Y	Toggle Insert Mode	
G	&	(And Sign)	**Z	Cursor to Right	
H	*	(Asterisk Sign)			

**** - Hold either of these keys (V or Z) down to move the cursor quickly through the message when editing.

*** - Toggle On - Character is reversed as displayed as characters are inserted. Toggle Off - Back to Flashing Cursor.

MESSAGE ENTRY

Use the information below when reprogramming a messages.

	ACTION	RESULT
1.	First press **ENTER** on the programming console.	"**MSG# ?**" appears on the screen.
2.	Enter the **C** function key followed by a 2-digit message number (e.g., C05, C10, etc.) and press **ENTER** again.	SWSTOPSTOPP02 A flashing cursor also appears positioned over the first letter in the message currently programmed.
3.	Enter the new message (See **Instruction Sign Messages**). Begin the message with the control character **S** (shift, then S). Continue using the normal, shift and special characters discussed earlier. When finished, press the control character **X** (shift, then X) as the last entry in a message. This indicates the message is complete.	The message is stored when in the Normal edit mode and the **Enter** key is pressed. "**MSG# ?**" appears on the screen again.

4.	Press the **R** function key followed by the 2 digit message number pertaining to the newly programmed message (e.g., R05, R10, etc.).	The message is displayed as it would in regular operation. This is a way to test the message to see if the message is correct.
5.	If the message is running properly, press the **Enter** key. **NOTE:** If message contains errors, return to step 1 and begin again.	"**MSG# ?**" should appear on the screen again.
6.	Press **X** and press the Enter key	The program returns to the normal operation.

SAMPLE MESSAGE

Below are the steps and keystrokes required to input a sample message on a 2 line 16 character instruction sign. No special keystrokes are required to change lines. When the first line is full (contains 8 characters or spaces), any additional characters or spaces will appear on the second line.

1. Connect a programming console to the sign.
2. Press the "Enter" key on the programming keyboard.
3. Press "C", "1","5" then press "Enter". This starts the editing of message #15. This is a blank message used to clear the screen.
4. Enter the keystrokes as shown below.

Note: The "Shift - S" (**S)** is already entered and may be skipped.

P	R	E	S	S	Shift	P	1	5

The screen should look like this: "**S**PRESS**P15**"

S	T	A	R	T	Space	Space	Space	B	U	T	T	O	N	Shift	P	1	5	Shift	X

The entire message should look like this: "**S**PRESS**P15**START BUTTON**P15X**"

5. Make sure the keyboard is in normal edit mode (upper) left character is blank and press the Enter key after the message entry is complete.
6. Test the message. Press "R15", and then press Enter.

This example message will display the word "PRESS" for 1.5 seconds then display the words "START BUTTON" for another 1.5 seconds. The message will play continuously alternating the two messages.

CORRECTING MESSAGE ENTRY ERRORS

If a mistake is made and a clear, recognizable message does not appear on the display, the standard message that is stored in the machine may be reloaded.

RELOADING A SINGLE STANDARD DISPLAY MESSAGE

1. Use the C function to select the message to edit. Using the example above press “C15” at the MSG ? prompt.
2. Move the cursor back over the **Shift - S (S)** character.
3. Insert some other character over the **S** control character. Make sure the keyboard is in the normal edit mode and press Enter.
4. Press X and Enter to exit the "MSG#?" prompt.
5. Any loaded messages that do not start with an **S** are considered invalid and the default message will be restored to those messages.

There are two functions available to assist when editing a message. The editor by default is in Type Over mode. This is indicated by a flashing cursor. When in Type Over mode the character the cursor is on will be changed to the new character if one is entered from the keyboard. Insert mode is indicated by a solid cursor. Insert mode can be used to insert characters in the middle of a message and moving the current character and all characters to the right. The mode can be toggled by pressing the "**Y**" key when in the **Special** edit mode.

Characters can also be deleted from a message by pressing the **Shift** key then the **Space** key. Pressing the **Shift** and **Space** causes the character the cursor is on to be deleted. The characters to the right of the cursor are shifted to the left.

CMD DEFAULT MESSAGE SETS

Custom Message Displays

16 Character 2 Line Sign

Default Messages

Msg #	Message Control Bits 16 8 4 2 1	Screen Number	English Default L 0	Dutch Default L 1	French Default L 2	French-Canadian Default L 3	Spanish L 4
00	0 1 1 1 1	Screen 1	WASH NOT READY	MAAK UW KEUZE	LE LAVAGE	LE LAVAGE	LAVADO
		Screen 2	DEPOSIT CORRECT	WERP JUISTE	N'EST PAS PRET	N'EST PAS PRET	NO ESTA LISTO
		Screen 3	DEPOSIT AMOUNT	BEDRAG IN	COMPOSEZ	COMPOSEZ	DEPOSITE
		Screen 4			VOTRE CODE	VOTRE CODE	CANTIDAD EXACTA
		Screen 5					DE MONEDAS

Custom Message Displays

16 Character 2 Line Sign

Default Messages

Msg #	Message Control Bits 16 8 4 2 1	Screen Number	English Default L 0	Dutch Default L 1	French Default L 2	French-Canadian Default L 3	Spanish L 4
01	0 1 1 1 0	Screen 1	SUPER POLISH	SUPER POLISH	SUPER POLISH	SUPER POLISH	SUPER ENCERADO
		Screen 2	POLISH	POLISH	POLISH	POLISH	ENCERADO
02	0 1 1 0 1	Screen 1	N E X T CUSTOMER	VOLGENDE KLANT	PROCHAIN CLIENT	PROCHAIN CLIENT	PROXIMO CLIENTE
		Screen 2					
03	0 1 1 0 0	Screen 1	W A S H COMPLETE	WASBEURT KLAAR	LAVAGE TERMINE	LAVAGE TERMINE	LAVADO
		Screen 2	PLEASE E X I T	VERTREK A.U.B.	VOUS POUVEZ	VOUS POUVEZ	TERMIN-ADO
		Screen 3	THANK YOU	D A N K U	SORTIR	SORTIR	POR FAVOR
		Screen 4	FOR YOUR BUSINESS	VOOR UW BEZOEK	MERCI	MERCI	SIGUE ADELANTE
		Screen 5			DE VOTRE VENUE	DE VOTRE VENUE	GRACIAS
		Screen 6					PARA SU LEALTAD
04	0 1 0 1 1	Screen 1	DRYING `'`'``	DROGEN `'`'`'`	SECHAGE `'`'`'`	SECHAGE `'`'`'`	SECANDO `'`'`'`
05	0 1 0 1 0	Screen 1	||||||||	||||||||	||||||||	||||||||	\/CERA\/
		Screen 2	'HOT'WAX `````````` HOT WAX	WARME `````````` WAX	CIRE `````````` CHAUDE	CIRE `````````` CHAUDE	CLIENTE
06	0 1 0 0 1	Screen 1	|`'||`'| WAXING	|`'||`'| WAX	|`'||`'| CIRE	|`'||`'| CIRE	ENJUAGUE CON CERA

Custom Message Displays

16 Character 2 Line Sign

Default Messages

Msg #	Message Control Bits 16 8 4 2 1	Screen Number	English Default L 0	Dutch Default L 1	French Default L 2	French-Canadian Default L 3	Spanish L 4
07	0 1 0 0 0	Screen 1	WHEEL SCRUB	WIELEN WASSEN	LAVAGE	LAVAGE	LAVADO
		Screen 2	00	00	DES ROUES	DES ROUES	DE RUEDAS
		Screen 3	<00>	<00>	<-00->	<-00->	<-0 0->
08	0 0 1 1 1	Screen 1	%%%%%%%% %%%%%%%%	%%%%%%%% %%%%%%%%	%%%%%%%% %%%%%%%%	%%%%%%%% %%%%%%%%	%%%%%%%% %%%%%%%%
		Screen 2	FOAM BATH (glitter off)	SCHUIM BAD (glitter off)	BAIN MOUSSANT (glitter off)	BAIN MOUSSANT (glitter off)	BANO CON ESPUMA (glitter off)
09	0 0 1 1 0	Screen 1	W A S H CYCLE	WASSEN	LAVAGE	LAVAGE	CICLO DE LAVADO
		Screen 2	WASH CYCLE	WASSEN	LAVAGE	LAVAGE	
10	0 0 1 0 1	Screen 1	W A S H CYCLE	WASSEN	LAVAGE	LAVAGE	CICLO DE LAVADO
		Screen 2	WASH CYCLE	WASSEN	LAVAGE	LAVAGE	
		Screen 3					
		Screen 4					
11	0 0 1 0 0	Screen 1	UNDERCAR W A S H	ONDER KANT WASSEN	LAVAGE DU CHASIS	LAVAGE DU CHASIS	LAVADO DE CHASIS LAVADO
		Screen 2	UNDERCAR {{{{{{{{	WASSEN {{{{{{{{	{{{{{{{{	{{{{{{{{	
		Screen 3	UNDERCAR iiii}}}}	WASSEN iiii}}}}	iiii}}}}	iiii}}}}	iiii}}}}

Custom Message Displays

16 Character 2 Line Sign

Default Messages

Msg #	Message Control Bits 16 ' 8 4 2 1	Screen Number	English Default L 0	Dutch Default L 1	French Default L 2	French-Canadian Default L 3	Spanish L 4
12	0 0 0 1 1	Screen 1	BACK-UP SLOWLY	LANGZAAM TERUG	RECULEZ	RECULEZ	HAGA
		Screen 2	BACK-UP	TERUG	AVEC SOIN	AVEC SOIN	RETRO-CEDER LENTA-MENTE
		Screen 3					
13	0 0 0 1 0	Screen 1	S T O P S T O P	S T O P S T O P	S T O P S T O P	S T O P S T O P	S T O P S T O P
		Screen 2	S T O P	S T O P	S T O P	S T O P	S T O P
14	0 0 0 0 1	Screen 1	DRIVE FORWARD	RIJ LANGZAAM	AVANCEZ	AVANCEZ	SE ACERQUE
		Screen 2	SLOWLY	VOORUIT LANGZAAM	AVEC SOIN	AVEC SOIN	LENTA-MENTE
		Screen 3		LANGZAAM			
15	0 0 0 0 0						
16	1 1 1 1 1	Screen 1	WASH NOT READY	TOETS CODE IN	LE LAVAGE	LE LAVAGE	LAVADO
		Screen 2	ENTER	TOETS	N'EST PAS PRET	N'EST PAS PRET	NO ESTA LISTO
		Screen 3	ENTER CODE		COMPOSEZ	COMPOSEZ	ENTRE CODIGO
		Screen 4			VOTRE CODE	VOTRE CODE	
17	1 1 1 1 0	Screen 1	S P O T F R E E	ZACHT WATER	RINCAGE	RINCAGE	ENJUAGUE
		Screen 2	RINSE CYCLE	WATER	SANS	SANS	SIN MANCHAS
		Screen 3			SANS TACHE	SANS TACHE	

Custom Message Displays

16 Character 2 Line Sign

Default Messages

Msg #	Message Control Bits 16 ' 8 4 2 1	Screen Number	English Default L 0	Dutch Default L 1	French Default L 2	French-Canadian Default L 3	Spanish L 4
18	1 1 1 0 1	Screen 1	VEHICLE IS	AUTO IS	VEHICLE	VEHICLE	VEHICULO
		Screen 2	TOO L O N G	TE L A N G	TROP L O N G	TROP L O N G	DE-MASIADO LARGO
		Screen 3	PLEASE EXIT	VERTREK A.U.B.	SORTER	SORTER	
		Screen 4	WASH AND	ON SPREEK	DE LA BAILE	DE LA BAILE	POR FAVOR
		Screen 5	CONTACT CASHIER	MET DE KASSIER	ET CON-TACTER CASSIER S.V.P.	ET CON-TACTER CASSIER S.V.P.	DE SALIR EL LAVADO Y COMUNI-CARSE CON EL CAJERO
		Screen 6					
		Screen 7					
		Screen 8					
19	1 1 1 0 0	Screen 1	|||||||| RINSING	VERS WATER	RINCAGE	RINCAGE	ENJUAGUE CON AGUA FRESCA
		Screen 2	`` `` `` `` `` `` `` `` RINSING	WATER	A L'EAU	A L'EAU	
		Screen 3	'' '' '' '' '' '' '' '' RINSING		A L'EAU CLAIRE	A L'EAU CLAIRE	
20	1 1 0 1 1	Screen 1	ROCKER PANEL	ONDER-ZIJKANT	LAVAGE	LAVAGE	BLASTER
		Screen 2	BLASTER	JET-STRAAL	BAS DE CAISSE	BAS DE CAISSE	DE PANELES
		Screen 3					

Custom Message Displays

16 Character 2 Line Sign

Default Messages

Msg #	Message Control Bits 16 8 4 2 1	Screen Number	English Default L 0	Dutch Default L 1	French Default L 2	French-Canadian Default L 3	Spanish L 4
21	1 1 0 1 0	Screen 1	TIRE -<O O>-	WIELEN -<O O>-	ROUSE <0 0>	ROUSE <0 0>	BLASTER
		Screen 2	BLASTER -<0 0>-	JET- -<0 0>-	HAUTE -0 0-	HAUTE -0 0-	DE RUEDAS
		Screen 3		JET- STRAAL	PRESSION <0 0>	PRESSION <0 0>	BLASTER <0 0>
22	1 1 0 0 1	Screen 1	H I G H IMPACT	HOGEDRUK ///////	RINCAGE	RINCAGE	ENJUAGUE CON ALTA
		Screen 2	W A S H	HOGEDRUK |||||||	HAUTE	HAUTE	CON ALTA PRESION
		Screen 3		HOGEDRUK &&&&&&&&	HAUTE PRESSION	HAUTE PRESSION	
23	1 1 0 0 0	Screen 1	PRESOAK	INWEKEN	PRE-	PRE-	QUIMICO
		Screen 2	SOAKING	INWEKEN	PRE- LAVAGE	PRE- LAVAGE	RE- MONJANDO
24	1 0 1 1 1	Screen 1	<< STEER << LEFT	STUUR NAAR	ALLER A GAUCHE	ALLER A GAUCHE	MANEJE A <<<
		Screen 2	STEER LEFT	LINKS <<<<<<	ALLER A <<<<<<	ALLER A <<<<<<	LA <<<<<
		Screen 3					DERECHA <<<<<<<<
25	1 0 1 1 0	Screen 1	STEER >> RIGHT >>	STUUR NAAR	ALLER A DROIT	ALLER A DROIT	MANEJE A >>>
		Screen 2	STEER RIGHT	RECHTS >>>>>>	ALLER A >>>>>>	ALLER A >>>>>>	LA IZ- >>>>>>
		Screen 3					QUIERDA >>>>>>>>
26	1 0 1 0 1	Screen 1	APPLYING	INWEEK MIDDEL	PRE-	PRE-	APLI- CANDO
		Screen 2	APPLYING PRESOAK		PRE- LAVAGE	PRE- LAVAGE	QUIMICO

Custom Message Displays

16 Character 2 Line Sign

Default Messages

Msg #	Message Control Bits 16 ' 8 4 2 1	Screen Number	English Default L 0	Dutch Default L 1	French Default L 2	French-Canadian Default L 3	Spanish L 4
27	1 0 1 0 0	Screen 1	FROST PROTECT	WATER AFBLAZEN	PURGE DE	PURGE DE	PROTECT-CION
		Screen 2	WATER PURGE	ANTI VORST	PROTECT-ION ANTIGEL	PROTECT-ION ANTIGEL	ANTI-ESCARCHA PURGA
		Screen 3					
		Screen 4					DE TUBERIAS
		Screen 5					DE AGUA
28	1 0 0 1 1	Screen 1	EXIT SLOWLY	RIJDT LANGZAAM	SORTIR	SORTIR	SIGUE ADELANTE
		Screen 2	THROUGH DRYER	DOOR DE DROGER	LENTE-MENT	LENTE-MENT	LENTA-MENTA
		Screen 3	THANK YOU	D A N K U	PAR LE SECHEUR	PAR LE SECHEUR	ABAJO SECADOR
		Screen 4	FOR YOUR BUSINESS	VOOR UW BEZOEK	MERCI	MERCI	GRACIAS
		Screen 5			DE VOTRE VENUE	DE VOTRE VENUE	PARA SU LEALTAD
29	1 0 0 1 0	Screen 1	TRI COLOR	DRIE KLEUREN	CIRES TROIS	CIRES TROIS	CERA ESPUMOSA
		Screen 2	FOAMING WAX (glitter off)	SCHUIM WAX (glitter off)	COULEURS (glitter off)	COULEURS (glitter off)	EN TRES COLORES (glitter off)
30	1 0 0 0 1	Screen 1					
		Screen 2					
		Screen 3					

Custom Message Displays

16 Character 2 Line Sign

Default Messages

Msg #	Message Control Bits 16 ' 8 4 2 1	Screen Number	English Default L 0	Dutch Default L 1	French Default L 2	French-Canadian Default L 3	Spanish L 4
31	1 0 0 0 0	Screen 1 Screen 2 Screen 3					

Custom Message Displays

16 Character 2 Line Sign

Default Messages

Msg #	Message Control Bits 16 ' 8 4 2 1	Screen Number	Portuguese Default L 5	SAW English Default L 6	VT2000 English Default L 7	Radius 2001 OHD Liberty English Default L 8
00	0 1 1 1 1	Screen 1 Screen 2 Screen 3 Screen 4 Screen 5	LAVAGEM NAO ESTA PRONTA DEPOSITE O VALOR CORRECTO	WELCOME PLEASE ENTER CODE OR CARD OR INSERT MONEY		WELCOME PLEASE ENTER CODE OR CARD OR INSERT MONEY
01	0 1 1 1 0	Screen 1 Screen 2	SUPER POLIDOR POLIDOR	CLEAR COAT SEALANT		CLEAR COAT SEALANT
02	0 1 1 0 1	Screen 1 Screen 2	PROXIMO CLIENTE	READY FOR NEXT FOR NEXT CUSTOMER		N E X T CUSTOMER
03	0 1 1 0 0	Screen 1 Screen 2 Screen 3 Screen 4 Screen 5 Screen 6	LAVAGEM COMPLETA SIGA POR FAVOR OBRIGADO POR TER VINDO	W A S H COMPLETE PLEASE E X I T THANK YOU FOR YOUR BUSINESS		W A S H COMPLETE PLEASE E X I T THANK YOU FOR YOUR BUSINESS
04	0 1 0 1 1	Screen 1	SECANDO `!`!`!	DRYING `!`!`!		DRYING `!`!`!

Custom Message Displays

16 Character 2 Line Sign

Default Messages

Msg #	Message Control Bits 16 8 4 2 1	Screen Number	Portuguese Default L 5	SAW English Default L 6	VT2000 English Default L 7	Radius 2001 OHD Liberty English Default L 8
05	0 1 0 1 0	Screen 1 Screen 2	/|\CERA/|\ QUENTE	|||||||| 'HOT' WAX ``````````		|||||||| 'HOT' WAX ``````````
06	0 1 0 0 1	Screen 1	BANHO DE CERA	|`'||`'| WAXING		|`'||`'| WAXING
07	0 1 0 0 0	Screen 1 Screen 2 Screen 3	ESCOVA DE RODAS <-00->	WHEEL SCRUB <-00->		CAR IN PARK
08	0 0 1 1 1	Screen 1 Screen 2	%%%%%%%% %%%%%%%% BANHO DE XAMPU (glitter off)	%%%%%%%% %%%%%%%% FOAM BATH (glitter off)	PRESS START BUTTON	%%%%%%%% %%%%%%%% SURFACE SEALANT (glitter off)
09	0 0 1 1 0	Screen 1 Screen 2	CICLO DE LAVAGEM	W A S H CYCLE WASH CYCLE		W A S H CYCLE WASH CYCLE
10	0 0 1 0 1	Screen 1 Screen 2 Screen 3 Screen 4	CICLO DE LAVADO	F O A M BRITE W A S H (glitter off)	CAR IN NEUTRAL RELEASE BRAKE DO NOT STEER TURN OFF RADIO	W A S H CYCLE WASH CYCLE

Custom Message Displays

16 Character 2 Line Sign

Default Messages

Msg #	Message Control Bits 16 ' 8 4 2 1	Screen Number	Portuguese Default L 5	SAW English Default L 6	VT2000 English Default L 7	Radius 2001 OHD Liberty English Default L 8
11	0 0 1 0 0	Screen 1 Screen 2 Screen 3	LAVA CHASIS LAVA {{{{{{{{ LAVA iiii}}}}	UNDERCAR W A S H UNDERCAR {{{{{{{{ UNDERCAR iiii}}}}		UNDERCAR W A S H UNDERCAR {{{{{{{{ UNDERCAR iiii}}}}
12	0 0 0 1 1	Screen 1 Screen 2 Screen 3	RETORNE DEVAGAR	BACK-UP SLOWLY BACK-UP	WAIT FOR CONVEYOR DO NOT DRIVE IN	BACK-UP SLOWLY BACK-UP
13	0 0 0 1 0	Screen 1 Screen 2	P A R A P A R A P A R A	S T O P S T O P S T O P		S T O P S T O P S T O P
14	0 0 0 0 1	Screen 1 Screen 2 Screen 3	SIGA ADIANTE DEVAGAR	DRIVE FORWARD SLOWLY	ENTER CODE OR DEPOSIT MONEY	DRIVE FORWARD SLOWLY
15	0 0 0 0 0					
16	1 1 1 1 1	Screen 1 Screen 2 Screen 3 Screen 4	LAVAGEM NAO ESTA PRONTA DIGITE O CODIGO	WASH NOT READY ENTER CODE CODE OR CARD OR CARD OR MONEY		WELCOME PLEASE ENTER CODE OR CARD OR MONEY

Custom Message Displays

16 Character 2 Line Sign

Default Messages

Msg #	Message Control Bits 16 ' 8 4 2 1	Screen Number	Portuguese Default L 5	SAW English Default L 6	VT2000 English Default L 7	Radius 2001 OHD Liberty English Default L 8
17	1 1 1 1 0	Screen 1 Screen 2 Screen 3	ENXAGUE SEM MANCHAS	SPOTFREE RINSE (glitter off) (glitter off)		SPOTFREE RINSE (glitter off) (glitter off)
18	1 1 1 0 1	Screen 1 Screen 2 Screen 3 Screen 4 Screen 5 Screen 6 Screen 7 Screen 8	VEICULO MUITO LONGO POR FAVOR SIGA E CONTACTE O CAIXA	VEHICLE IS TOO L O N G PLEASE EXIT WASH AND CONTACT CASHIER		VEHICLE IS TOO L O N G PLEASE EXIT WASH AND CONTACT CASHIER
19	1 1 1 0 0	Screen 1 Screen 2 Screen 3	ENXAGUE DE AGUA DE AGUA LIMPA	|||||||| RINSING `` `` `` `` `` `` `` `` RINSING '' '' '' '' '' '' '' '' RINSING		|||||||| RINSING `` `` `` `` `` `` `` `` RINSING '' '' '' '' '' '' '' '' RINSING

Custom Message Displays

16 Character 2 Line Sign

Default Messages

Msg #	Message Control Bits 16 ' 8 4 2 1	Screen Number	Portuguese Default L 5	SAW English Default L 6	VT2000 English Default L 7	Radius 2001 OHD Liberty English Default L 8
20	1 1 0 1 1	Screen 1 Screen 2 Screen 3	LAVAGEM LATERAL	ROCKER PANEL BLASTER BLASTER (car)		BLASTER 25 TIME 19 DRIVE FORWARD
21	1 1 0 1 0	Screen 1 Screen 2 Screen 3	LAVAGEM DE RODAS LAVAGEM <0 0>	TIRE BLASTER BLASTER <0 0> BLASTER -0 0-		BLASTER 15 TIME 14 DRIVE FORWARD
22	1 1 0 0 1	Screen 1 Screen 2 Screen 3	ENXAGUE DE ALTA PRESSAO	H I G H IMPACT IMPACT (CAR) WASH		H I G H IMPACT W A S H
23	1 1 0 0 0	Screen 1 Screen 2	ENSA-BOANDO BOANDO XAMPU	PRESOAK SOAKING (glitter off)		PRESOAK SOAKING (glitter off)
24	1 0 1 1 1	Screen 1 Screen 2 Screen 3	SIGA <<< PARA <<<<<< ESQUERDA <<<<<<<<	TRIFOAM W A X (glitter off)		<< STEER << LEFT STEER LEFT

Custom Message Displays

16 Character 2 Line Sign

Default Messages

Msg #	Message Control Bits 16 8 4 2 1	Screen Number	Portuguese Default L 5	SAW English Default L 6	VT2000 English Default L 7	Radius 2001 OHD Liberty English Default L 8
25	1 0 1 1 0	Screen 1 Screen 2 Screen 3	SIGA >>> PARA >>>>>> DIREITA >>>>>>>>	TRIFOAM BATH (glitter off)		STEER >> RIGHT >> STEER RIGHT
26	1 0 1 0 1	Screen 1 Screen 2	JOGANDO XAMPU	APPLYING APPLYING PRESOAK		APPLYING APPLYING PRESOAK
27	1 0 1 0 0	Screen 1 Screen 2 Screen 3 Screen 4 Screen 5	PROTECAO ANTI GELO SAIDA DE AGUA	FROST PROTECT WATER PURGE		FROST PROTECT WATER PURGE
28	1 0 0 1 1	Screen 1 Screen 2 Screen 3 Screen 4 Screen 5	PASSE DEVAGAR PELO SECADOR OBRIGADO POR TER VINDO	EXIT SLOWLY THROUGH DRYER THANK YOU FOR YOUR BUSINESS		EXIT SLOWLY THROUGH DRYER THANK YOU FOR YOUR BUSINESS

Custom Message Displays

16 Character 2 Line Sign

Default Messages

Msg #	Message Control Bits 16 ' 8 4 2 1	Screen Number	Portuguese Default L 5	SAW English Default L 6	VT2000 English Default L 7	Radius 2001 OHD Liberty English Default L 8
29	1 0 0 1 0	Screen 1 Screen 2		TRI COLOR FOAMING WAX (glitter off)		TRI COLOR FOAMING WAX (glitter off)
30	1 0 0 0 1	Screen 1 Screen 2 Screen 3				BLASTER 20 TIME 19 DRIVE FORWARD
31	1 0 0 0 0	Screen 1 Screen 2 Screen 3				BLASTER 5 TIME 4 DRIVE FORWARD

Custom Message Displays

16 Character 2 Line Sign
Default Messages

Msg #	Message Control Bits 16 8 4 2 1	Screen Number	Dutch VT2000 L 9	French VT2000 L 10	French-Canadian VT2000 L 11	Spanish VT2000 L 12
00	0 1 1 1 1	Screen 1				
01	0 1 1 1 0	Screen 1				
02	0 1 1 0 1	Screen 1				
03	0 1 1 0 0	Screen 1				
04	0 1 0 1 1	Screen 1				
05	0 1 0 1 0	Screen 1				
06	0 1 0 0 1	Screen 1				
07	0 1 0 0 0	Screen 1				
08	0 0 1 1 1	Screen 1 Screen 2	DRUK START TOETS	APPUYEZ SUR START	APPUYEZ SUR START	APRETAR BOTON DE START
09	0 0 1 1 0	Screen 3				
10	0 0 1 0 1	Screen 1 Screen 2 Screen 3 Screen 4 Screen 5	VOERTUIG IN VRIJ-STAND HANDREM VRIJ STUREN RADIO AFZETTEN	VEHICULE POINT MONT RELACHEZ FREINS LACHEZ VOLANT ETEIGNEZ RADIO	VEHICULE POINT MONT RELACHEZ FREINS LACHEZ VOLANT ETEIGNEZ RADIO	PONER EN NEUTRO SOLTAR FRENO NO CONDUCIR APAGAR RADIO

Custom Message Displays

16 Character 2 Line Sign
Default Messages

Msg #	Message Control Bits 16 8 4 2 1	Screen Number	Dutch VT2000 L 9	French VT2000 L 10	French-Canadian VT2000 L 11	Spanish VT2000 L 12
11	0 0 1 0 0	Screen 1				
12	0 0 0 1 1	Screen 1 Screen 2 Screen 3	WACHTEN OP KETTING NIET INRIJDEN	ATTENDEZ	ATTENDEZ	ESPERAR CONVEYOR NO MANEJE A LA BAHIA
13	0 0 0 1 0	Screen 1				
14	0 0 0 0 1	Screen 1 Screen 2	TOETS CODE OF WERP GELD IN	ENTREZ CODE OU MONNAIE	ENTREZ CODE OU MONNAIE	ENTRAR CODIGO O DINERO
15	0 0 0 0 0	Screen 1				
16	1 1 1 1 1	Screen 1				
17	1 1 1 1 0	Screen 1				
18	1 1 1 0 1	Screen 1				
19	1 1 1 0 0	Screen 1				
20	1 1 0 1 1	Screen 1				
21	1 1 0 1 0	Screen 1				
22	1 1 0 0 1	Screen 1				

Custom Message Displays

16 Character 2 Line Sign
Default Messages

Msg #	Message Control Bits 16 ' 8 4 2 1	Screen Number	Dutch VT2000 L 9	French VT2000 L 10	French-Canadian VT2000 L 11	Spanish VT2000 L 12
23	1 1 0 0 0	Screen 1				
24	1 0 1 1 1	Screen 1				
25	1 0 1 1 0	Screen 1				
26	1 0 1 0 1	Screen 1				
27	1 0 1 0 0	Screen 1				
28	1 0 0 1 1	Screen 1				
29	1 0 0 1 0	Screen 1				
30	1 0 0 0 1	Screen 1				
31	1 0 0 0 0	Screen 1				

Custom Message Displays

16 Character 2 Line Sign
Default Messages

Msg #	Message Control Bits 16 ' 8 4 2 1	Screen Number	Dutch 2001-OHD Liberty L 13	French 2001-OHD Liberty L 14	French-Canadian 2001-OHD Liberty L 15	Spanish 2001-OHD Liberty L 16
00	0 1 1 1 1	Screen 1	WELCOM	BIEN-	BIEN-	BIEN-
		Screen 2	TOETS	VENUE ENTREZ	VENUE ENTREZ	VENIDOS POR
		Screen 3	CODE IN OF VOER	CODE OU	CODE OU	FAVOR DE
		Screen 4	KAART IN OF	CARTE OU	CARTE OU	ENTRAR CODIGO O
		Screen 5	GELD	MONNAIE	MONNAIE	TARJETA O DINERO
01	0 1 1 1 0	Screen 1	FINALE WAX LAAG	PHASE RINCAGE	PHASE RINCAGE	ENJUAGUE DE
		Screen 2				LACRA
02	0 1 1 0 1	Screen 1	VOLGENDE KLANT	PROCHAIN CLIENT	PROCHAIN CLIENT	PROXIMO CLIENTE
03	0 1 1 0 0	Screen 1	WASBEURT KLAAR	LAVAGE TERMINE	LAVAGE TERMINE	LAVADO
		Screen 2	VERTREK A.U.B.	VOUS POUVEZ	VOUS POUVEZ	TERMIN- ADO
		Screen 3	D A N K U	SORTIR	SORTIR	POR FAVOR
		Screen 4	VOOR UW BEZOEK	MERCI	MERCI	SIGUE ADELANTE
		Screen 5		DE VOTRE VENUE	DE VOTRE VENUE	GRACIAS
		Screen 6				PARA SU LEALTAD
04	0 1 0 1 1	Screen 1	DROGEN `!`!`!	SECHAGE `!`!`!	SECHAGE `!`!`!	SECANDO `!`!`!

Custom Message Displays

16 Character 2 Line Sign

Default Messages

Msg #	Message Control Bits 16 ' 8 4 2 1	Screen Number	Dutch 2001-OHD Liberty L 13	French 2001-OHD Liberty L 14	French-Canadian 2001-OHD Liberty L 15	Spanish 2001-OHD Liberty L 16
05	0 1 0 1 0	Screen 1 Screen 2	|||||||| WARME ```````` WAX	|||||||| CIRE ```````` CHAUDE	|||||||| CIRE ```````` CHAUDE	\/CERA\/ CLIENTE
06	0 1 0 0 1	Screen 1	|`'||`'| WAX	|`'||`'| CIRE	|`'||`'| CIRE	ENJUAGUE CON CERA
07	0 1 0 0 0	Screen 1 Screen 2	VOERTUIG IN IN PARKEER	FREIN A MAIN	FREIN A MAIN	PONER EN PARK
08	0 0 1 1 1	Screen 1 Screen 2	%%%%%%%% %%%%%%%% SCHUIM BAD (glitter off)	%%%%%%%% %%%%%%%% BAIN MOUSSANT (glitter off)	%%%%%%%% %%%%%%%% BAIN MOUSSANT (glitter off)	%%%%%%%% %%%%%%%% BANO CON ESPUMA (glitter off)
09	0 0 1 1 0	Screen 1 Screen 2	WASSEN WASSEN	LAVAGE LAVAGE	LAVAGE LAVAGE	CICLO DE LAVADO
10	0 0 1 0 1	Screen 1 Screen 2	WASSEN WASSEN	LAVAGE LAVAGE	LAVAGE LAVAGE	CICLO DE LAVADO
11	0 0 1 0 0	Screen 1 Screen 2 Screen 3	ONDER KANT WASSEN {{{{{{{{ WASSEN iiii}}}}	LAVAGE DU CHASIS {{{{{{{{ iiii}}}}	LAVAGE DU CHASIS {{{{{{{{ iiii}}}}	LAVADO DE CHASIS LAVADO iiii}}}}

Custom Message Displays

16 Character 2 Line Sign
Default Messages

Msg #	Message Control Bits 16 ' 8 4 2 1	Screen Number	Dutch 2001-OHD Liberty L 13	French 2001-OHD Liberty L 14	French-Canadian 2001-OHD Liberty L 15	Spanish 2001-OHD Liberty L 16
12	0 0 0 1 1	Screen 1 Screen 2 Screen 3	LANGZAAM TERUG TERUG	RECULEZ AVEC SOIN	RECULEZ AVEC SOIN	HAGA RETRO-CEDER LENTA-MENTE
13	0 0 0 1 0	Screen 1 Screen 2	S T O P S T O P S T O P	S T O P S T O P S T O P	S T O P S T O P S T O P	S T O P S T O P S T O P
14	0 0 0 0 1	Screen 1 Screen 2 Screen 3	RIJ LANGZAAM VOORUIT LANGZAAM LANGZAAM	AVANCEZ AVEC SOIN	AVANCEZ AVEC SOIN	SE ACERQUE LENTA-MENTE
15	0 0 0 0 0					
16	1 1 1 1 1	Screen 1 Screen 2 Screen 3 Screen 4 Screen 5	WELCOM TOETS CODE IN OF VOER KAART IN OF GELD	BIEN-VENUE ENTREZ CODE OU CARTE OU MONNAIE	BIEN-VENUE ENTREZ CODE OU CARTE OU MONNAIE	BIEN-VENIDOS POR FAVOR DE ENTRAR CODIGO O TARJETA O DINERO
17	1 1 1 1 0	Screen 1 Screen 2 Screen 3	ZACHT WATER WATER	RINCAGE SANS SANS TACHE	RINCAGE SANS SANS TACHE	ENJUAGUE SIN MANCHAS

Custom Message Displays

16 Character 2 Line Sign
Default Messages

Msg #	Message Control Bits 16 ' 8 4 2 1	Screen Number	Dutch 2001-OHD Liberty L 13	French 2001-OHD Liberty L 14	French-Canadian 2001-OHD Liberty L 15	Spanish 2001-OHD Liberty L 16
18	1 1 1 0 1	Screen 1	AUTO IS	VEHICLE	VEHICLE	VEHICULO
		Screen 2	TE L A N G	TROP L O N G	TROP L O N G	DE-MASIADO
		Screen 3	VERTREK A.U.B.	SORTER	SORTER	LARGO
		Screen 4	ON SPREEK	DE LA BAILE	DE LA BAILE	POR FAVOR
		Screen 5	MET DE KASSIER	ET CON-TACTER	ET CON-TACTER	DE SALIR
		Screen 6		CASSIER S.V.P.	CASSIER S.V.P.	EL LAVADO
		Screen 7				Y COMUNI-CARSE
		Screen 8				CON EL CAJERO
19	1 1 1 0 0	Screen 1	VERS WATER	RINCAGE	RINCAGE	ENJUAGUE
		Screen 2	WATER	A L'EAU	A L'EAU	CON AGUA FRESCA
		Screen 3		A L'EAU CLAIRE	A L'EAU CLAIRE	
20	1 1 0 1 1	Screen 1	HOGEDRUK 25	LAVAGEHP 25	LAVAGEHP 25	CORRA 25
		Screen 2	TIJD 24	TEMPO 24	TEMPO 24	TIEMPO 24
		Screen 3	RIJ VOORUIT	AVANCEZ	AVANCEZ	ENTRAR BAHIA
21	1 1 0 1 0	Screen 1	HOGEDRUK 15	LAVAGEHP 15	LAVAGEHP 15	CORRA 15
		Screen 2	TIJD 14	TEMPO 14	TEMPO 14	TIEMPO 14
		Screen 3	RIJ VOORUIT	AVANCEZ	AVANCEZ	ENTRAR BAHIA

Custom Message Displays

16 Character 2 Line Sign
Default Messages

Msg #	Message Control Bits 16 8 4 2 1	Screen Number	Dutch 2001-OHD Liberty L 13	French 2001-OHD Liberty L 14	French-Canadian 2001-OHD Liberty L 15	Spanish 2001-OHD Liberty L 16
22	1 1 0 0 1	Screen 1	HOGEDRUK ///////	RINCAGE	RINCAGE	ENJUAGUE CON ALTA
		Screen 2	HOGEDRUK |||||||	HAUTE	HAUTE	CON ALTA PRESION
		Screen 3	HOGEDRUK &&&&&&&	HAUTE PRESSION	HAUTE PRESSION	
23	1 1 0 0 0	Screen 1	INWEKEN	PRE-	PRE-	QUIMICO
		Screen 2	INWEKEN	PRE- LAVAGE	PRE- LAVAGE	RE- MONJANDO
24	1 0 1 1 1	Screen 1	STUUR NAAR	ALLER A GAUCHE	ALLER A GAUCHE	MANEJE A <<<
		Screen 2	LINKS <<<<<<	ALLER A <<<<<<	ALLER A <<<<<<	LA <<<<<
		Screen 3				DERECHA <<<<<<<<
25	1 0 1 1 0	Screen 1	STUUR NAAR	ALLER A DROIT	ALLER A DROIT	MANEJE A >>>
		Screen 2	RECHTS >>>>>>	ALLER A >>>>>>	ALLER A >>>>>>	LA IZ- >>>>>>
		Screen 3				QUIERDA >>>>>>>>
26	1 0 1 0 1	Screen 1	INWEEK MIDDEL	PRE-	PRE-	APLI- CANDO
		Screen 2		PRE- LAVAGE	PRE- LAVAGE	QUIMICO

Custom Message Displays

16 Character 2 Line Sign
Default Messages

Msg #	Message Control Bits 16 ' 8 4 2 1	Screen Number	Dutch 2001-OHD Liberty L 13	French 2001-OHD Liberty L 14	French-Canadian 2001-OHD Liberty L 15	Spanish 2001-OHD Liberty L 16
27	1 0 1 0 0	Screen 1	WATER AFBLAZEN	PURGE DE	PURGE DE	PROTECT-CION
		Screen 2	ANTI VORST	PROTECT-ION	PROTECT-ION	ANTI-ESCARCHA
		Screen 3		ANTIGEL	ANTIGEL	PURGA
		Screen 4				DE TUBERIAS
		Screen 5				DE AGUA
28	1 0 0 1 1	Screen 1	RIJDT LANGZAAM	SORTIR	SORTIR	SIGUE ADELANTE
		Screen 2	DOOR DE DROGER	LENTE-MENT	LENTE-MENT	LENTA-MENTA
		Screen 3	D A N K U	PAR LE SECHEUR	PAR LE SECHEUR	ABAJO SECADOR
		Screen 4	VOOR UW BEZOEK	MERCI	MERCI	GRACIAS
		Screen 5		DE VOTRE VENUE	DE VOTRE VENUE	PARA SU LEALTAD
29	1 0 0 1 0	Screen 1	DRIE KLEUREN	CIRES TROIS	CIRES TROIS	CERA ESPUMOSA
		Screen 2	SCHUIM WAX (glitter off)	COULEURS (glitter off)	COULEURS (glitter off)	EN TRES COLORES (glitter off)
30	1 0 0 0 1	Screen 1	HOGEDRUK 2 0	LAVAGEHP 2 0	LAVAGEHP 2 0	CHORRA 2 0
		Screen 2	TIJD 1 9	TEMPO 1 9	TEMPO 1 9	TIEMPO 1 9
		Screen 3	RIJ VOORUIT	AVANCEZ	AVANCEZ	ENTRAR BAHIA

Custom Message Displays

16 Character 2 Line Sign
Default Messages

Msg #	Message Control Bits 16 ' 8 4 2 1	Screen Number	Dutch 2001-OHD Liberty L 13	French 2001-OHD Liberty L 14	French-Canadian 2001-OHD Liberty L 15	Spanish 2001-OHD Liberty L 16
31	1 0 0 0 0	Screen 1	HOGEDRUK 0 5	LAVAGEHP 0 5	LAVAGEHP 0 5	CHORRA 0 5
		Screen 2	TIJD 0 4	TEMPO 0 4	TEMPO 0 4	TIEMPO 0 4
		Screen 3	RIJ VOORUIT	AVANCEZ	AVANCEZ	ENTRAR BAHIA

Custom Message Displays

16 Character 2 Line Sign
Default Messages

Msg #	Message Control Bits 16 8 4 2 1	Screen Number	German US2001 OHD L 17	Italian US2001 OHD L 18	English Soft Gloss XS Squared L 19	
00	0 1 1 1 1	Screen 1	WILL-KOMMEN	BEN-VENUTO	WELCOME	
		Screen 2	BITTE	PER PIACERE	PLEASE ENTER	
		Screen 3	ZAHLEN-KODE	INTRO DURRE	CODE OR CARD	
		Screen 4	EIN-GEBEN	CODICE	OR INSERT	
		Screen 5	ODER GELD	O INSERIRE	MONEY	
		Screen 6	EIN-WERFEN	DENARO		
01	0 1 1 1 0	Screen 1	SPEZIAL-WACHS	CERA-LACCA	CLEAR COAT SEALANT	
		Screen 2				
02	0 1 1 0 1	Screen 1	FUER	PRONTO	READY FOR NEXT	
		Screen 2	NAECHST-EN	PER PROSSIMO	FOR NEXT CUSTOMER	
		Screen 3	KUNDEN BEREIT	VEICOLO		
03	0 1 1 0 0	Screen 1	WAESCHE FERTIG	LAVAGGIO FINITO	W A S H COMPLETE	
		Screen 2	BITTE ABFAHREN	PER PIACERE	PLEASE E X I T	
		Screen 3	VIELEN DANK	HSCIRE	THANK YOU	
		Screen 4	AUF	GRAZIE MILLE	FOR YOUR BUSINESS	
		Screen 5	WIEDER-SEHEN			

Custom Message Displays

16 Character 2 Line Sign
Default Messages

Msg #	Message Control Bits 16 8 4 2 1	Screen Number	German US2001 OHD L 17	Italian US2001 OHD L 18	English Soft Gloss XS Squared L 19	
04	0 1 0 1 1	Screen 1	TROCKNEN ‘’’’’’	ASCIUGA TURA	DRYING ‘’’’’’	
05	0 1 0 1 0	Screen 1 Screen 2	HEISSER WACHS	CERA CALDE	|||||||| ‘HOT’ WAX ``````````	
06	0 1 0 0 1	Screen 1	|`'||`'| WACHS	|`'||`'| CERA	|`’||`’| WAXING	
07	0 1 0 0 0	Screen 1 Screen 2 Screen 3 Screen 4	FAHRZEUG IN FRIEGANG STELLEN HAND- BREMSE AN- ZIEHEN	VEICOLO IN FOLLE CON FRENO O PARK	WHEEL SCRUB <-00->	
08	0 0 1 1 1	Screen 1 Screen 2	%%%%%%%% %%%%%%%% SCHAUM BAD (glitter off)	%%%%%%%% %%%%%%%% SHAMPOO NEVE (glitter off)	%%%%%%%% %%%%%%%% FOAM BATH (glitter off)	
09	0 0 1 1 0	Screen 1 Screen 2	WASCHEN	CICLO LAVAGGIO	W A S H CYCLE WASH CYCLE	
10	0 0 1 0 1	Screen 1 Screen 2	WASCHEN	CICLO LAVAGGIO	W A S H CYCLE WASH CYCLE	

Custom Message Displays

16 Character 2 Line Sign

Default Messages

Msg #	Message Control Bits 16 8 4 2 1	Screen Number	German US2001 OHD L 17	Italian US2001 OHD L 18	English Soft Gloss XS Squared L 19	
11	0 0 1 0 0	Screen 1 Screen 2	UNTER- BODEN WAESCHE	LAVAGGIO SOTTO SCOCCA	UNDERCAR W A S H UNDERCAR	
12	0 0 0 1 1	Screen 1 Screen 2 Screen 3	LANGSAM RUECK- WAERTZ FAHREN	FAR MARCIA INDIETRO LENTA- MENTE	BACK-UP SLOWLY BACK-UP	
13	0 0 0 1 0	Screen 1 Screen 2	H A L T H A L T H A L T	S T O P S T O P S T O P	S T O P S T O P S T O P	
14	0 0 0 0 1	Screen 1 Screen 2 Screen 3	LANGSAM FOR WAERTZ FAHREN	AVANZARE LENTA- MENTE	DRIVE FORWARD SLOWLY	
15	0 0 0 0 0					
16	1 1 1 1 1	Screen 1 Screen 2 Screen 3 Screen 4 Screen 5 Screen 6	WILL- KOMMEN BITTE ZAHLEN- KODE EIN- GEBEN ODER GELD EIN- WERFEN	BEN- VENUTO PER PIACERE INTRO DURRE CODICE O INSERIRE DENARO	WASH NOT READY ENTER CODE CODE OR CARD OR CARD OR MONEY	

Custom Message Displays

16 Character 2 Line Sign
Default Messages

Msg #	Message Control Bits 16 8 4 2 1	Screen Number	German US2001 OHD L 17	Italian US2001 OHD L 18	English Soft Gloss XS Squared L 19	
17	1 1 1 1 0	Screen 1 Screen 2	KLAR- SPUELUNG	SCIACQUA TURA ANTI- MACCHIA	SPOTFREE RINSE (glitter off)	
18	1 1 1 0 1	Screen 1 Screen 2 Screen 3 Screen 4 Screen 5 Screen 6 Screen 7 Screen 8	FAHRZEUG Z U L A N G BITTE AUS- FAHREN UND BEI DER KASSE NACH- FRAGEN	VEICOLO TROPPO LUNGO PER FAVORE USCIRE LAVAGGIO E METTERSI IN CONTATTO CON CASSIERE	VEHICLE IS TOO L O N G PLEASE EXIT WASH AND CONTACT CASHIER	
19	1 1 1 0 0	Screen 1 Screen 2	|||||| SPUELEN ‘’’’’’ SPUELEN	SCIAQUA- TURA	||||||| RINSING ``````` RINSING	
20	1 1 0 1 1	Screen 1 Screen 2 Screen 3 Screen 4 Screen 5	WASSER- AUSTOSS ZEIT 2 5 LANGSAM 24 FOR WAERTS FAHREN 23	BLASTER 2 5 TEMPO 2 4 AVANZARE 2 3	BLASTER 25 TIME 24 DRIVE FORWARD	

Custom Message Displays

16 Character 2 Line Sign
Default Messages

Msg #	Message Control Bits 16 8 4 2 1	Screen Number	German US2001 OHD L 17	Italian US2001 OHD L 18	English Soft Gloss XS Squared L 19	
21	1 1 0 1 0	Screen 1 Screen 2 Screen 3 Screen 4 Screen 5	WASSER- AUSTOSS ZEIT 1 5 LANGSAM 1 4 FOR WAERTS FAHREN 1 3	BLASTER 1 5 TEMPO 1 4 AVANZARE 1 3	BLASTER 15 TIME 14 DRIVE FORWARD	
22	1 1 0 0 1	Screen 1 Screen 2 Screen 3	HOCH- DRUCK- WAESCHE	LAVAGGIO AD ALTO IMPATTO	|||||||| PRE-WASH	
23	1 1 0 0 0	Screen 1 Screen 2	EINWEICH WAESCHE	SHAMPOO BAGNATO	PRESOAK SOAKING (glitter off)	
24	1 0 1 1 1	Screen 1 Screen 2 Screen 3	<< NACH. << LINKS NACH. LINKS STEUERN << <<	GUIDARE << << GUIDARE A SINISTRA	<< STEER << LEFT STEER LEFT	
25	1 0 1 1 0	Screen 1 Screen 2 Screen 3	NACH >> RECHTS>> NACH . RECHTS . STEUERN >> >>	GUIDARE >> >> GUIDARE A DESTRA	STEER >> RIGHT >> STEER RIGHT	

Custom Message Displays

16 Character 2 Line Sign

Default Messages

Msg #	Message Control Bits 16 8 4 2 1	Screen Number	German US2001 OHD L 17	Italian US2001 OHD L 18	English Soft Gloss XS Squared L 19	
26	1 0 1 0 1	Screen 1 Screen 2 Screen 3	EINWEICH WAESCHE IM GANG	APPLICAN SHAMPOO PPLICAND SHAMPOO PLICANDO SHAMPOO	APPLYING APPLYING PRESOAK	
27	1 0 1 0 0	Screen 1 Screen 2 Screen 3	FROST- SCHUTZ WASSER- AUSLAUF	DIPOSI- TIVO ANTIGELO PURGE D'ACQUA	FROST PROTECT WATER PURGE	
28	1 0 0 1 1	Screen 1 Screen 2 Screen 3 Screen 4 Screen 5	LANGSAM DURCH TROCKNER ANLAGE AUS- FAHREN	USCIRE LENTA- MENTE SOTTO ASCIUGA- TURA GRAZIE MILLE	EXIT SLOWLY THROUGH DRYER THANK YOU FOR YOUR BUSINESS	
29	1 0 0 1 0	Screen 1 Screen 2	DREI- FARBEN SCHAUM- WACHS (glitter off)	CERA IN TRE COLORI (glitter off)	TRI COLOR FOAMING WAX (glitter off)	

Custom Message Displays

16 Character 2 Line Sign
Default Messages

Msg #	Message Control Bits 16 ' 8 4 2 1	Screen Number	German US2001 OHD L 17	Italian US2001 OHD L 18	English Soft Gloss XS Squared L 19	
30	1 0 0 0 1	Screen 1	WASSER-	BLASTER	BLASTER	
			AUSTOSS	2 0	20	
		Screen 2	ZEIT	TEMPO	TIME	
			2 0	1 9	19	
		Screen 3	LANGSAM	AVANZARE	DRIVE	
			1 9	1 8	FORWARD	
		Screen 4	FOR			
			WAERTS			
		Screen 5	FAHREN			
			1 8			
31	1 0 0 0 0	Screen 1	WASSER-	BLASTER	BLASTER	
			AUSTOSS	0 5	5	
		Screen 2	ZEIT	TEMPO	TIME	
			0 5	0 4	4	
		Screen 3	LANGSAM	AVANZARE	DRIVE	
			0 4	0 3	FORWARD	
		Screen 4	FOR			
			WAERTS			
		Screen 5	FAHREN			
			0 3			

Custom Message Displays

12 Character 1 Line
Default Messages

Msg #	Message Control Bits 16 ' 8 4 2 1	English Default L 0	Dutch Default L 1	French Default L 2	French-Canadian Default L 3
00	0 1 1 1 1	WELCOME TO OUR CARWASH P L E A S E ENTER CODE OR INSERT COINS	W E L K O M IN ONZE CARWASH T O E T S CODE IN OF WERP MUNTEN IN	BIENVENUE DANS NOTRE CARWASH VEUILLEZ COMPOSER VOTRE CODE OU INSERER LA MONNAIE	BIENVENUE DANS NOTRE LAVE-AUTO VEUILLEZ COMPOSER VOTRE CODE OU INSEREZ DES 0.25
01	0 1 1 1 0	S U P E R P O L I S H	S U P E R P O L I S H	S U P E R P O L I S H	S U P E R P O L I S H
02	0 1 1 0 1	R E A D Y FOR NEXT CUSTOMER	K L A A R VOOR VOLGENDE KLANT	PRET POUR PROCHAIN CLIENT	PRET POUR PROCHAIN CLIENT
03	0 1 1 0 0	WASH COMPLETE EXITING NOW THANK YOU FOR YOUR BUSINESS	VERTREK NU D A N K U VOOR UW BEZOEK	LAVAGE TERMINE LE CLIENT SE PREPARE A SORTIR MERCI DE VOTRE VENUE	LAVAGE TERMINE LE CLIENT SE PREPARE A SORTIR MERCI DE VOTRE VENUE
04	0 1 0 1 1	'''DRYING''' ```DRYING``` '' DRYING '' `` DRYING `` ' DRYING ' DRYING	'''DROGEN''' ```DROGEN``` '' DROGEN '' `` DROGEN `` ' DROGEN ' DROGEN	''SECHAGE'' ``SECHAGE`` ''SECHAGE'' ``SECHAGE`` ' SECHAGE ' SECHAGE	''SECHAGE'' ``SECHAGE`` ''SECHAGE'' ``SECHAGE`` ' SECHAGE ' SECHAGE

Custom Message Displays

12 Character 1 Line
Default Messages

Msg #	Message Control Bits 16 ' 8 4 2 1	English Default L 0	Dutch Default L 1	French Default L 2	French-Canadian Default L 3
05	0 1 0 1 0	||`HOT'WAX|| `` HOT WAX`` ||`HOT'WAX|| '' HOT WAX''	|WARME WAX| `WARME WAX` |WARME WAX| 'WARME WAX'	CIRE CHAUDE	CIRE CHAUDE
06	0 1 0 0 1	|| WAXING || `` WAXING `` || WAXING || '' WAXING ''	||| WAX ||| ``` WAX ``` ||| WAX ||| ''' WAX '''	||| CIRE ||| ``` CIRE ``` ||| CIRE ||| ''' CIRE '''	||| CIRE ||| ``` CIRE ``` ||| CIRE ||| ''' CIRE '''
07	0 1 0 0 0	WHEEL SCRUB 0 0 <0 0> -0 0- <O O>	W I E L E N W A S S E N 0 0 <0 0> -0 0-	LAVAGE DES ROUES 0 0 <0 0> -0 0-	LAVAGE DES ROUES 0 0 <0 0> -0 0-
08	0 0 1 1 1	%%%%%%%%%%%% FOAMBATH %%FOAMBATH%% (glitter off)	%%%%%%%%%%%% SCHUIMBAD %SCHUIMBAD%% (glitter off)	%%%%%%%%%%%% BAIN % MOUSSANT % %%MOUSSANT%% (glitter off)	%%%%%%%%%%%% % MOUSSANT % %%MOUSSANT%% (glitter off)
09	0 0 1 1 0	WASH CYCLE	W A S S E N	L A V A G E	L A V A G E
10	0 0 1 0 1	WASH CYCLE	W A S S E N	L A V A G E	L A V A G E
11	0 0 1 0 0	UNDERCAR W A S H {{{{{{{{{{{{ iiiiiiiiiiii }}}}}}}}}}}}	ONDERKANT W A S S E N {{{{{{{{{{{{ iiiiiiiiiiii }}}}}}}}}}}}	LAVAGE DU CHASSIS {{{{{{{{{{{{ iiiiiiiiiiii }}}}}}}}}}}}	LAVAGE DU CHASSIS {{{{{{{{{{{{ iiiiiiiiiiii }}}}}}}}}}}}
12	0 0 0 1 1				
13	0 0 0 1 0				

Custom Message Displays

12 Character 1 Line
Default Messages

Msg #	Message Control Bits 16 ' 8 4 2 1	English Default L 0	Dutch Default L 1	French Default L 2	French-Canadian Default L 3
14	0 0 0 0 1	CORRECT CODE DRIVE FORWARD SLOWLY SLOWLY	JUISTE CODE RIJ LANGZAAM VOORUIT LANGZAAM LANGZAAM	CODE VALABLE AVANCEZ LENTEMENT LENTEMENT	CODE VALABLE AVANCEZ AVEC SOIN AVEC SOIN
15	0 0 0 0 0				
16	1 1 1 1 1				
17	1 1 1 1 0				
18	1 1 1 0 1				
19	1 1 1 0 0				
20	1 1 0 1 1				
21	1 1 0 1 0				
22	1 1 0 0 1				
23	1 1 0 0 0				
24	1 0 1 1 1				
25	1 0 1 1 0				
26	1 0 1 0 1				
27	1 0 1 0 0				
28	1 0 0 1 1				
29	1 0 0 1 0				
30	1 0 0 0 1				
31	1 0 0 0 0				

Custom Message Displays

16 Character 1 Line
Default Messages

Msg #	Message Control Bits 16 ' 8 4 2 1	English Default L 0	Dutch Default L 1	French Default L 2	French-Canadian Default L 3
00	0 1 1 1 1	WELCOME TO OUR CARWASH P L E A S E ENTER CODE OR CARD OR MONEY	W E L K O M IN ONZE CARWASH T O E T S CODE IN OF WERP MUNTEN IN	BIENVENUE DANS NOTRE CARWASH VEUILLEZ COMPOSER VOTRE CODE OU INSERER LA MONNAIE	BIENVENUE DANS NOTRE LAVE-AUTO VEUILLEZ COMPOSER VOTRE CODE OU INSEREZ DES 0.25
01	0 1 1 1 0	CLEAR COAT SEALANT	S U P E R POLISH SUPER POLISH	S U P E R POLISH SUPER POLISH	S U P E R POLISH SUPER POLISH
02	0 1 1 0 1	R E A D Y FOR NEXT CUSTOMER	K L A A R VOOR VOLGENDE KLANT	PRET POUR PROCHAIN CLIENT	PRET POUR PROCHAIN CLIENT
03	0 1 1 0 0	WASH COMPLETE EXITING NOW THANK YOU FOR YOUR BUSINESS	VERTREK NU D A N K U VOOR UW BEZOEK	LAVAGE TERMINE LE CLIENT SE PREPARE A SORTIR MERCI DE VOTRE VENUE	LAVAGE TERMINE LE CLIENT SE PREPARE A SORTIR MERCI DE VOTRE VENUE
04	0 1 0 1 1	'''' DRYING '''' ``` DRYING ``` '' DRYING '' / DRYING /	'''DROGEN''' ```DROGEN``` '' DROGEN '' `` DROGEN `` ' DROGEN ' DROGEN	''SECHAGE'' ``SECHAGE`` ''SECHAGE'' ``SECHAGE`` ' SECHAGE ' SECHAGE	''SECHAGE'' ``SECHAGE`` ''SECHAGE'' ``SECHAGE`` ' SECHAGE ' SECHAGE

Custom Message Displays

16 Character 1 Line
Default Messages

Msg #	Message Control Bits 16 ' 8 4 2 1	English Default L 0	Dutch Default L 1	French Default L 2	French-Canadian Default L 3
05	0 1 0 1 0	''''HOT' WAX ''' ```'HOT' WAX ``` ''''HOT' ''' ///'HOT' WAX ///	|WARME WAX| `WARME WAX`	CIRE CHAUDE	CIRE CHAUDE
06	0 1 0 0 1	''' WAXING ''' ``` WAXING ``` ''' WAXING ''' /// WAXING ///	||| WAX ||| ``` WAX ``` ||| WAX ||| ''' WAX '''	||| CIRE ||| ``` CIRE ``` ||| CIRE ||| ''' CIRE '''	||| CIRE ||| ``` CIRE ``` ||| CIRE ||| ''' CIRE '''
07	0 1 0 0 0	WHEEL SCRUB (0 0) (0 0) -0 0- (0 0) (0 0)	W I E L E N WASSEN 0 0 <0 0> -0 0-	LAVAGE DES ROUES 0 0 <0 0> -0 0-	LAVAGE DES ROUES 0 0 <0 0> -0 0-
08	0 0 1 1 1	FOAM BATH %%%%%%%%%% (glitter off)	%%%%%%%%%% SCHUIMBAD %SCHUIMBAD%% (glitter off)	%%%%%%%%%% BAIN % MOUSSANT % %%MOUSSANT%% (glitter off)	%%%%%%%%%% % MOUSSANT % %%MOUSSANT%% (glitter off)
09	0 0 1 1 0	WASH CYCLE WASH CYCLE (glitter off)	W A S S E N	L A V A G E	L A V A G E
10	0 0 1 0 1	FOAMBRITE WASH FOAMBRITE WASH (glitter off)	W A S S E N	L A V A G E	L A V A G E
11	0 0 1 0 0	UNDERCAR WASH {{{{{{{{{{{{ iiiiiiiiiiii }}}}}}}}}}}}	ONDERKANT WASSEN {{{{{{{{{{{{ iiiiiiiiiiii }}}}}}}}}}}}	LAVAGE DU CHASSIS {{{{{{{{{{{{ iiiiiiiiiiii }}}}}}}}}}}}	LAVAGE DU CHASSIS {{{{{{{{{{{{ iiiiiiiiiiii }}}}}}}}}}}}
12	0 0 0 1 1				
13	0 0 0 1 0				

Custom Message Displays

16 Character 1 Line
Default Messages

Msg #	Message Control Bits 16 ' 8 4 2 1	English Default L 0	Dutch Default L 1	French Default L 2	French-Canadian Default L 3
14	0 0 0 0 1	DRIVE FORWARD S L O W L Y SLOWLY SLOWLY	JUISTE CODE RIJ LANGZAAM VOORUIT LANGZAAM LANGZAAM	CODE VALABLE AVANCEZ LENTEMENT LENTEMENT	CODE VALABLE AVANCEZ AVEC SOIN AVEC SOIN
15	0 0 0 0 0				
16	1 1 1 1 1	WASH NOT READY ENTER CODE OR CARD OR MONEY			
17	1 1 1 1 0	S P O T F R E E R I N S E RINSE RINSE (glitter off)			
18	1 1 1 0 1	VEHICLE IS TOO LONG PLEASE EXIT WASH AND CONTACT CASHIER			
19	1 1 1 0 0	FRESH WATER R I N S E R I N S E (glitter off)			
20	1 1 0 1 1	ROCKER PANEL BLASTER ( ) ( ) - - ( ) ( )			

Custom Message Displays

16 Character 1 Line

Default Messages

Msg #	Message Control Bits 16 ' 8 4 2 1	English Default L 0	Dutch Default L 1	French Default L 2	French-Canadian Default L 3
21	1 1 0 1 0	TIRE BLASTER (0 0) (0 0) -0 0- (0 0) (0 0)			
22	1 1 0 0 1	HIGH IMPACT W A S H			
23	1 1 0 0 0	PRESOAK SOAKING PRESOAK SOAKING (glitter off)			
24	1 0 1 1 1	TRIFOAM WAX TRIFOAM WAX (glitter off)			
25	1 0 1 1 0	TRIFOAM BATH TRIFOAM BATH (glitter off)			
26	1 0 1 0 1	APPLYING PRESOAK APPLYING PRESOAK (glitter off)			
27	1 0 1 0 0	FROST PROTECT PURGE			
28	1 0 0 1 1	EXIT SLOWLY THROUGH DRYER THANK YOU FOR YOUR BUSINESS			
29	1 0 0 1 0				
30	1 0 0 0 1				
31	1 0 0 0 0				

Custom Message Displays

8 Character 1 Line
Default Messages

Msg #	Message Control Bits 16 ' 8 4 2 1	English Default L 0	Dutch Default L 1	French Default L 2	French-Canadian Default L 3	Spanish L 4
00	0 1 1 1 1	WELCOME PLEASE ENTER CODE OR CARD OR INSERT MONEY		BIENVENU S.V.P. ENTREZ CODE OU CARTE OU INSEREZ MONNAIE		HOLA FAVOR MARCAR CODICO O TARJ O INTRODUZ DINERO
01	0 1 1 1 0	CLEAR COAT SEALANT		CIRE		ENJUAGUE CLEAR COAT
02	0 1 1 0 1	READY FOR NEXT CUSTOMER		PRET POUR LE CLIENT SUIVANT		LISTO PROXIMO CLIENTE
03	0 1 1 0 0	WASH COMPLETE PLEASE EXIT THANKYOU FOR YOUR BUSINESS		LAVAGE TERMINE VOUS POUVEZ SORTIR MERCI DE VOTRE VENUE		TERMINO LAVADO FAVOR SALIR GRACIAS PARA SU LEALTAD
04	0 1 0 1 1	'DRYING` `DRYING' 'DRYING` ` ' 'DRYING` `DRYING'		SECHAGE		'SECANDO `SECANDO ` ` 'SECANDO `SECANDO
05	0 1 0 1 0	`HOT'WAX HOT WAX `HOT' HOT WAX		CIRE CHAUDE		CERA 'CERA'

Custom Message Displays

8 Character 1 Line
Default Messages

Msg #	Message Control Bits 16 ' 8 4 2 1	English Default L 0	Dutch Default L 1	French Default L 2	French-Canadian Default L 3	Spanish L 4
06	0 1 0 0 1	|WAXING| `WAXING` | | 'WAXING'		CIRE		| CERA | ` CERA ` | | ' CERA '
07	0 1 0 0 0	WHEEL SCRUB (0 0) (0 0) -O 0- (0 0) (0 0)		LAVAGE DES ROUES		LAVADO RUEDAS (0 0) (0 0) -O 0- (0 O) (0 0)
08	0 0 1 1 1	FOAMBATH %%%%%%%% (glitter off)		BAIN MOUSSANT		ESPUMA %%%%%%%% (glitter off)
09	0 0 1 1 0	W A S H CYCLE CYCLE (glitter off)		CYCLE LAVAGE		CICLO LAVADO (glitter off)
10	0 0 1 0 1	FOAM BRITE WASH WASH (glitter off)		LAVAGE		LAVADO F O A M BRITE (glitter off)
11	0 0 1 0 0	UNDERCAR W A S H {{{{{{{{ iiiiiiii }}}}}}}}		LAVAGE DU CHASSIS		LAVADO CHASIS {{{{{{{{ Iiiiiiii }}}}}}}}
12	0 0 0 1 1	BACK-UP SLOWLY		RECULEZ AVEC SOIN		RETRO DESPACIO

Custom Message Displays

8 Character 1 Line
Default Messages

Msg #	Message Control Bits 16 ' 8 4 2 1	English Default L 0	Dutch Default L 1	French Default L 2	French-Canadian Default L 3	Spanish L 4
13	0 0 0 1 0	S T O P S T O P		ARRET		PARAR
14	0 0 0 0 1	DRIVE FORWARD SLOWLY SLOWLY		AVANCEZ AVEC SOIN		SIGA DESPACIO SIGA DISPACIO DESPACIO
15	0 0 0 0 0					
16	1 1 1 1 1	WASH NOT READY ENTER CODE OR CARD OR MONEY		LE LAVAGE N'EST PAS PRET COMPOSEZ VOTRE CODE OU OU MONNAIE		LAVADO NO LISTO MARCAR CODIGO O TARJ DINERO
17	1 1 1 1 0	SPOTFREE RINSE RINSE (glitter off)		RINCAGE SANS TACHE		ENJUAGUE (glitter off)
18	1 1 1 0 1	VEHICLE IS TOO L O N G PLEASE EXIT AND CONTACT CASHIER		VEHICULE EST TROP LONG SORTER DE LA BAIE ET CON-TACTER CASSIER S.V.P.		HEHICULO DESMAS. LARGO FAVOR SALIR Y HABLAR CON CAJERO

Custom Message Displays

8 Character 1 Line
Default Messages

Msg #	Message Control Bits 16 ' 8 4 2 1	English Default L 0	Dutch Default L 1	French Default L 2	French-Canadian Default L 3	Spanish L 4
19	1 1 1 0 0	FRESH WATER RINSE RINSE (glitter off)		RINCAGE A L'EAU CLAIR		ENJUAGUE CON AGUA LIMPIA (glitter off)
20	1 1 0 1 1	ROCKER PANEL BLASTER ( ) ( ) - - ( ) ( )		LAVAGE BAS DE CAISSE ( ) ( ) - - ( ) ( )		CHORRO DE ESTRIBOS ( ) ( ) - - ( ) ( )
21	1 1 0 1 0	TIRE BLASTER (0 0) -0 0- (0 0) (o o) o o		LAVAGE DE ROUES HAUTE PRESSION		CHORRO LLANTAS (0 0) -0 0- (0 0) (o o) o o
22	1 1 0 0 1	H I G H IMPACT WASH		LAVAGE HAUTE PRESSION		LAVADO A L T O IMPACTO
23	1 1 0 0 0	PRESOAK SOAKING SOAKING (glitter off)		PRE-LAVAGE		ESPUMA (glitter off)
24	1 0 1 1 1	TRIFOAM W A X W A X (glitter off)		CIRE TROIS COULEURS		CERA TRIFOAM (glitter off)

Custom Message Displays

8 Character 1 Line
Default Messages

Msg #	Message Control Bits 16 ' 8 4 2 1	English Default L 0	Dutch Default L 1	French Default L 2	French-Canadian Default L 3	Spanish L 4
25	1 0 1 1 0	TRIFOAM % BATH % % BATH % (glitter off)		BAIN TROIS COULEURS		% BANO % TRIFOAM
26	1 0 1 0 1	PRESOAK		PRE-LAVAGE		ESPUMA (glitter off)
27	1 0 1 0 0	FROST PROTECT PURGE		PURGE DE PROTECT-ION ANTIGEL		PURGA PROTECC. ESCARCHA
28	1 0 0 1 1	EXIT SLOWLY THROUGH DRYER THANKYOU FOR YOUR BUSINESS		SORTIR LENTE-MENT PAR LE SECHEUR MERCI DE VOTRE VENUE		SALIR DESPACIO A TRAVES SECADO GRACIAS POR SU LEALTAD
29	1 0 0 1 0					
30	1 0 0 0 1					
31	1 0 0 0 0					

NOTES:

GENERAL NOTES
- –ALL CONSTRUCTION TO MEET ALL APPLICABLE LOCAL,STATE & NATIONAL CODES.
- –ALL ELECTRICAL FITTINGS TO BE WATERTIGHT. ANY FIXTURES IN VICINITY OF WASH UNIT TO BE WATERTIGHT INCLUDING LIGHTS.
- –NO CONDUITS MAY ENTER THE TOP OF ANY ENCLOSURE.
- –DRILL A 1/4" (6mm) DIAMETER DRAIN HOLE IN THE BOTTOM OF ALL JUNCTION BOXES AND TERMINAL BOXES THAT ARE LOCATED IN THE WASH BAY.
- –ALL MATERIALS TO BE PROVIDED AND INSTALLED BY CUSTOMER UNLESS OTHERWISE SPECIFIED.
- –CONSULT YOUR RYKO REPRESENTATIVE FOR DIMENSIONS OTHER THAN SHOWN.
- –REFER TO EQUIPMENT INSTALLATION DRAWINGS FOR PROPER NUMBER OF WIRES AND WIRE SIZES.
- –DO NOT USE WIRES LARGER OR SMALLER THAN THOSE SPECIFIED.

!! CAUTION !!

TO AVOID ELECTRICAL SHOCK OR OTHER PERSONAL INJURY WHILE PERFORMING SERVICE ON THE CAR WASH EQUIPMENT, DISCONNECT ALL POWER SUPPLIES TO THE CAR WASH EQUIPMENT, AND DO NOT STAND OR CLIMB ON THE MACHINE AT ANY TIME FOR ANY REASON.

(1) A WASH BAY TERMINAL BOX MAY NOT BE PRESENT. IF NOT PRESENT, WIRES FROM THE WASH CONTROL BOX WILL CONNECT DIRECTLY TO BOOM CABLES AND/OR THEIR FINAL DESTINATION. OTHER WIRES MAY BE REQUIRED IN THE WASH BAY THAT ARE ROUTED SEPARATELY AND/OR MAY ROUTE THROUGH BUT NOT MAKE CONNECTION IN THE WASH BAY TERMINAL BOX.

(2) THESE WIRES ARE REQUIRED TO OPERATE EQUIPMENT IN THE WASH BAY.

(3) THESE WIRES MAY BE REQUIRED DEPENDING ON OPTIONS TO BE INSTALLED.

(4) CONDUIT LOCATIONS INTO TERMINAL BOXES/ENCLOSURES IN THIS DRAWING ARE FOR ILLUSTRATION ONLY. ACTUAL FIELD ROUTING MAY BE DIFFERENT.

(5) CONDUITS FOR OPTIONS ARE SHOWN WITH DASHED LINES. CONDUITS THAT ARE NOT OPTIONAL ARE SOLID LINES.

(6) WIRE IN CMD SIGN MAY BE TAGGED AS #19. TIE WIRE #25 FROM WASH BAY TERMINAL BOX TO WIRE #19 IN CMD SIGN.

(7) IF ADDITIONAL EMERGENCY STOP SWITCHES ARE INSTALLED, THEY MUST BE WIRED IN SERIES. WIRE NUMBER 26 THAT ORIGINATES IN THE COMMUNICATION INTERFACE BOX AND CONNECTED TO TERMINAL #26 MUST BE REMOVED FROM THE TERMINAL. ONE END OF THE SERIES WIRED E–STOP SWITCHES MUST BE CONNECTED TO THIS WIRE. THE OTHER END MUST CONNECTED TO TERMINAL #26.

(8) IF A FREESTANDING DRYER WITH LOOP DETECT IS PRESENT, THE INSIDE LOOP CONNECTS TO THE DRYER LOOP RELAY. REFER TO DRYER FIELD WIRING DRAWING FOR PROPER CONNECTIONS.

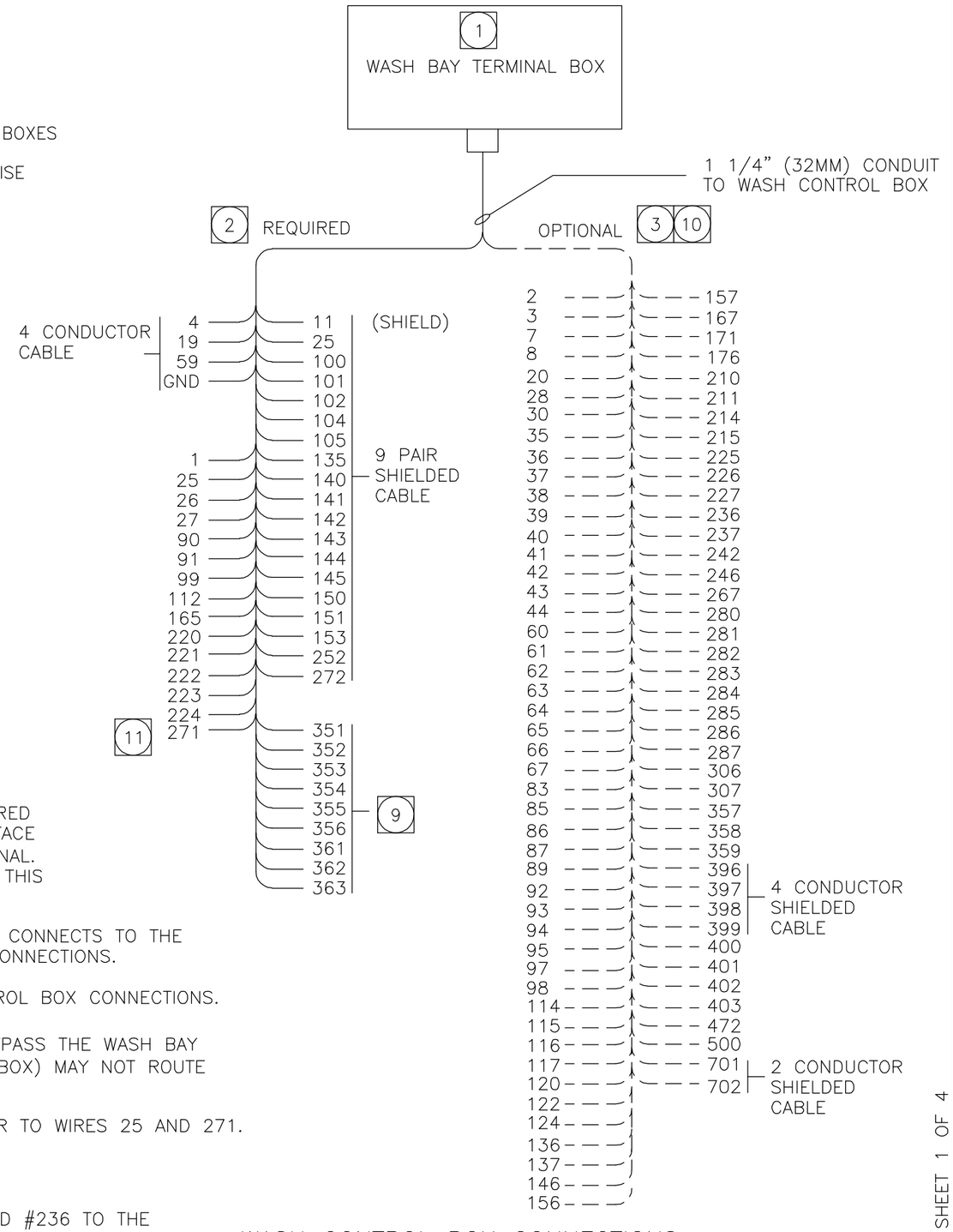
(9) REFER TO ELECTRICAL INSTALLATION/CONTROL BOX DRAWING FOR WASH CONTROL BOX CONNECTIONS.

(10) SOME ROUTING OF OPTIONAL WIRES (FROM THE WASH CONTROL BOX) MAY BYPASS THE WASH BAY TERMINAL BOX, AND SOME OPTIONAL WIRES (FROM THE WASH BAY TERMINAL BOX) MAY NOT ROUTE THROUGH OR TERMINATE IN THE WASH CONTROL BOX.

(11) IF THERE IS NO WASH BAY TERMINAL BOX, CONNECT THE BAY SWITCH BUZZER TO WIRES 25 AND 271.

(12) WIRE COLORS IN PARENTHESIS ARE FOR 50HZ WASH MACHINES.

(13) FOR NON–RYKO R.O. WATER SYSTEMS (I.E.: PurClean) CONNECT WIRE #25 AND #236 TO THE R.O. SYSTEM (24VAC ON=R.O. WATER NEEDED).



WASH CONTROL BOX CONNECTIONS

LTR	ECO	DESCRIPTION	DATE	BY
A	0307–092	ADD NOTE 13	3/29/07	WD
–	0307–035	RELEASING DRAWING	3/12/07	WS
			GDL	GDL

FORM #19477–039 REV B 1/21/97

PRODUCT: RADIUS

All specifications subject to change without notice.

SCALE NONE | DATE 3/8/07
DRAWN SMOTHERS | CHK'D WD/SWS
APVD GDL | DATE 3/12/07

RYKO® MFG. CO.
GRIMES, IOWA, 50111 U.S.A.

FIELD WIRING/ RADIUS, FX3U

DWG NO. 24420–004

REV. A

SHEET 1 OF 4

STANDARD 18/4 (.75SQMM/4) GANTRY CABLE
4 RED (1)
19 BLK (2)
59 WHT (3)
GND GRN (G/Y)
12

STANDARD 16/10 (.75SQMM/12) GANTRY CABLE
351 BLK (1)
352 WHT (2)
353 RED (3)
354 ORG (4)
355 BLU (5)
356 R/B (6)
361 W/B (7)
362 G/B (8)
363 O/B (9)
GND GRN (G/Y)
12

STANDARD 9 PAIR GANTRY CABLE
25 BLK / 100 RED
101 BLK / 102 WHT
104 BLK / 105 GRN
135 BLK / 140 YEL
141 BLK / 142 BRN
143 BLK / 144 ORG
145 RED / 150 WHT
151 RED / 153 GRN
252 BLK / 272 BLU
11 (SHIELD)

1
WASH BAY TERMINAL BOX

OPTIONAL 18/8 GANTRY THERMOSTAT AND FLOAT SWITCH CABLE
12
19 BLU
59 RED
167 GRN
30 WHT
246 BLK

OPTIONAL 8/4 (6SQMM/4) GANTRY CABLE
357 BLK (BLK)
358 WHT (BLU)
359 RED (BRN)
GND GRN (G/Y)
HOT PRESOAK OPTION

OPTIONAL18/3 (.75SQMM/4) GANTRY CABLE
12
90 WHT (BLU)
83 BLK BRN
GND GRN (G/Y)
TRIFOAM SPOTLIGHT OPTION

OPTIONAL18/3 (.75SQMM/3) GANTRY CABLE
12
90 WHT BLU
98 BLK BRN
GND GRN (G/Y)
BACK LIGHT OPTION

OPTIONAL18/2 (.75SQMM/2) GANTRY CABLE
12
90 WHT (2)
97 BLK (1)
FREEZE PROTECT OPTION

1
19
25
112
ENTRANCE PHOTOEYE

19
156
FROST PROTECT T-STAT

19
157
PRE RINSE T-STAT

26
7
E-STOP SWITCHES

G
25 — COM
90 (115VAC TO
99 TRANSFORMER)
220 — 1
221 — 2
222 — 4
223 — 8
224 — 16
6
CUSTOM MESSAGE DISPLAY

TIP
(W/MODEM ONLY)
RING
PHONE LINE
COMMUNICATION INTERFACE CABLE TO CONTROL BOX
G
19
59
530
531
533
535
537
538
539
540
90
91
(W/MODEM ONLY)
701
702
SHIELD
2 CONDUCTOR SHIELDED CABLE
COMMUNICATION INTERFACE BOX

(GO)
(STOP)
(BK-UP)
(N)
G — (GRN) GND
85 — (BLK) 603
86 — (BLK) 95
87 — (BLK) 609
90 — (WHT) 90
STOP-GO-BACKUP LIGHT

19
125
126
127
130
131
132
MANUAL ACTIVATION (OPTIONAL)

G
19
25
92
125
126
127
500
G
90
99
NON-RYKO CB (OPTIONAL)

H
N
G
SEPARATE 115VAC POWER CIRCUIT W/ DEDICATED GFCI BREAKER.
701
702
SHIELD
2 CONDUCTOR SHIELDED CABLE
26
472
500
396
397
398
399
INTERCOM OPTION
AMTT/AMTT CS (OPTIONAL)

COIN BOX
(ONLY ONE OPTION MAY BE PRESENT)

REV.	LTR	DESCRIPTION	BY	DATE	APVD
			WD	3/29/07	GDL
	A	0307-092 ADD NOTE 13			
	–	0307-035 RELEASING DRAWING	WS	3/12/07	GDL
		ECO			

PRODUCT: RADIUS

All specifications subject to change without notice.

SCALE	NONE	DATE	3/8/07
DRAWN	SMOTHERS	CHK'D	WD/SWS
APVD	GDL	DATE	3/12/07

RYKO® MFG. CO.
GRIMES, IOWA, 50111 U.S.A.

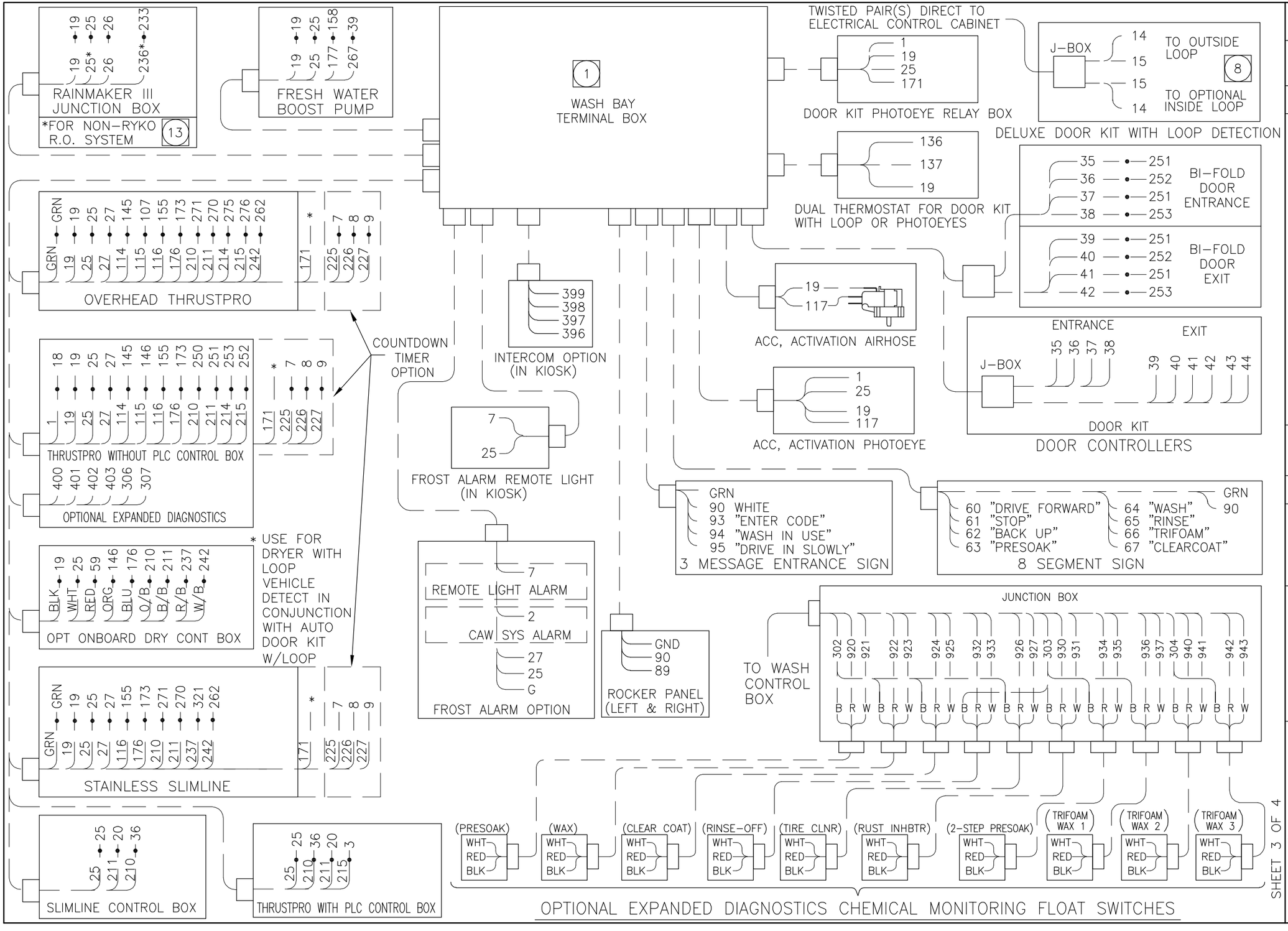
FIELD WIRING/ RADIUS,FX3U

DWG NO. 24420-004

REV. A

SHEET 2 OF 4

FORM #19477-039 REV B 1/21/97



LTR	ECO	DESCRIPTION	BY	DATE	APVD
			WD	3/29/07	GDL
A	0307-092	ADD NOTE 13	WS	3/12/07	GDL
–	0307-035	RELEASING DRAWING			

PRODUCT: RADIUS

All specifications subject to change without notice.

SCALE	DATE
NONE	3/8/07
DRAWN	CHK'D
SMOTHERS	WD/SWS
APVD	DATE
GDL	3/12/07

RYKO® MFG. CO.
GRIMES, IOWA, 50111 U.S.A.

FIELD WIRING/
RADIUS, FX3U

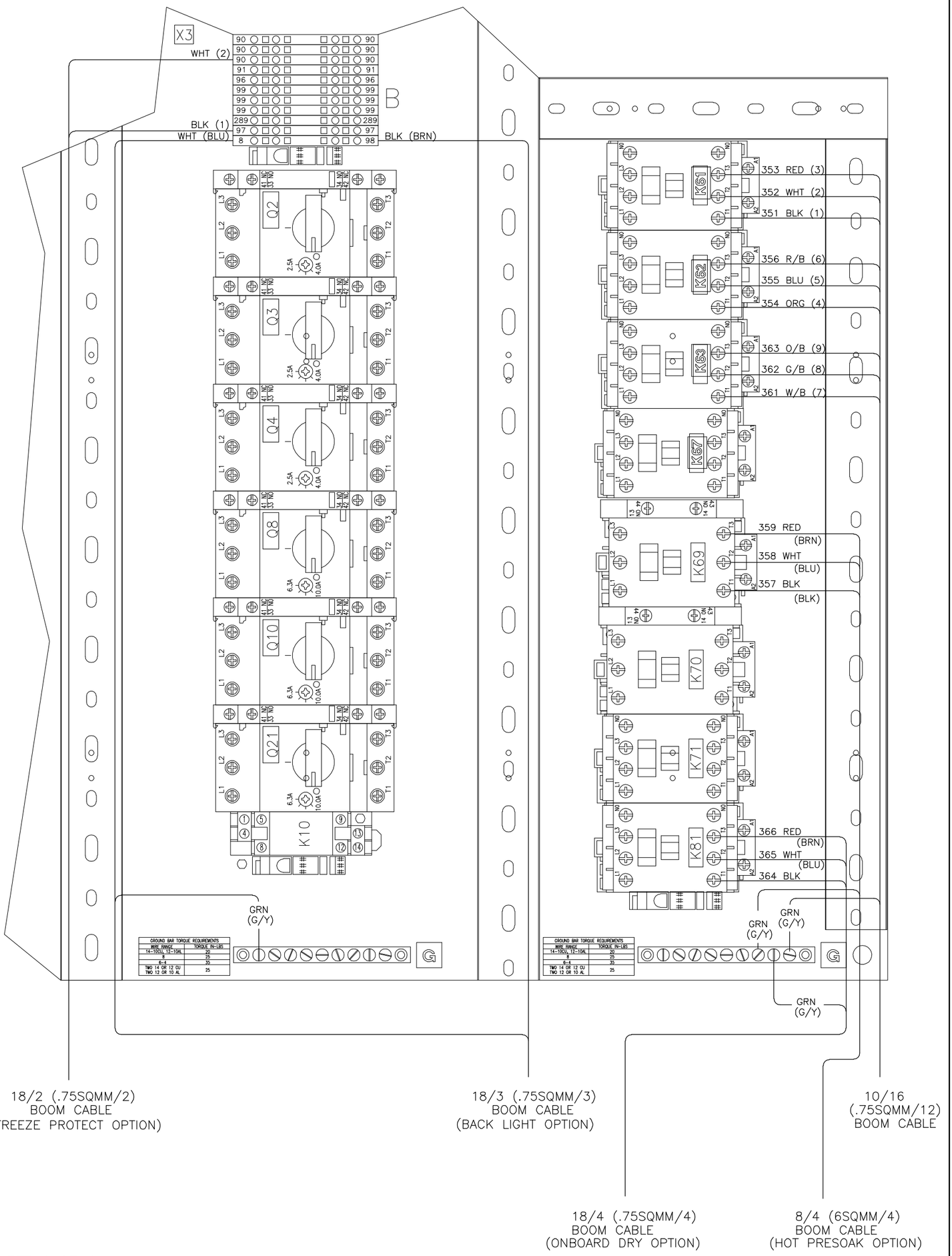
REV. A
DWG NO. 24420-004

SHEET 3 OF 4

FORM #19477-039 REV B 1/21/97

NOTE:

13 ALL OTHER WIRING INTO THE ELECTRICAL CONTROL CABINET CONNECTS TO X1 TERMINAL BLOCK ACCORDING TO WIRE NUMBER.



SHEET 4 OF 4

RYKO® MFG.CO. GRIMES,IOWA, 50111 U.S.A.	All specifications subject to change without notice.	PRODUCT							
		RADIUS							
FIELD WIRING/ RADIUS,FX3U	SCALE NONE / DATE 3/8/07								
	DRAWN SMOTHERS / CHK'D WD/SWS		A	0307-092	ADD NOTE 13	WD	3/29/07	GDL
REV. A / DWG NO. 24420-004	APVD GDL / DATE 3/12/07		–	0307-035	RELEASING DRAWING	WS	3/12/07	GDL
			LTR	ECO	DESCRIPTION	BY	DATE	APVD

FORM #19477-039 REV B 1/21/97

Parts Listing Table Of Contents For Work Order 7527830

REDUCER ASSY/TROLLEY DRIVE

PART NO. 22034-002 REVISION L

ITEM	QTY.	UOM	PART NO.	DESCRIPTION
23	1	EA	10005-203	WIRE TIE/6",1-3/4"MAX DIA
13	4	EA	10038-206	WASHER/LOCK,SPLIT RING,5/16,SS
6	1	EA	10180-121	REDUCER/15:1,56C,L-F OUTPUT
21	1	EA	10305-201	TERMINAL/RING,#10,22-16GA,RED
20	4	EA	10345-202	WIRE NUT/ORANGE
19	1	EA	10362-240	CONN/STR RLF,PLS,1/2,.276-.472
22	2	EA	10363-209	CONDUIT LOCKNUT/SEAL,1/2",STL
7	1	EA	10384-001	TAPE/ELECTRICAL,3/4",RED
11	4	EA	10428-226	WASHER/FLAT,.50x1.125x.065,SS
1	1	EA	10660-211	MOTOR/1HP,50-60HZ,TENV
12	4	EA	10877-226	SCREW/HHC,5/16-18x3/4,SS
18	13	FT	18432-000	CABLE/ 18/4,SEOW,600V
10	1	EA	19605-000	SHOP PROC/REMOVAL DRAIN PLUGS
4	1	EA	24661-003	PULLEY ASSY/DRIVE,3/4,STANDARD

DWG. NO. 22034–002

NOTES:

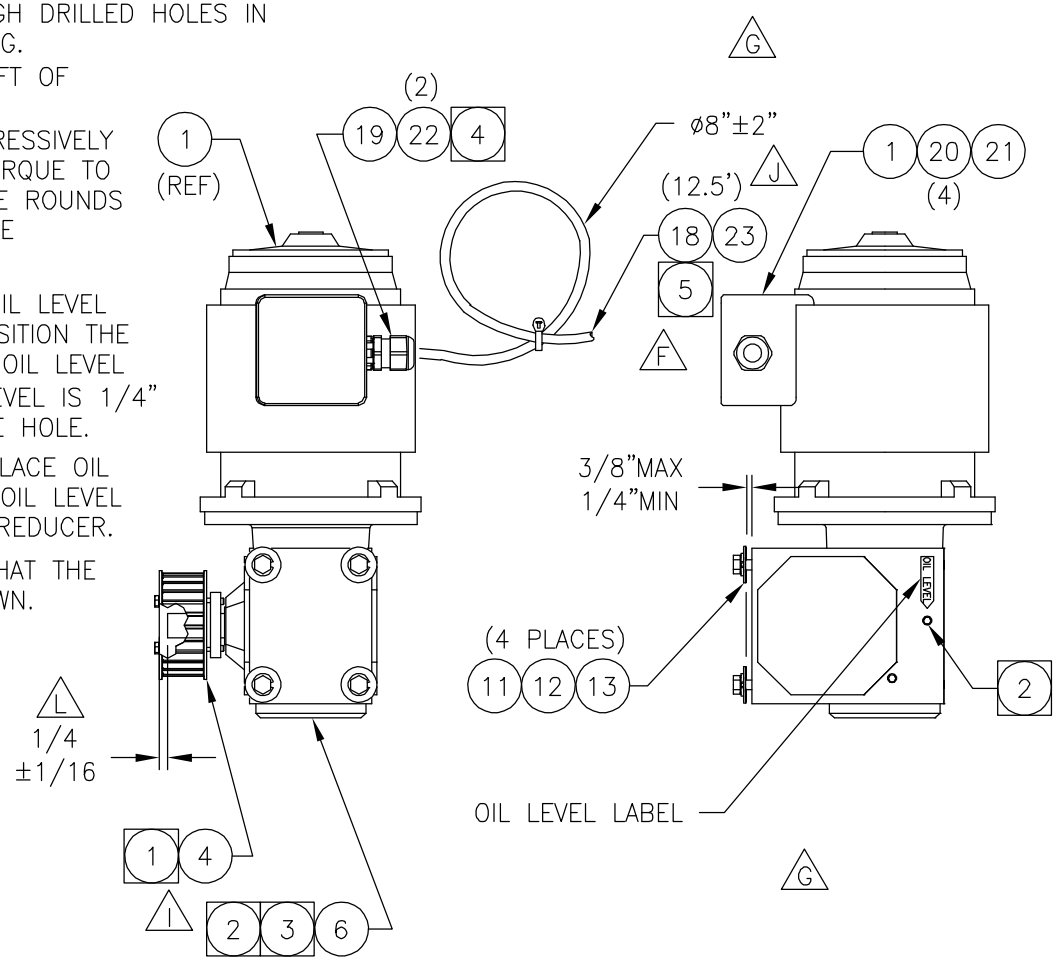
1. A) ALIGN DRILLED HOLES IN PULLEY WITH TAPPED HOLES IN BUSHING.
   B) INSERT SCREWS WITH LOCKWASHERS THROUGH DRILLED HOLES IN PULLEY AND THREAD LOOSELY INTO BUSHING.
   C) POSITION ASSEMBLY (ITEM #4) ON THE SHAFT OF REDUCER, AS SHOWN.
   D) TIGHTEN SCREWS WITH LOCKWASHERS PROGRESSIVELY USING A TORQUE WRENCH AND SOCKET. TORQUE TO 43–47 IN–LBS, AND THEN MAKE TWO MORE ROUNDS OF TIGHTENING TO ASSURE ALL SCREWS ARE UNIFORMLY TIGHT.
2. BEFORE INSTALLING REDUCER (ITEM #6), THE OIL LEVEL MUST BE CHECKED IN THE GEAR REDUCER. POSITION THE UNIT IN A VERTICAL ORIENTATION. REMOVE THE OIL LEVEL PIPE PLUG AS SHOWN. THE ACCEPTABLE OIL LEVEL IS 1/4" BELOW THE PLUG HOLE UP TO BOTTOM OF THE HOLE.
3. AFTER CHECKING THE OIL LEVEL, AS SHOWN, PLACE OIL LEVEL LABEL NEXT TO OIL LEVEL PLUG. NOTE: OIL LEVEL LABEL IS SUPPLIED WITH EACH ELECTRA GEAR REDUCER.
4. ROTATE MOTOR J–BOX, IF NECESSARY, SUCH THAT THE CONDUIT ENTRANCE FACES THE DIRECTION SHOWN.
5. MARK BOTH ENDS OF CABLE (ITEM #18) WITH RED ELECTRICAL TAPE (ITEM #7).

L G

TROLLEY MOTOR WIRING

WIRE#	CABLE COLOR	MOTOR CONN
354	BLK	2 & 8
355	WHT	3 & 9
356	RED	1 & 7
GND	GRN	GND

TIE TOGETHER 4, 5 & 6



						PRODUCT	TOLERANCES UNLESS OTHERWISE SPECIFIED	MATERIAL	RYKO® MFG. CO. GRIMES,IOWA 50111 U.S.A.
						US2001–OHD	LOCATIONS ±1/8	SEE PRODUCT STRUCTURE	
						RADIUS		SCALE NONE / DATE 12/14/00	REDUCER ASSY/ TROLLEY DRIVE
								DRAWN KS / CHK'D GA/MB	
L	0707–041	ADD NOTE 5, ADD TOLERANCE	KS	7/25/07	GDL		1. ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE. 2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.	APVD RS / DATE 12/15/00	DWG. NO. 22034–002 / REV. L
LTR	ECO	DESCRIPTION	BY	DATE	APVD				

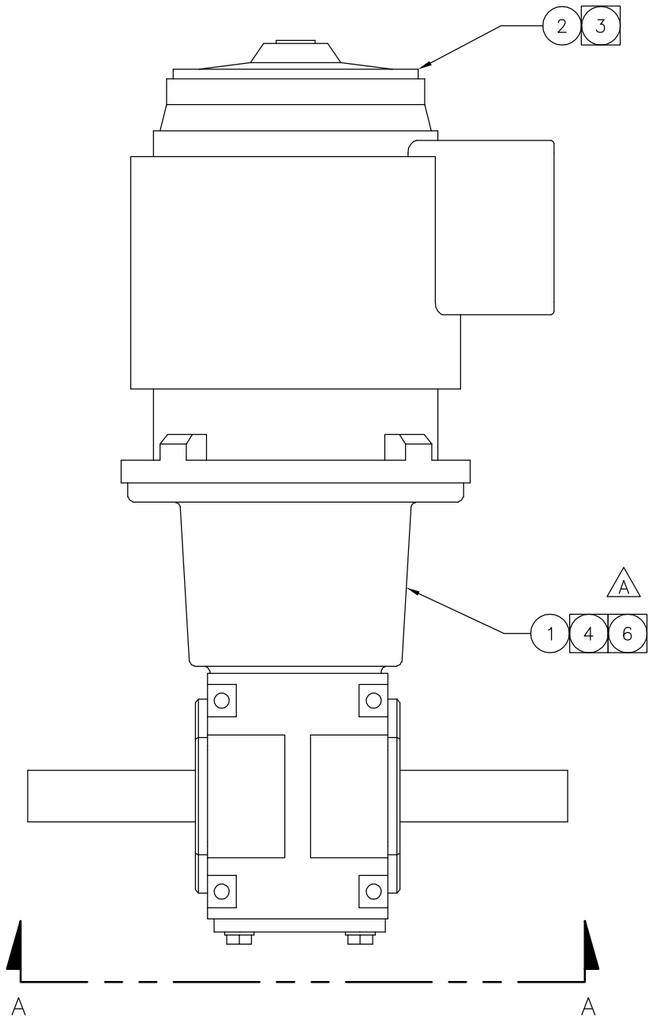
REDUCER ASSY/DRIVE,GANTRY

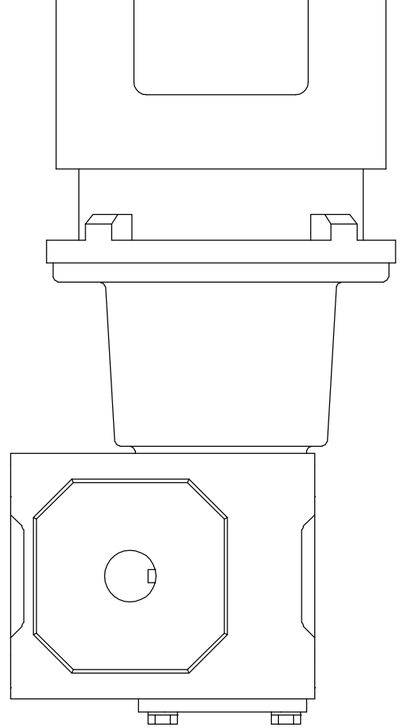
PART NO. 22034-007 REVISION A

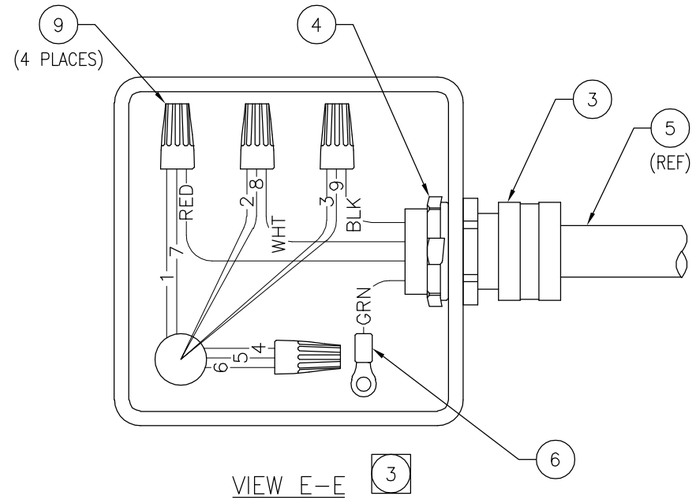
ITEM	QTY.	UOM	PART NO.	DESCRIPTION
6	1	EA	10305-201	TERMINAL/RING,#10,22-16GA,RED
9	4	EA	10345-202	WIRE NUT/ORANGE
3	1	EA	10362-240	CONN/STR RLF,PLS,1/2,.276-.472
4	1	EA	10363-209	CONDUIT LOCKNUT/SEAL,1/2",STL
7	1	EA	10384-002	TAPE/ELECTRICAL,3/4",YELLOW
2	1	EA	10660-211	MOTOR/1HP,50-60HZ,TENV
10	1	EA	11695-200	THREADLOCK COMPOUND
8	1	EA	13610-001	OIL/SYNTHETIC LUBE,1GAL JUG
1	1	EA	15069-007	REDUCER/10:1,56C,LR,CPLG
5	10	FT	18432-000	CABLE/ 18/4,SEOW,600V

NOTES:

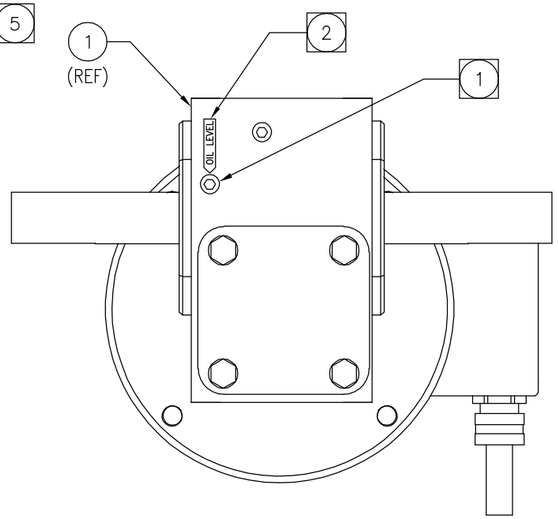
1. THE OIL LEVEL OF THE REDUCER MUST BE CHECKED. REMOVE THE OIL LEVEL PLUG SHOWN. THE ACCEPTABLE OIL LEVEL IS BETWEEN 1/4" BELOW THE PLUG HOLE AND THE BOTTOM OF THE PLUG HOLE. IF NEEDED, ADD OIL (ITEM #8) INTO THE REDUCER.
2. AFTER CHECKING OIL LEVEL, PLACE OIL LEVEL LABEL NEXT TO THE LEVEL PLUG, AS SHOWN IN VIEW A–A. THE OIL LEVEL LABEL, SCREWS AND LOCK WASHERS USED FOR MOUNTING THE MOTOR TO THE REDUCER ARE SUPPLIED WITH EACH REDUCER.
3. ROTATE THE JUNCTION BOX ON THE MOTOR SO THAT THE STRAIN RELIEF (ITEM #3) GOES INTO THE BOTTOM OF THE JUNCTION BOX.
4. APPLY 1/16" WIDE STRIP OF THREADLOCK COMPOUND (ITEM #10) ONTO THREADS OF COUPLING SET SCREWS. WIPE AWAY ANY EXCESS THREADLOCK.
5. MARK BOTH ENDS OF CABLE (ITEM #5) WITH YELLOW ELECTRICAL TAPE (ITEM #7). △A
6. BEFORE TIGHTENING SET SCREWS ON COUPLING, ENSURE REDUCER SHAFT IS SPINNING FREELY.







VIEW E–E 3
(ENLARGED FOR CLARITY)



VIEW A–A

LTR	DESCRIPTION	BY	DATE	APVD
A	0707–041 ADD NOTES 5 & 6, ADD ITEM #7	KS	7/25/07	GDL
–	0504–121 RELEASING DRAWING	AM	7/6/04	GDL

FORM #19477–037 REV B 01/20/97

PRODUCT: US2001–OHD RADIUS

TOLERANCES UNLESS OTHERWISE SPECIFIED

MATERIAL: SEE PRODUCT STRUCTURE

SCALE: NONE | DATE: 5/27/04

DRAWN: AMULLEN | CHK'D: KC/GA

APVD | DATE: 7/6/04

GDL | 7/6/04

1. ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.

RYKO® MFG. CO. U.S.A.
GRIMES, IOWA 50111

REDUCER ASSY/ DRIVE, GANTRY

REV. A | DWG. NO. 22034–007

TROLLEY DRIVE ADDITION

PART NO. 22040-003 REVISION F

ITEM	QTY.	UOM	PART NO.	DESCRIPTION
14	2	EA	10005-203	WIRE TIE/6",1-3/4"MAX DIA
8	4	EA	10037-207	NUT/ 3/8-16,ZN PL
11	2	EA	10186-210	PIN/COTTER,1/8X2,SS
7	6	EA	10428-202	WASHER/FLAT,3/8"SAE,SS
10	2	EA	10428-204	WASHER/FLAT,1",SAE,SS
6	2	EA	10877-269	SCREW/HHC,3/8-16x4,SS,THD-ALL
9	2	EA	10878-207	NUT/ 3/8-16,NYL INS,ZN PL
5	1	EA	21474-000	IDLER PULLEY/UHMW,3" DIA
1	1	EA	22034-002	REDUCER ASSY/TROLLEY DRIVE
4	1	EA	24275-000	BAR/PULLEY,TROLLEY
13	2	EA	24532-000	SHIM/GEARBOX,DRIVE,TROLLEY
12	1	EA	24608-003	TIMING BELT/TROLLEY,OHD,LIB

NOTES:

(F) (1) PLACE 1st TOOTH OF BELT (ITEM #12) END IN FIRST HOLE OF BELT CLAMP AND CLAMP BELT DOWN TO TROLLEY WELDMENT, AS SHOWN. IF SPACE ALLOWS, LET ONE TOOTH ON BELT HANG OUT OF CLAMP TO HELP WITH BELT TENSIONING. DO THE SAME TO OTHER SIDE AFTER LOOPING THE BELT AROUND THE IDLER PULLEY (ITEM #5) AND REDUCER PULLEY. IF THIS IS A NARROW OHD GANTRY, FOLD THIS END BACKWARDS ON ITSELF SO THE END OF THE BELT DOES NOT SAG DOWN TO TOUCH THE LOWER SECTION. PLACE WIRE TIE (ITEM #14) AROUND THE FOLDED END.

(2) ATTACH IDLER PULLEY ASSEMBLY TO STAINLESS STEEL MOUNT AS SHOWN SO THAT THERE IS APPROXIMATELY 2–1/8" BETWEEN THE INSIDE OF THE MOUNT AND IDLER PULLEY SHAFT. THIS IS THE POINT WHERE THE BELT TENSION WILL BE ADJUSTED. ADJUST THE NUTS AND JAM NUTS TO BE FINGER TIGHT. THE TIMING BELT (ITEM #12) SHOULD STRAIGHTEN OUT AS SHOWN IN THE FRONT VIEW.

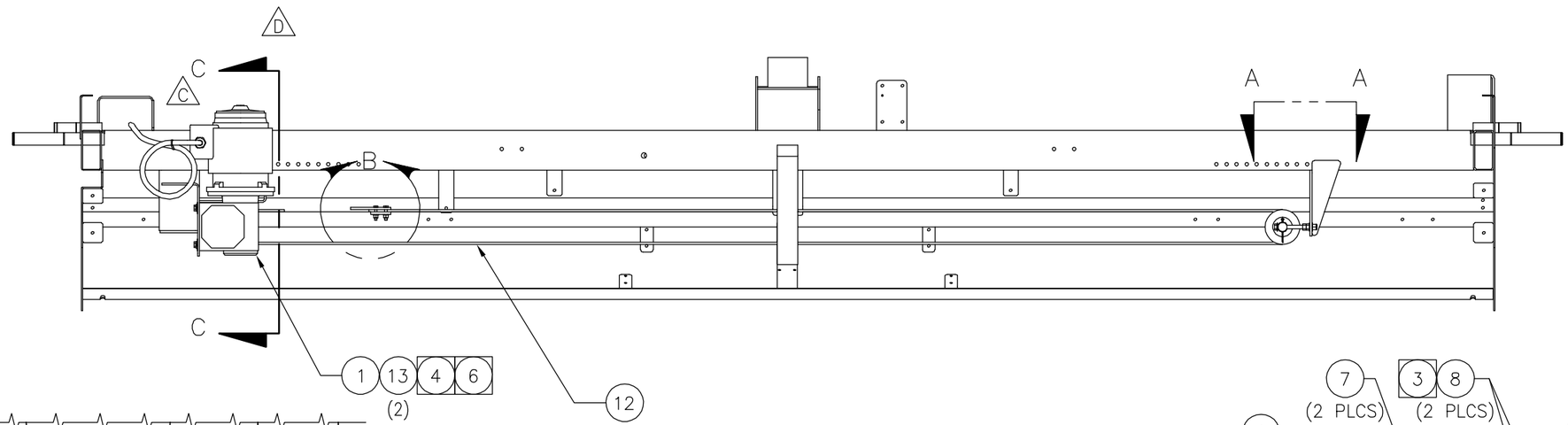
(3) LOOSEN THE JAM NUTS AND ADJUST NYLON LOCK NUTS (ITEM #9) ALTERNATELY AND EVENLY 1 1/2 TURNS. TIGHTEN THE JAM NUTS FINGER TIGHT. THERE SHOULD NOW BE APPROXIMATELY 2 1/32" BETWEEN THE MOUNT AND IDLER PULLEY SHAFT. TIGHTEN THE NYLON LOCK ADJUSTMENT NUTS UNTIL BOTH THE NYLON LOCK NUTS AND JAM NUTS ARE TIGHTENED SECURELY AGAINST THE STAINLESS STEEL MOUNT.

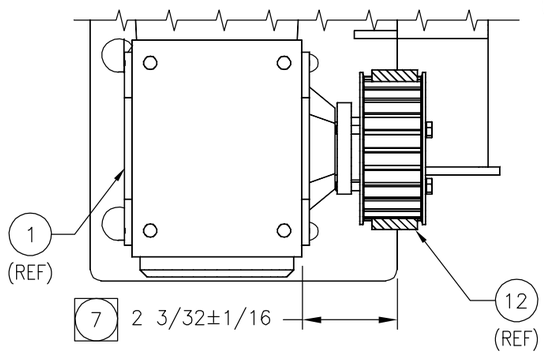
(C) (4) ROUTE MOTOR CABLE ALONG WITH OTHER CABLES. TERMINATE MOTOR CABLE IN GANTRY JUNCTION BOX ASSEMBLY. REFER TO GANTRY ASSEMBLY FOR WIRING.

(5) TROLLEY ASSEMBLY NOT SHOWN COMPLETELY FOR CLARITY.

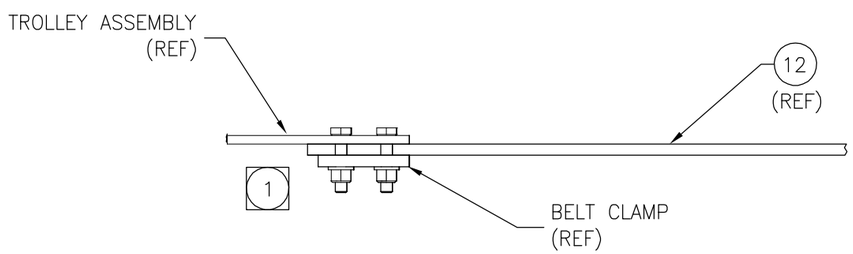
(6) MOVE THE TROLLEY BACK AND FORTH ON THE TRACKS TO DETERMINE WHETHER THE GEARBOX CENTERLINE NEEDS ADJUSTED. IF THE BELT STAYS ON ONE SIDE OF THE DRIVE PULLEY OR THE OTHER, INSERT ONE OR TWO SHIMS (ITEM #13) BETWEEN THE GEARBOX MOUNT BRACKET AND GEARBOX ON THE FRONT OR BACK SIDE OF GEARBOX, DEPENDING ON WHICH WAY THE CENTERLINE NEEDS ADJUSTED. IF THE BELT STAYS AGAINST THE FRONT GUIDE BAR, PUT SHIM(S) UNDER THE GEARBOX ON THE REAR SIDE, AND VICE VERSA. ATTACH UNUSED SHIM(S) ON THE BACKSIDE OF THE GEARBOX MOUNTING BRACKET UNDER THE GEARBOX MOUNTING SCREWS.

(D) (7) ALIGN THE PULLEY ON THE DRIVE REDUCER ASSEMBLY (ITEM #1) WITH THE TROLLEY DRIVE BELT. POSITION THE SIDE THE REDUCER FROM THE EDGE OF THE FRAME WELDMENT, AS SHOWN, TO ALIGN THE PULLEY AND BELT.

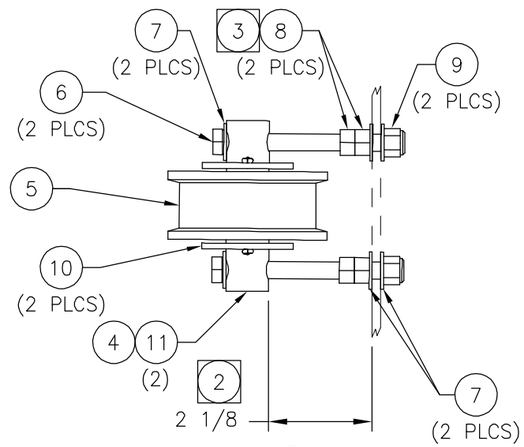




SECTION C–C
(D) (ENLARGED FOR CLARITY)



DETAIL B
(ENLARGED FOR CLARITY)
(TYPICAL–2 PLACES)



VIEW A–A
(ENLARGED FOR CLARITY)

-007 TROLLEY DRIVE ADDITION/460V
-003 TROLLEY DRIVE ADDITION

LTR	ECO	DESCRIPTION	DATE	APVD
F	1004–107	REV NOTE 1	3/9/05	GDL
E	0904–108	REV TO ADD –007 TO DRAWING	10/8/04	GDL
D	0404–016	ADD NOTE 7 & SECT C–C	4/13/04	GDL
C	0302–094	REVISED MOTOR CABLE ROUTING	4/26/02	GDL
B	1101–078	REP ITEM 12 WITH NEW BELT	11/19/01	GDL
A	0501–125	ADDED ITEM #13 AND NOTE #6	6/4/01	GDL
–	1200–068	RELEASING DRAWING	12/29/00	RS

PRODUCT
US2001–OHD

TOLERANCES UNLESS OTHERWISE SPECIFIED
LOCATIONS: ±1/8

1. ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.

MATERIAL SEE PRODUCT STRUCTURE
SCALE NONE
DRAWN KS
DATE 12/15/00
CHK'D LS/GA
APVD RS
DATE 12/29/00

RYKO® MFG. CO. U.S.A.
GRIMES,IOWA 50111

TROLLEY DRIVE ADDITION

REV. F
DWG. NO. 22040–003

FORM #19477–037 REV B 01/20/97

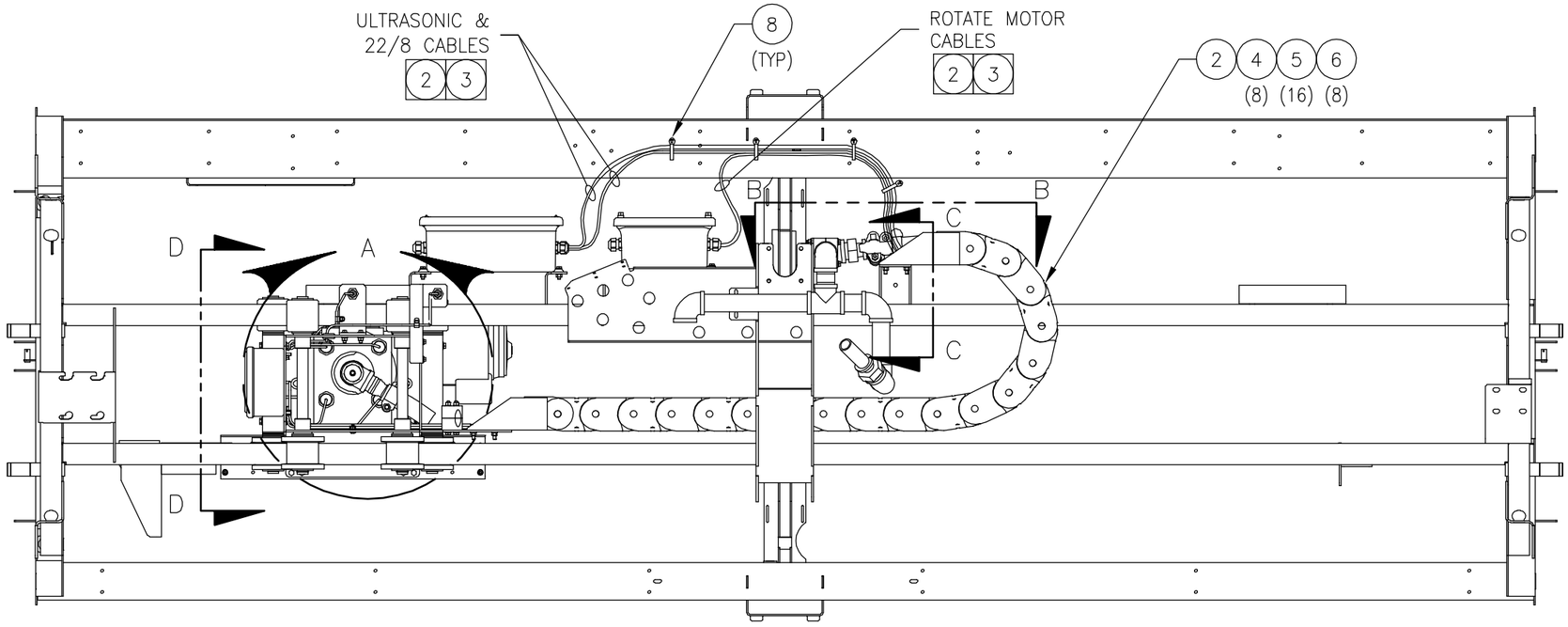
TROLLEY ADDITION/208-230V

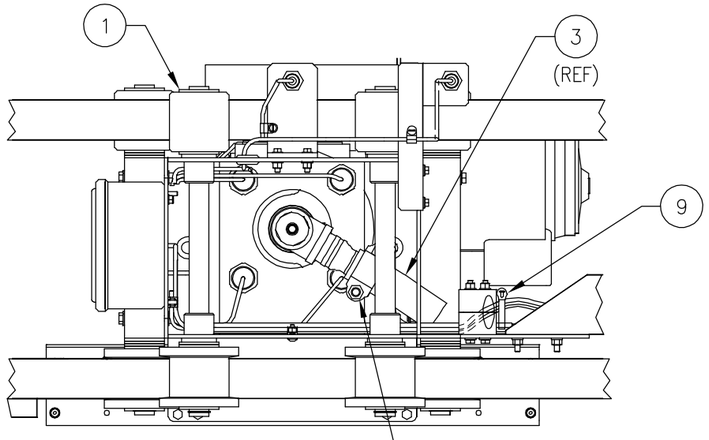
PART NO. 22110-019 REVISION C

ITEM	QTY.	UOM	PART NO.	DESCRIPTION
8	6	EA	10005-203	WIRE TIE/6",1-3/4"MAX DIA
9	1	EA	10005-205	WIRE TIE/12",3-1/2"MAX DIA
15	1	EA	10024-204	CLAMP/WORM GEAR,1-1/16" TO 2"
13	1	EA	10039-213	SCREW/MACH,#10-24x3/4,PH,CR,SS
17	5	EA	10428-204	WASHER/FLAT,1",SAE,SS
5	16	EA	10428-205	WASHER/FLAT,1/4"SAE,SS
14	2	EA	10428-211	WASHER/FLAT,#10 SAE,SS
16	1	EA	10592-001	CLAMP/HOSE,1"ID
7	1	EA	10592-004	CLAMP/HOSE,1.25,1.625TO1.812OD
4	8	EA	10877-240	SCREW/HHC,1/4-20x1-1/4,SS
12	1	EA	10878-204	NUT/ #10-24,NYL INS,ZN PL
6	8	EA	10878-205	NUT/ 1/4-20,NYL INS,ZN PL
11	1	EA	11488-205	CLAMP/CABLE,3/8"DIA,BLK NYLON
2	1	EA	15722-016	CABLE CARRIER/TROLLEY,US2-O
3	8	FT	17683-000	HOSE/WATER,1-1/4"ID,400PSI
1	1	EA	24202-017	TROLLEY ASSEMBLY/208-230V
10	4	EA	25770-000	WASHER/SUPPORT,RING,1",SS

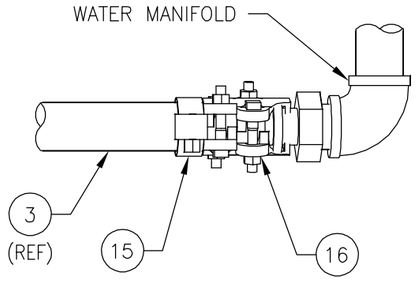
NOTES:

1. WATER HOSE IS TO SIT ON BOTTOM OF CABLE CHAIN (ITEM #2). MOTOR CABLE, SENSOR CABLES AND 22/8 CABLE ROUTE UNDER THE WATER HOSE TO ENTER THE CABLE CHAIN AND THEN THROUGH THE UPPER PORTION OF THE CABLE CHAIN. CLAMP THE MOTOR CABLE TO THE CABLE CARRIER MOUNT PLATE, USING THE CABLE CLAMP (ITEM #11). SEPARATE THE HOSE AND CABLES WITH THE DIVIDER CROSS BARS, LOCATED EVERY OTHER LINK IN CABLE CHAIN.
2. ROUTE ALONG WITH INCOMING CABLES AND HOSES FROM THE BOOM GOING TO GANTRY TERMINAL BOXES.
3. TERMINATE WIRES FROM TROLLEY CABLES IN GANTRY TERMINAL BOXES ACCORDING TO GANTRY ASSEMBLY INSTRUCTIONS.

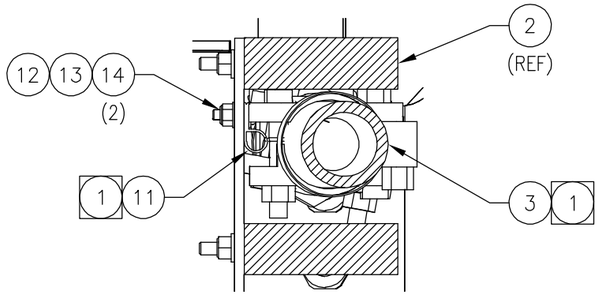




DETAIL A
(ENLARGED FOR CLARITY)



VIEW B–B
(ENLARGED FOR CLARITY)
(VIEW ROTATED 180°)



SECTION C–C
(ENLARGED FOR CLARITY)
(VIEW ROTATED 90° CW)

LTR	DESCRIPTION	BY	DATE	APVD
C	0807–020 ADD WASHER ITEM #17	GA	8/7/07	GDL
B	0207–016 REP ITEM 1	WD	2/15/07	GDL
A	0107–065 REV ITEM #10	KS	2/6/07	GDL
–	0806–099 RELEASING DRAWING	KS	9/8/06	GDL

PRODUCT RADIUS

TOLERANCES UNLESS OTHERWISE SPECIFIED

MATERIAL SEE PRODUCT STRUCTURE

SCALE NONE | DATE 8/29/06

DRAWN KS | CHK'D WD/GA

APVD GDL | DATE 9/8/06

1. ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.

SHEET 1 OF 2

RYKO® MFG. CO. U.S.A.
GRIMES,IOWA 50111

TROLLEY ADDITION/ 208–230V

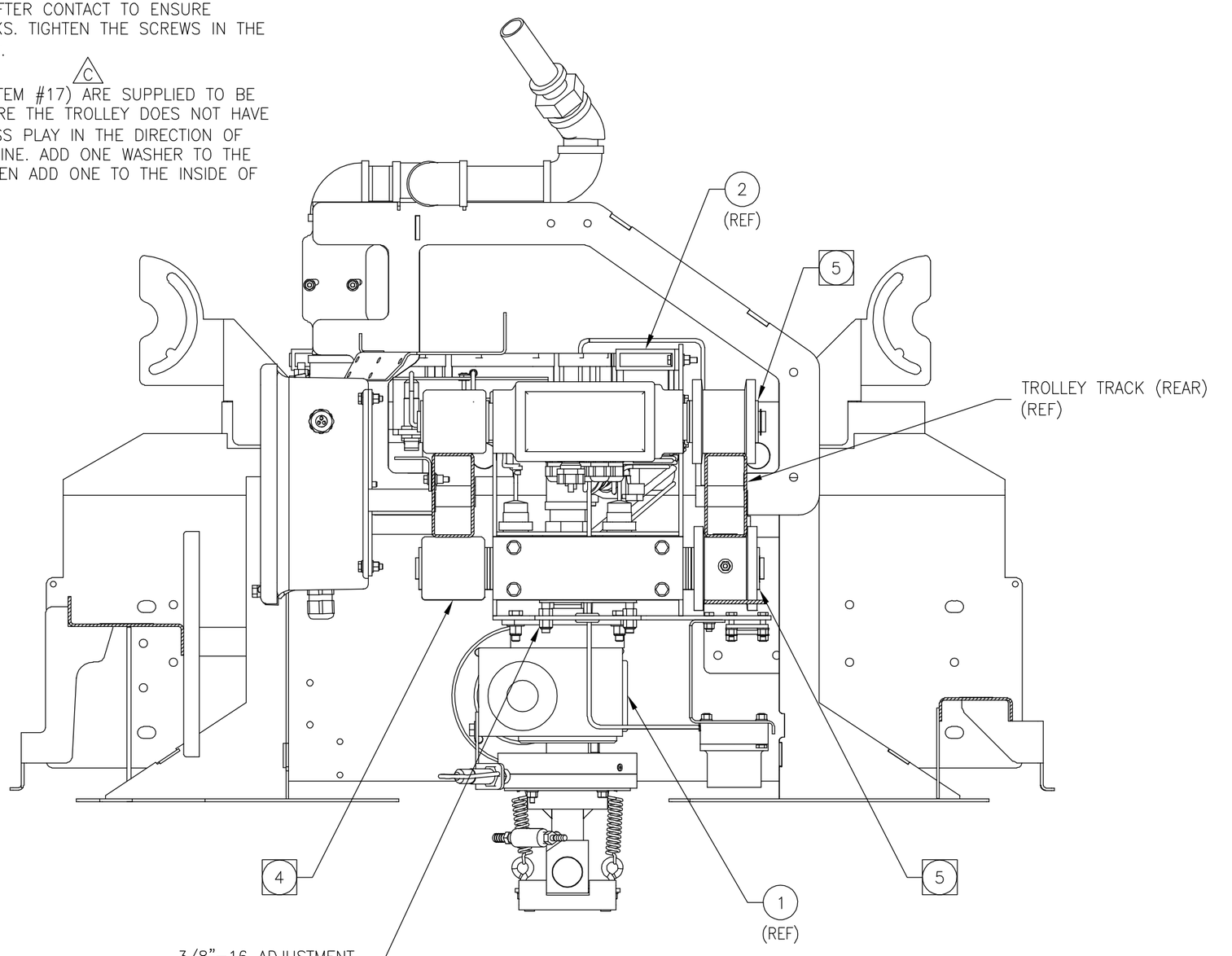
REV. C | DWG. NO. 22110–019

FORM #19477–037 REV B 01/20/97

NOTES:

4 THE LOWER SET OF UHMW WHEELS ARE TO BE ADJUSTED SO THAT THERE IS CONTACT WITH THE UNDERSIDE OF THE TROLLEY TRACKS. LOOSEN ALL THE SCREWS IN THE RECTANGULAR AXLE BEARINGS BEFORE ADJUSTMENT. RAISE UP THE WHEEL AND AXLE BY TURNING THE 3/8" NUTS ON THE TOP OF THE TROLLEY WELDMENT. TURN THESE NUTS COUNTER CLOCKWISE UNTIL THERE IS CONTACT WITH THE TRACK. GIVE THE NUTS 1/4 TURN AFTER CONTACT TO ENSURE PROPER TENSION AGAINST THE TRACKS. TIGHTEN THE SCREWS IN THE BEARINGS AND THE 3/8" LOCK NUTS.

5 ADDITIONAL WASHERS (ITEM #10 & ITEM #17) ARE SUPPLIED TO BE ADDED TO THE TROLLEY AXLE. ENSURE THE TROLLEY DOES NOT HAVE MORE THAN ONE WASHER'S THICKNESS PLAY IN THE DIRECTION OF THE FRONT AND BACK OF THE MACHINE. ADD ONE WASHER TO THE OUTSIDE OF REAR WHEELS FIRST, THEN ADD ONE TO THE INSIDE OF REAR WHEEL, IF NEEDED. △C



SECTION D–D
(ENLARGED FOR CLARITY)

SHEET 2 OF 2

LTR	DESCRIPTION	BY	DATE	APVD
C	0807–020 ADD WASHER ITEM #17 TO NOTE 5	GA	8/7/07	GDL
B	0207–016 REP ITEM 1	WD	2/15/07	GDL
A	0107–065 REV ITEM #10	KS	2/6/07	GDL
–	0806–099 RELEASING DRAWING	KS	9/8/06	GDL

PRODUCT
RADIUS

TOLERANCES
UNLESS OTHERWISE SPECIFIED

1: ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.

MATERIAL SEE PRODUCT STRUCTURE

SCALE NONE | DATE 8/29/06
DRAWN KS | CHK'D WD/GA
APVD | DATE 9/8/06
GDL

RYKO® MFG. CO. U.S.A.
GRIMES,IOWA 50111

TROLLEY ADDITION/
208–230V

REV. C | DWG. NO. 22110–019

FORM #19477–037 REV B 01/20/97

BOOM ADDITION/MACHINE

PART NO. 22409-013 REVISION E

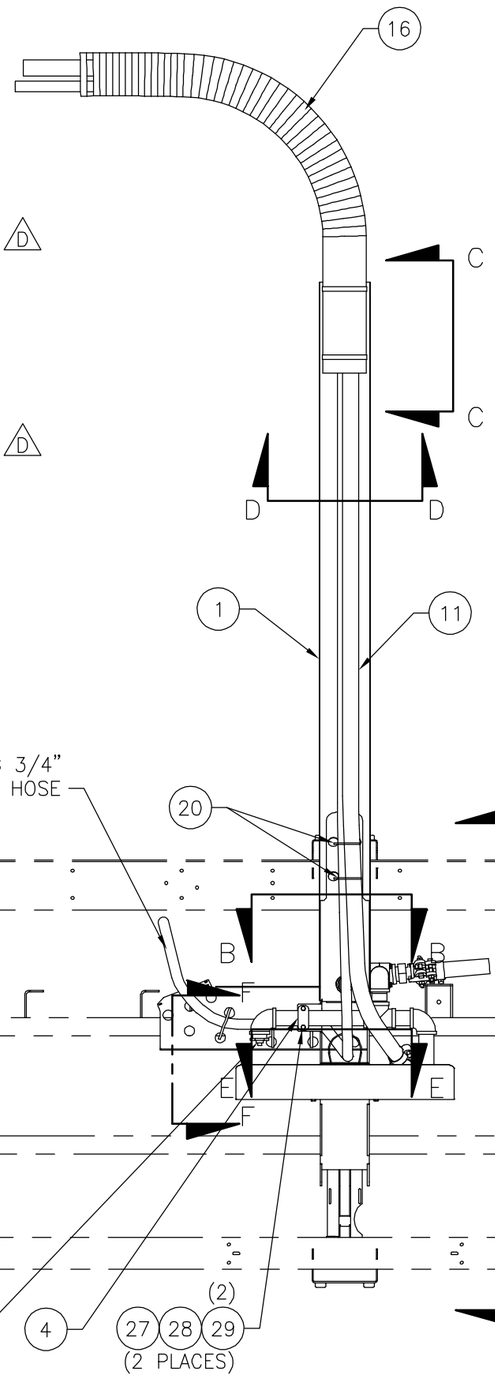
ITEM	QTY.	UOM	PART NO.	DESCRIPTION
20	26	EA	10005-205	WIRE TIE/12",3-1/2"MAX DIA
26	1	EA	10024-204	CLAMP/WORM GEAR,1-1/16" TO 2"
23	1	EA	10255-219	BUSHING/RDCR,HEX,GALV,1.25x1/2
14	8	EA	10428-202	WASHER/FLAT,3/8"SAE,SS
32	4	EA	10428-203	WASHER/FLAT,5/16"SAE,SS
29	8	EA	10428-205	WASHER/FLAT,1/4"SAE,SS
7	1	EA	10592-001	CLAMP/HOSE,1"ID
12	4	EA	10877-220	SCREW/HHC,1/4-20x3/4,SS
31	4	EA	10877-226	SCREW/HHC,5/16-18x3/4,SS
13	4	EA	10877-236	SCREW/HHC,3/8-16x2-1/2,SS
27	4	EA	10877-255	SCREW/HHC,1/4-20x3,SS
28	4	EA	10878-205	NUT/ 1/4-20,NYL INS,ZN PL
33	4	EA	10878-206	NUT/ 5/16-18,NYL INS,ZN PL
15	4	EA	10878-207	NUT/ 3/8-16,NYL INS,ZN PL
4	2	PR	11402-215	CLAMP BODY/SINGLE,1-1/4"PIPE
22	1	EA	11555-204	PLUG/PIPE,BRS,1/2MPT,SQ HD
25	1	EA	12164-006	LABEL/BOOM NOTICE,OPPOSITE
9	12	FT	12979-003	TRIM/PLASTIC EDGE,1/32",BLK
19	1	EA	13956-002	LUBRICANT/GREASE,6 LB CAN
21	2	FT	15041-000	TRIM/PLASTIC EDGING,5/16",BLK
24	2	FT	15041-001	TRIM/PLASTIC EDGING,1/8",BLK
34	4	EA	16679-008	NUT/RVT,AL,HEX,1/4-20,.16 GRIP
11	48	FT	17683-000	HOSE/WATER,1-1/4"ID,400PSI
2	2	EA	18373-018	BEARING/UHMW,1.92 BORE,2",2BLT
16	4	FT	20769-000	HOSE/SUCTION,4"ID
1	1	EA	27186-000	BOOM WLDT/MACHINE
3	1	EA	27190-000	MANIFOLD ASSY/WASH WATER
30	1	EA	27260-000	CABLE BRACKET/MACHINE BOOM
8	1	EA	27262-000	COVER/MANIFOLD

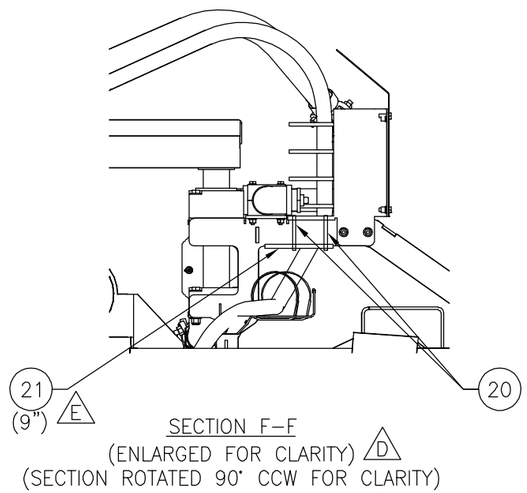
NOTES:

(1) ROUTE ALL HOSES, CABLES, & POLYTUBES, EXCEPT HOSE (ITEM #11), DOWN BOOM CHANNEL, AND ALONG SAME LOOP AS EXISTING RINSE ADDITION HOSE. REFER TO THE FOLLOWING TABLE FOR STANDARD AND OPTIONAL HOSE, CABLE, & POLYTUBE:

BOOM CABLES	BOOM HOSES	BOOM POLYTUBES
STANDARD: 18/4 9-Pair } From Gantry J-Box 16/10	STANDARD: 3/4" Black Rubber (Rinse Halo) 1 1/4" Hi-Pressure (Hi-impact line) (This hose (Item 11) does NOT route with bundle through hole in boom.)	STANDARD: (1) 1/2" Black Tape – Base Presoak (from cable carrier)
OPTIONAL: 14/3 (Backlight) 8 OR 10/4 (Presoak Heater) 18/8 (Presoak Heater) 18/2 (Trifoam Spotlight)		OPTIONAL: (1) 1/2" Green Tape– Acid Presoak (From cable carrier) (3) 1/2" Blue, Red, Yellow Tape – Trifoam (From tees on trough) (1) 1/4" Purple – Presoak Air (from cable carrier) (1) 1/4" Red – Trifoam Air from Splicer Tee (Red) (1) 1/4" Blue – Trifoam Air from Splicer Tee (Blue) (1) 1/4" Yellow – Trifoam Air from Splicer Tee (Yellow) (1) 1/4" Green – Rinse Halo Water Evac (From tee on trough)
4/4 18/4 } From Dryer Control Box 18/12	OPTIONAL: 1/2" Black Rubber (Surf Seal Prod)	

(E) (E) (D) (B) (D) (D)





SECTION F-F
(ENLARGED FOR CLARITY) (D)
(SECTION ROTATED 90° CCW FOR CLARITY)

LTR	DESCRIPTION	BY	DATE	APVD
E	REV EDGE TRIM & CABLE CALLOUT	GA	3/20/07	GDL
D	ADD VIEW F-F, REV WIRE CHART	KS	2/28/07	GDL
C	ADD COVER, REV TRIM LENGTH	CP	1/25/07	GDL
B	ADD CABLE BRKT,REV BOOM LOOP	GA	1/3/07	MAF
A	REV MNFLD CONNECTION,ADD DIM	CP	10/4/06	GDL
–	RELEASING DRAWING	CP	9/6/06	GDL
	ECO			

PRODUCT RADIUS

FORM #19477-037 REV B 01/20/97

TOLERANCES UNLESS OTHERWISE SPECIFIED

1. ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.

MATERIAL SEE PRODUCT STRUCTURE

SCALE NONE | DATE 9/5/06
DRAWN CP | CHK'D WA/CP
APVD | DATE
GDL | 9/6/06

SHEET 1 OF 2

RYKO® MFG. CO. U.S.A.
GRIMES,IOWA 50111

BOOM ADDITION/ MACHINE

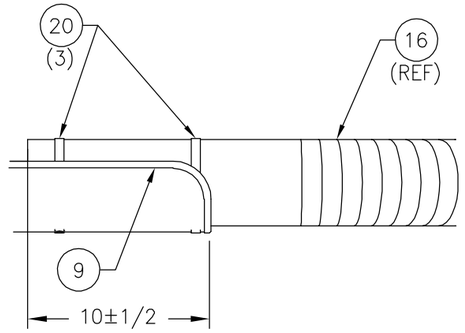
REV. E | DWG. NO. 22409-013

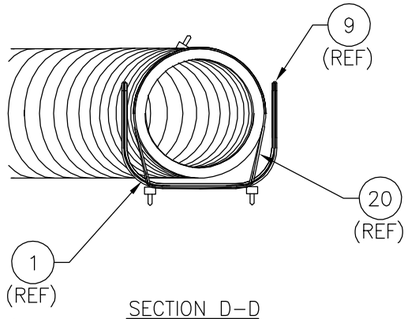
NOTES:

(3) (B) WRAP WIRE TIES (ITEM #20) AROUND THE BUNDLE OF BOOM HOSES, CABLES, AND POLYTUBING TO SECURE TO CABLE BRACKET (ITEM #30) AND THE GANTRY WELDMENT. ENSURE THE BOOM HOSES, ETC. LOOP APPROXIMATELY 6" ABOVE THE CABLE BRACKET (ITEM #30) BEFORE SECURING BUNDLE TO THE MACHINE BOOM (ITEM #1) WITH WIRE TIES (ITEM #20).

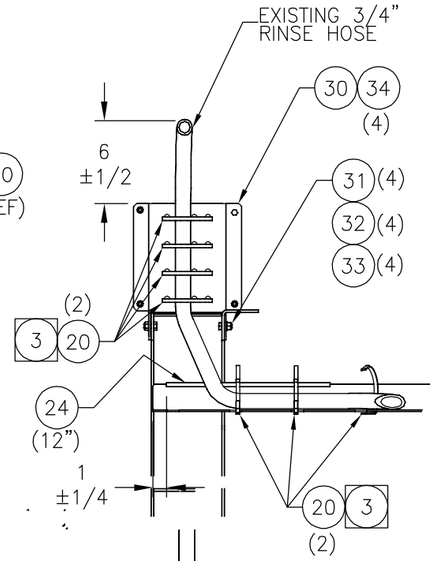
(4) DO NOT CONNECT 1-1/4" HOSE (ITEM #11) TO MANIFOLD (ITEM #3) UNTIL THE MACHINE IS AT THE TEST TRACK. SECURE CLAMPS (ITEMS #7 AND 26) TO HOSE BARB.

(5) ADD A THIN COATING OF LUBRICANT (ITEM #19) TO INSIDE OF BOOM BEARING (ITEM #2).

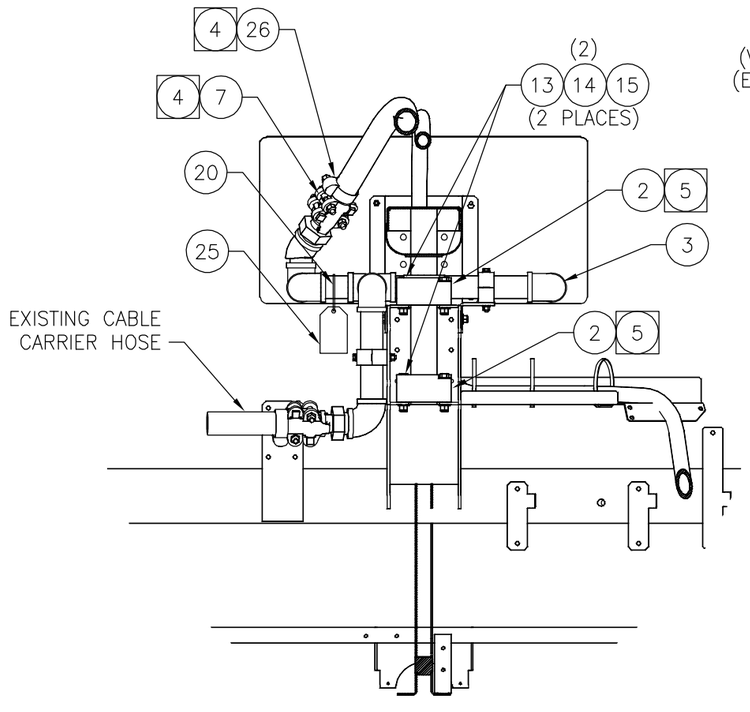




SECTION D-D
(SOME ITEMS REMOVED FOR CLARITY)
(ENLARGED FOR CLARITY)

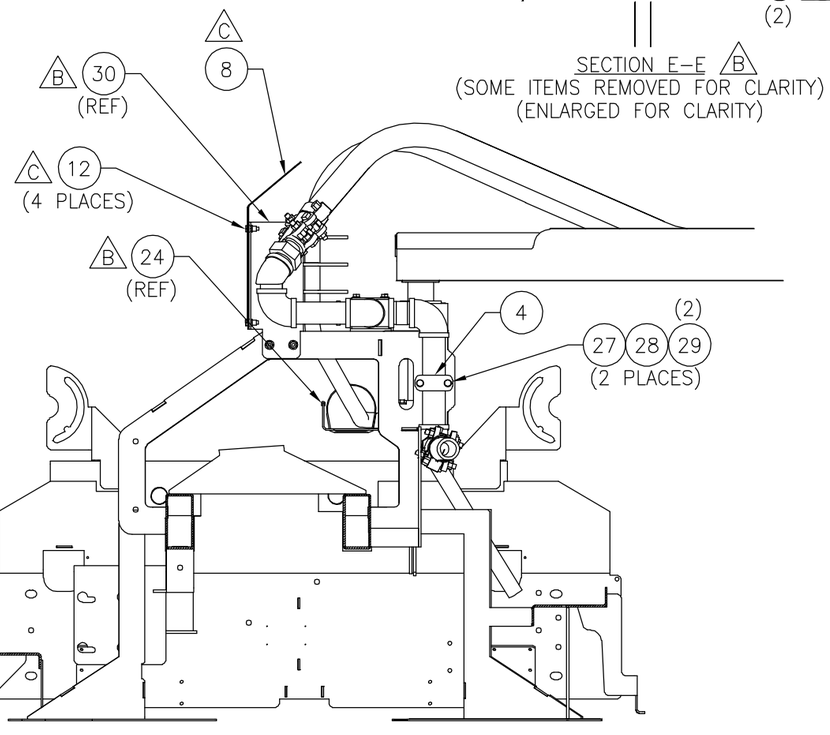


SECTION E-E (B)
(SOME ITEMS REMOVED FOR CLARITY)
(ENLARGED FOR CLARITY)



SECTION B-B
(SECTION ROTATED 180°)
(ENLARGED FOR CLARITY)

VIEW C-C
(VIEW ROTATED 90° CW)
(ENLARGED FOR CLARITY)



SECTION A-A
(SECTION ROTATED 90° CW)
(ENLARGED FOR CLARITY)

LTR	ECO	DESCRIPTION	BY	DATE	APVD
E	0307-017	REFER TO SHEET 1	GA	3/20/07	GDL
D	0207-084	SEE OTHER SHEETS	KS	2/28/07	GDL
C	0107-012	ADD COVER, REV TRIM LENGTH	CP	1/25/07	GDL
B	0107-002	ADD CABLE BRKT,REV BOOM LOOP	GA	1/3/07	MAF
A	0906-065	REV MNFLD CONNECTION,ADD DIM	CP	10/4/06	GDL
-	0806-108	RELEASING DRAWING	CP	9/6/06	GDL

PRODUCT
RADIUS

TOLERANCES
UNLESS OTHERWISE SPECIFIED

1: ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE UNLESS OTHERWISE SPECIFIED.
ALL DIMENSIONS ARE IN INCHES.

MATERIAL
SEE PRODUCT STRUCTURE

SCALE NONE | DATE 9/5/06
DRAWN CP | CHK'D WA/CP
APVD | DATE
GDL | 9/6/06

RYKO® MFG. CO. U.S.A.
GRIMES,IOWA 50111

BOOM ADDITION/ MACHINE

REV. E | DWG. NO. 22409-013

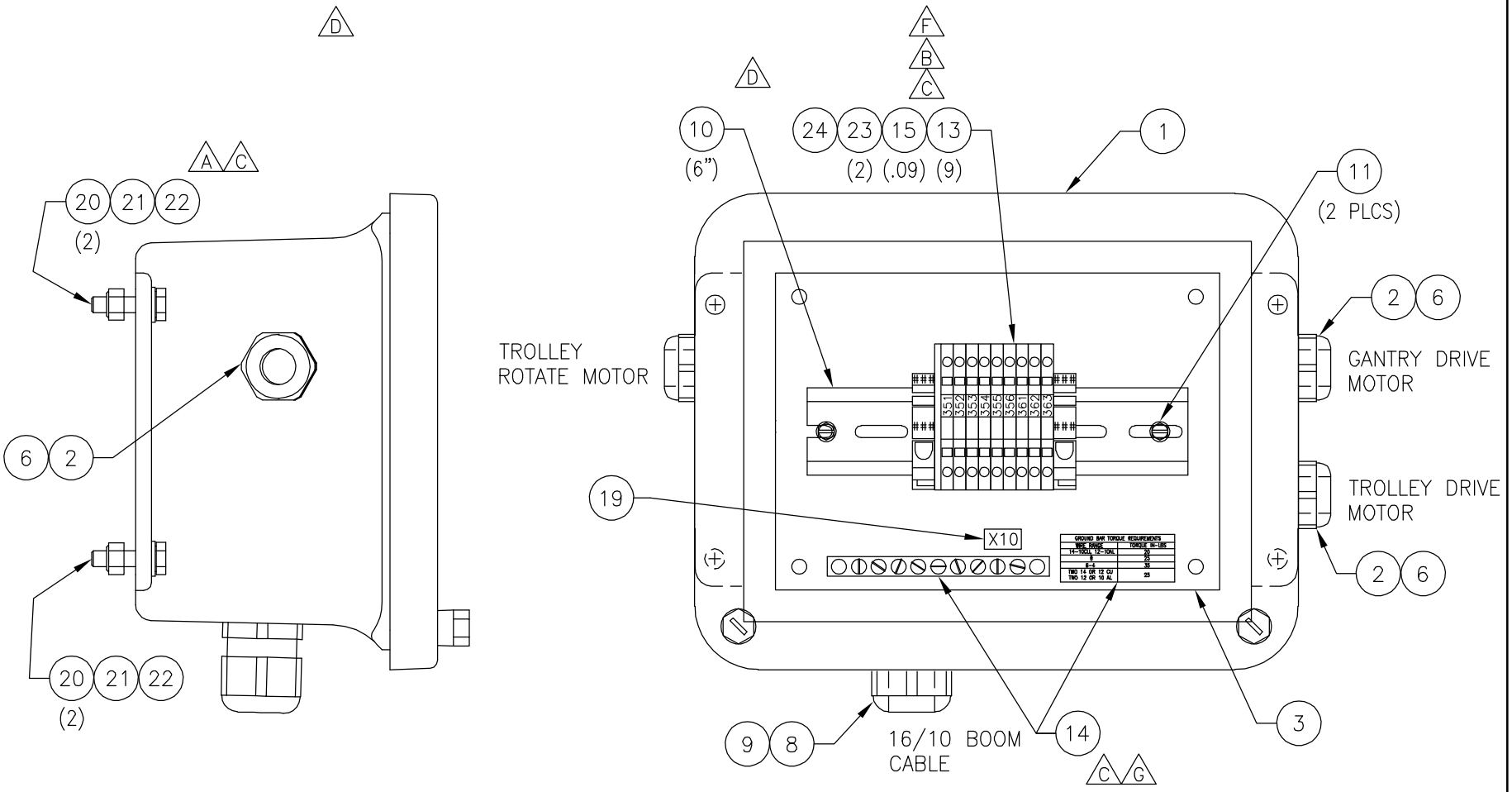
SHEET 2 OF 2

TERMINAL BOX ASSY/GANTRY,HV

PART NO. 23790-009 REVISION G

ITEM	QTY.	UOM	PART NO.	DESCRIPTION
15	0	EA	10145-262	TERMINAL MARKER/100 BLANK
23	2	EA	10145-280	TERMINAL BLOCK END CLAMP
13	9	EA	10145-301	TERMINAL BLOCK/SPRING,1P,12AWG
24	1	EA	10145-302	TERMINAL BLOCK END PLATE/2COND
11	2	EA	10192-222	SCREW/TPG,#6x1/2,SLHWH,SS
6	3	EA	10362-240	CONN/STR RLF,PLS,1/2,.276-.472
8	1	EA	10362-244	CONN/STR RLF,PLS,3/4,.545-.708
9	1	EA	10363-208	CONDUIT LOCKNUT/SEAL,3/4",STL
2	3	EA	10363-209	CONDUIT LOCKNUT/SEAL,1/2",STL
20	8	EA	10428-205	WASHER/FLAT,1/4"SAE,SS
21	4	EA	10877-201	SCREW/HHC,1/4-20x1",SS
22	4	EA	10878-205	NUT/ 1/4-20,NYL INS,ZN PL
1	1	EA	10919-431	ENCL/T-BOX,8X6X4,MOD
14	1	EA	12494-001	GROUNDING BAR/w/SCREWS & DECAL
10	0	EA	12995-000	TRACK/RELAY MOUNTING
19	1	EA	20092-001	LABEL/"X" TERM BLK ID,X1-X10
3	1	EA	24011-000	PANEL/CONTROL BOX,RMIII

DWG. NO. 23790–009



						PRODUCT	TOLERANCES UNLESS OTHERWISE SPECIFIED	MATERIAL SEE PRODUCT STRUCTURE	RYKO® MFG. CO. GRIMES,IOWA 50111 U.S.A.
						US2001–OHD			
						LIBERTY		SCALE NONE / DATE 6/3/04	TERMINAL BOX ASSY/ GANTRY,HV
								DRAWN AMULLEN / CHK'D KC/KB	
G	0606–060	ADD GROUND BAR LABEL (ITEM 14)	WA	6/19/06	GDL		1. ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE. 2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.	APVD GDL / DATE 7/6/04	DWG. NO. 23790–009 / REV. G
LTR	ECO	DESCRIPTION	BY	DATE	APVD				

FORM #19477–036 REV A 01/18/96

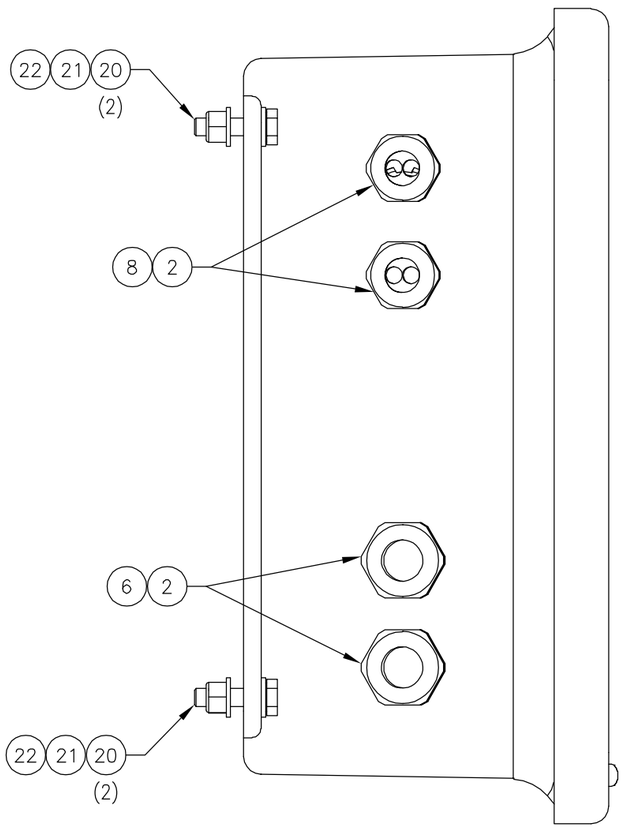
TERMINAL BOX ASSY/GANTRY,LV

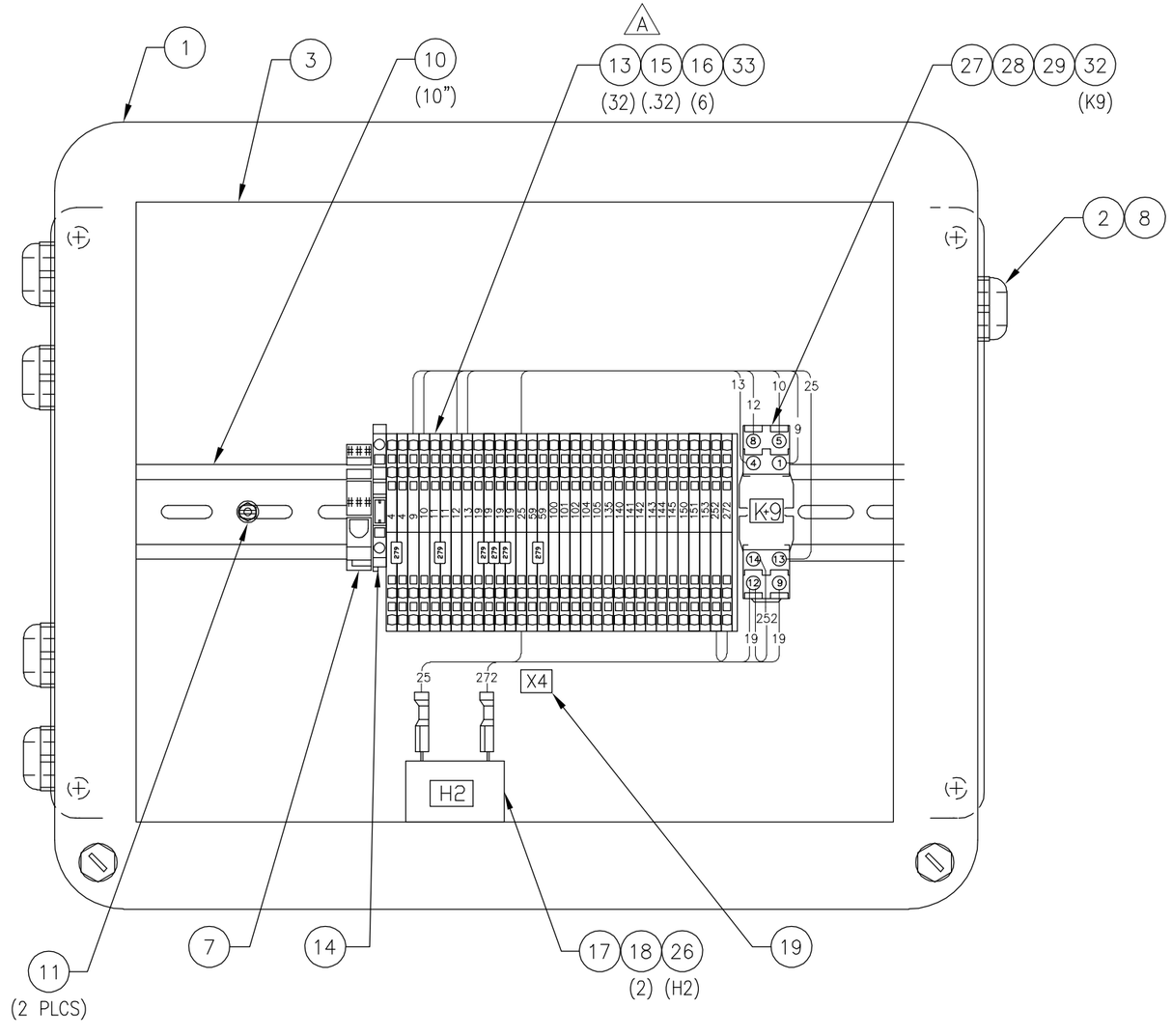
PART NO. 23790-011 REVISION A

ITEM	QTY.	UOM	PART NO.	DESCRIPTION
14	1	EA	10145-261	TERMINAL BLOCK/SPRING,2CND,GND
16	6	EA	10145-266	TERMINAL BLOCK JUMPER BAR
15	0	EA	10145-267	TERMINAL MARKER/100 BLANK
7	1	EA	10145-280	TERMINAL BLOCK END CLAMP
13	32	EA	10145-295	TERMINAL BLOCK/SPRING,4 COND
33	1	EA	10145-296	TERMINAL BLOCK END PLATE/4COND
11	2	EA	10192-217	SCREW/TPG,#6x3/8,PAN HD,SS
30	1	FT	10279-272	WIRE/STRANDED,20GA,RED
31	3	FT	10279-276	WIRE/STRANDED,20GA,BLUE
6	2	EA	10362-240	CONN/STR RLF,PLS,1/2,.276-.472
8	3	EA	10362-252	CONN/STR RLF,PLS,1/2,3X6MM
2	5	EA	10363-209	CONDUIT LOCKNUT/SEAL,1/2",STL
20	8	EA	10428-205	WASHER/FLAT,1/4"SAE,SS
18	2	EA	10495-201	TERMINAL/RCPT,SLIP,22-18G,RED
21	4	EA	10877-201	SCREW/HHC,1/4-20x1",SS
22	4	EA	10878-205	NUT/ 1/4-20,NYL INS,ZN PL
1	1	EA	10919-430	ENCL/T-BOX,12X10X6,MOD
27	1	EA	12959-001	RELAY/MINI,DPDT,3A CONT,24VAC
28	1	EA	12960-001	RELAY BASE/2P,BLADE,DIN MT,7A
29	1	EA	12970-001	SPRING/RELAY HOLD DOWN,DPDT
10	0	EA	12995-000	TRACK/RELAY MOUNTING
32	1	EA	14344-001	LABEL/"K" RELAY ID,K1-K10
17	1	EA	16797-001	ALARM/PIEZO,15-32VAC/DC
19	1	EA	20092-001	LABEL/"X" TERM BLK ID,X1-X10
3	1	EA	24239-001	PANEL/T-BOX,12X10X6
26	1	EA	25869-000	LABEL/"H" TERM BLK ID,H1-H10

ITEM #30 RED WIRE	
WIRE #	ROUTING
25	K9–14, X4, H2
252	K9–13, X4
272	X4, H2

ITEM #31 BLUE WIRE	
WIRE #	ROUTING
19	K9–12, K9–9, X4
9	K9–1, X4
10	K9–5, X4
12	K9–8, X4
13	K9–4, X4





(COVER REMOVED FOR CLARITY)

LTR	DESCRIPTION	BY	DATE	APVD
A	0306–046 ADD QTY 1 OF ITEM #13 & 15	KS	3/15/07	GDL
–	0306–018 RELEASED DRAWING	GA	5/3/06	GDL
LTR	ECO	BY	DATE	APVD

FORM #19477–037 REV B 01/20/97

PRODUCT
US2001–OHD
LIBERTY

TOLERANCES
UNLESS OTHERWISE SPECIFIED

1. ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.

MATERIAL
SEE PRODUCT STRUCTURE

SCALE NONE | DATE 4/26/06
DRAWN SMOTHERS | CHK'D GA/WD
APVD | DATE 5/3/06
GDL

RYKO® MFG. CO. U.S.A.
GRIMES,IOWA 50111

TERMINAL BOX ASSY/ GANTRY,LV

REV. A
DWG. NO. 23790–011

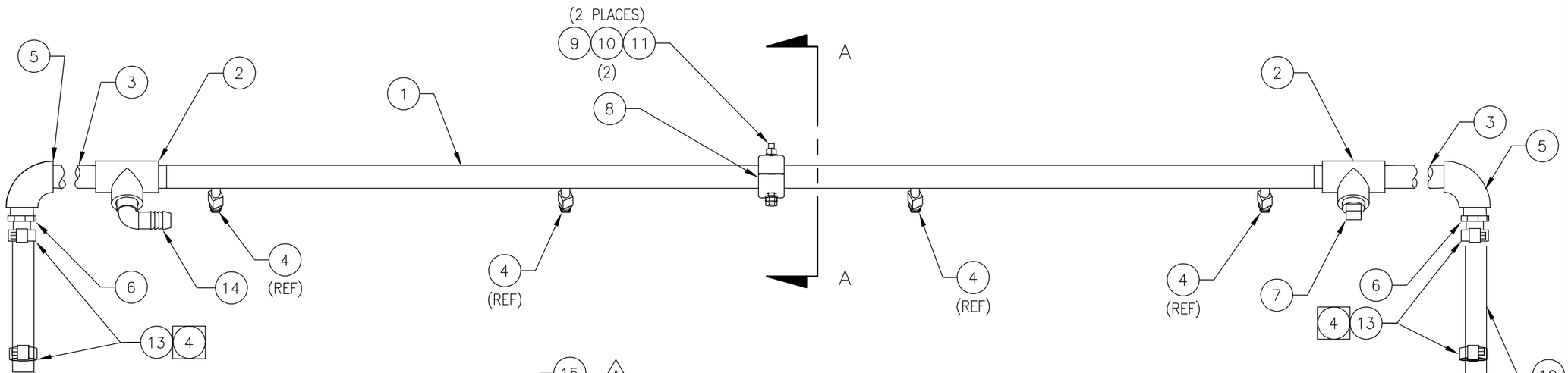
MANFOLD ASSY/GANTRY,FRONT

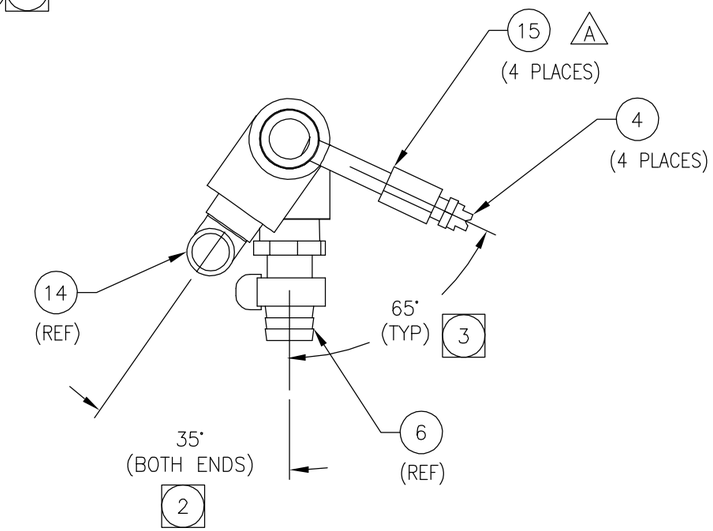
PART NO. 24244-009 REVISION A

ITEM	QTY.	UOM	PART NO.	DESCRIPTION
13	4	EA	10024-207	CLAMP/WORM GEAR,11/16 TO 1-1/4
5	2	EA	10101-205	ELBOW/PVC 80,3/4"THDxTHD
2	2	EA	10102-208	TEE/PVC 80,3/4"FPT THD
4	4	EA	10226-232	NOZZLE/ 1/8MPTx65DEGx2GPM,BRS
10	4	EA	10428-205	WASHER/FLAT,1/4"SAE,SS
14	1	EA	10766-213	ELBOW/PVC,3/4HOSEx3/4MPT
6	2	EA	10767-204	HOSE BARB/PVC,3/4HOSEx3/4MPT
9	2	EA	10877-285	SCREW/HHC,1/4-20X2-1/2,SS
11	2	EA	10878-205	NUT/ 1/4-20,NYL INS,ZN PL
12	1	FT	11065-000	HOSE/WATER,3/4ID,150PSI,BLACK
8	1	PR	11402-209	CLAMP/SUPPORT,SINGLE,3/4"PIPE
7	1	EA	11903-203	PLUG/PIPE,PLS,3/4"MPT,SQ HEAD
15	4	EA	19802-080	ADAPTER/BRS,1/8"MPTXFPTX2-1/2"
1	1	EA	24246-007	MANIFOLD/FRONT,MIDDLE
3	2	EA	24246-008	MANIFOLD/FRONT,ENDS

NOTES:

1. PLACES THE CLAMP (ITEM #8) ON MANIFOLD (ITEM #1), FINGER TIGHTEN SCREWS, WASHERS AND NUTS (ITEMS #9, #10 AND #11) ON THE CLAMP FOR USE IN FUTURE ASSEMBLIES.
2. ELBOWS (ITEM #5) ARE CONSIDERED TO BE VERTICAL. ANGLE TEES (ITEM #2) 35° UP FROM VERTICAL.
3. ANGLE MANIFOLD (ITEMS #1) SO THAT NOZZLE HOLES ARE 65° UP FROM VERTICAL.
4. TIGHTEN WORM GEAR CLAMP (ITEM #13) ONTO END OF HOSE (ITEM #12 FOR FUTURE ASSY.)





SECTION A–A
(ENLARGED FOR CLARITY)
(HOSE REMOVED FOR CLARITY)
(TYP)

LTR	DESCRIPTION	BY	DATE	APVD
A	0207–076 ADD ADAPTER #15	GA	2/27/07	GDL
–	1206–069 RELEASING DRAWING	GA	12/28/06	MAF
	ECO			

FORM #19477–037 REV B 01/20/97

PRODUCT RADIUS

TOLERANCES
UNLESS OTHERWISE SPECIFIED
LOCATIONS: ±1/16
ANGULAR: ±2°

1. ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.

MATERIAL SEE PRODUCT STRUCTURE
SCALE NONE
DRAWN GA
DATE 12/22/06
CHK'D GA/WD
APVD
DATE
MAF 12/28/06

RYKO® MFG. CO. U.S.A.
GRIMES,IOWA 50111

MANIFOLD ASSY/
GANTRY,FRONT

REV. A
DWG. NO. 24244–009

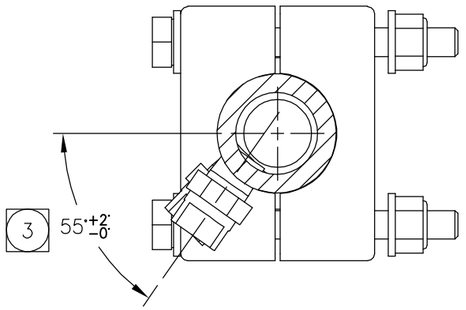
MANIFOLD ASSY/GANTRY,END

PART NO. 24244-011 REVISION A

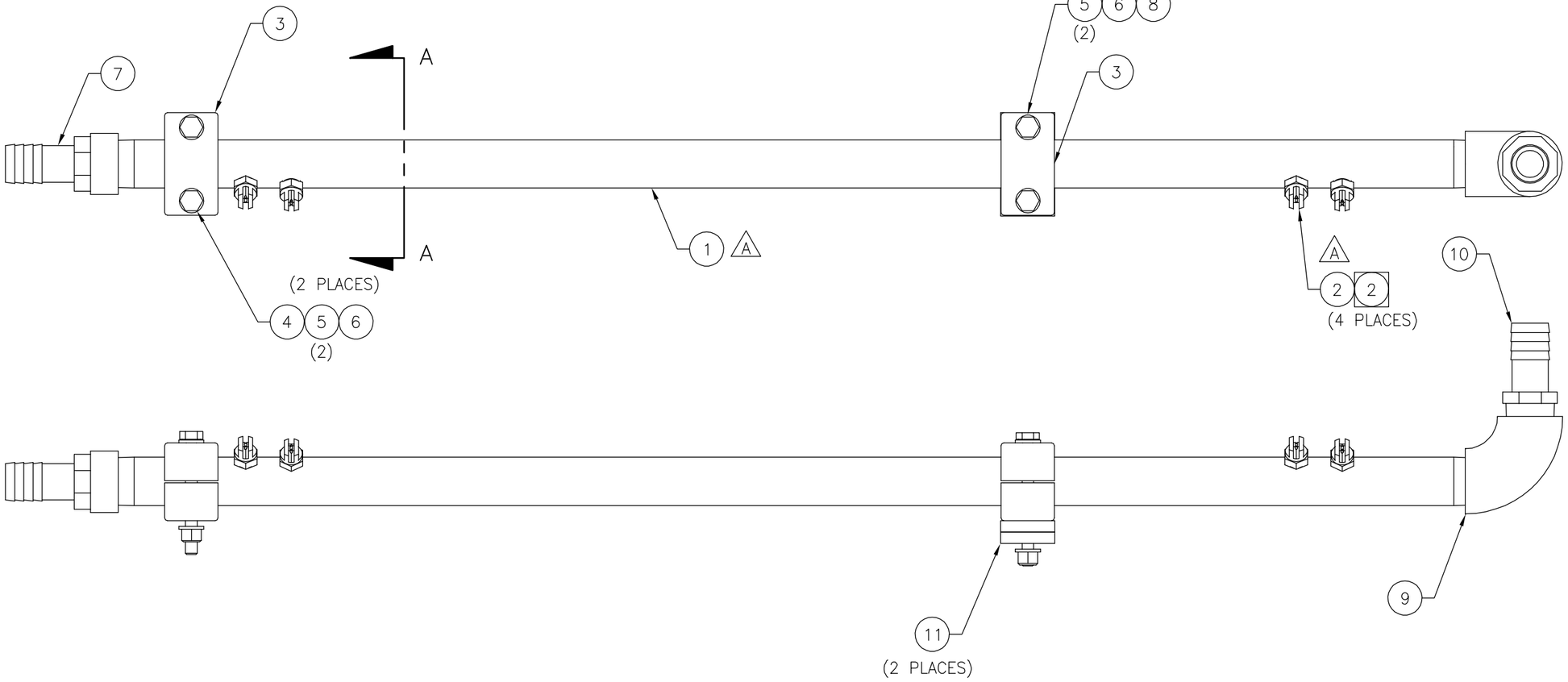
ITEM	QTY.	UOM	PART NO.	DESCRIPTION
9	1	EA	10101-205	ELBOW/PVC 80,3/4"THDxTHD
2	4	EA	10226-232	NOZZLE/ 1/8MPTx65DEGx2GPM,BRS
5	8	EA	10428-205	WASHER/FLAT,1/4"SAE,SS
10	1	EA	10767-204	HOSE BARB/PVC,3/4HOSEx3/4MPT
8	2	EA	10877-283	SCREW/HHC,1/4-20X2-3/4,SS
4	2	EA	10877-285	SCREW/HHC,1/4-20X2-1/2,SS
6	4	EA	10878-205	NUT/ 1/4-20,NYL INS,ZN PL
3	2	PR	11402-209	CLAMP/SUPPORT,SINGLE,3/4"PIPE
7	1	EA	11902-201	HOSE BARB/PLS,3/4HOSEx3/4FPT
11	2	EA	17452-022	PLATE/FAB,AL,.25X1-3/16X2-1/4
1	1	EA	24246-010	MANIFOLD/RINSE

NOTES:

1. PLACE BOTH CLAMPS (ITEM #3) ON MANIFOLD (ITEM #1), FINGER TIGHTEN SCREWS, WASHERS AND NUTS (ITEMS #4, #5, #6, AND #8) ON CLAMPS FOR USE IN FUTURE ASSEMBLIES.
2. ROTATE NOZZLES (ITEM #2) SO THEY WILL SPRAY PERPENDICULAR WITH MANIFOLD (ITEM #1).
3. ANGLE MEASUREMENT IS FROM HORIZONTAL TO TILTED NOZZLE.



SECTION A–A



LTR	DESCRIPTION	BY	DATE	APVD
A	0807–069 CORRECT ITEM #1 & #2 CALLOUTS	GA	8/15/07	GDL
–	0507–090 RELEASING DRAWING	GA	5/31/07	GDL

PRODUCT: RADIUS

TOLERANCES UNLESS OTHERWISE SPECIFIED
LOCATIONS: ±1/16
ANGULAR: ±2°

1. ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.

MATERIAL: SEE PRODUCT STRUCTURE
SCALE: NONE
DRAWN: GA DATE 5/30/07
CHK'D: GA
APVD DATE
GDL 5/31/07

RYKO® MFG. CO. U.S.A.
GRIMES,IOWA 50111

MANIFOLD ASSY/ GANTRY,END

REV. A
DWG. NO. 24244–011

FORM #19477–037 REV B 01/20/97

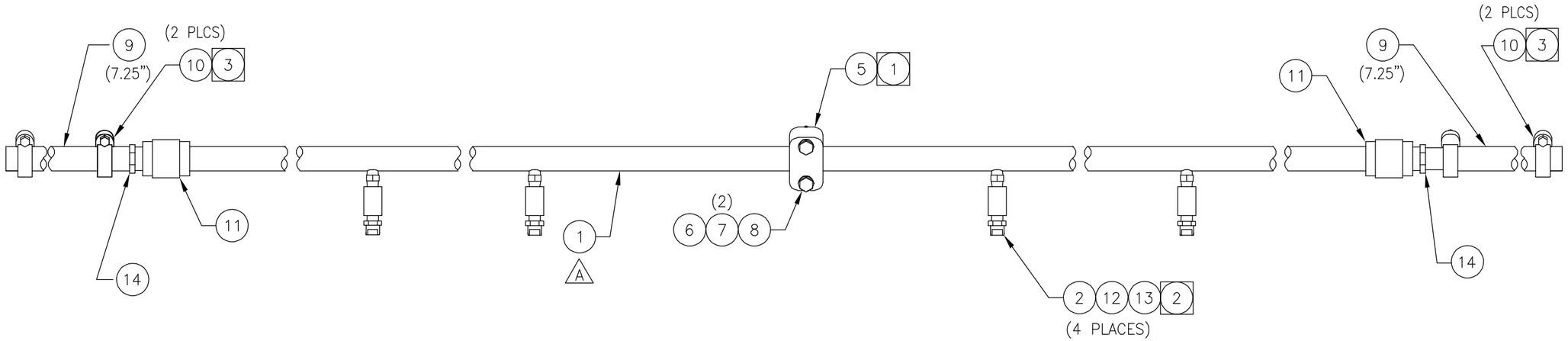
MANFOLD ASSY/GANTRY,REAR

PART NO. 24244-012 REVISION A

ITEM	QTY.	UOM	PART NO.	DESCRIPTION
10	4	EA	10024-207	CLAMP/WORM GEAR,11/16 TO 1-1/4
11	2	EA	10106-201	COUPLING/ADP,PVC,1/2SKTx1/2FPT
2	4	EA	10226-232	NOZZLE/ 1/8MPTx65DEGx2GPM,BRS
13	4	EA	10257-210	COUPLING/PIPE,SS,1/8"
7	4	EA	10428-205	WASHER/FLAT,1/4"SAE,SS
14	2	EA	10767-215	HOSE BARB/PVC,3/4HOSEx1/2MPT
6	2	EA	10877-263	SCREW/HHC,1/4-20x2,SS
8	2	EA	10878-205	NUT/ 1/4-20,NYL INS,ZN PL
9	1	FT	11065-000	HOSE/WATER,3/4ID,150PSI,BLACK
12	4	EA	11263-218	NIPPLE/BRS,1/8xCLOSE,HEX
5	1	PR	11402-204	CLAMP/SUPPORT,SINGLE,1/2"PIPE
1	1	EA	24246-009	MANIFOLD/REAR,LONG,1/2"

NOTES:

1. PLACE THE CLAMP (ITEM #5) ON MANIFOLD (ITEM #1), FINGER TIGHTEN SCREWS, WASHERS AND NUTS (ITEMS #6, #7 AND #8) ON THE CLAMP FOR USE IN FUTURE ASSEMBLIES.
2. ROTATE NOZZLES (ITEM #2) SO THEY WILL SPRAY PARALLEL WITH MANIFOLD (ITEM #1).
3. TIGHTEN WORM GEAR CLAMPS (ITEM #10) ONTO END OF HOSE FOR FUTURE ASSEMBLY.



LTR	DESCRIPTION	BY	DATE	APVD
A	0807-069 ADD ITEM #1 CALLOUT	GA	8/15/07	GDL
–	0507-090 RELEASING DRAWING	GA	5/31/07	GDL
	ECO	BY	DATE	APVD

PRODUCT RADIUS

TOLERANCES UNLESS OTHERWISE SPECIFIED LOCATIONS: ±1/16

1. ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.

MATERIAL SEE PRODUCT STRUCTURE

SCALE NONE | DATE 5/25/07
DRAWN GA | CHK'D GA
APVD | DATE 5/31/07
GDL | 5/31/07

RYKO® MFG. CO. U.S.A.
GRIMES,IOWA 50111

MANIFOLD ASSY/ GANTRY,REAR

REV. A | DWG. NO. 24244-012

FORM #19477-037 REV B 01/20/97

GANTRY ASSY/RADIUS

PART NO. 24250-016 REVISION A

ITEM	QTY.	UOM	PART NO.	DESCRIPTION
37	2	EA	10005-203	WIRE TIE/6",1-3/4"MAX DIA
23	12	EA	10005-205	WIRE TIE/12",3-1/2"MAX DIA
5	4	EA	10034-247	SCREW/MACH,1/4-20x1,HWH,SS
39	2	EA	10039-213	SCREW/MACH,#10-24x3/4,PH,CR,SS
8	2	EA	10196-000	BUMPER/RUBBER STOP
33	2	EA	10362-240	CONN/STR RLF,PLS,1/2,.276-.472
32	1	EA	10362-244	CONN/STR RLF,PLS,3/4,.545-.708
36	1	EA	10363-208	CONDUIT LOCKNUT/SEAL,3/4",STL
35	2	EA	10363-209	CONDUIT LOCKNUT/SEAL,1/2",STL
29	8	EA	10428-202	WASHER/FLAT,3/8"SAE,SS
10	4	EA	10428-203	WASHER/FLAT,5/16"SAE,SS
20	8	EA	10428-205	WASHER/FLAT,1/4"SAE,SS
40	4	EA	10428-211	WASHER/FLAT,#10 SAE,SS
22	4	EA	10604-220	RIVET/SS,.125,.126-.187,BLIND
31	8	EA	10877-202	SCREW/HHC,3/8-16x1-1/4,SS
19	4	EA	10877-220	SCREW/HHC,1/4-20x3/4,SS
16	4	EA	10877-230	SCREW/HHC,1/4-20x1-1/2,SS
9	2	EA	10877-244	SCREW/HHC,1/4-20x1-3/4,SS
41	2	EA	10878-204	NUT/ #10-24,NYL INS,ZN PL
11	10	EA	10878-205	NUT/ 1/4-20,NYL INS,ZN PL
38	2	EA	11488-203	CLAMP/CABLE,1/4"DIA,BLK NYLON
34	1	EA	11695-200	THREADLOCK COMPOUND
27	50	FT	13684-000	CABLE/ 16/10,SO,6OOV
12	2	EA	14526-026	SWITCH/PROX,M30 SHORT,DC,NO,7M
26	50	FT	14685-000	CABLE/9 PR,24GA STRD,SHIELDED
30	8	EA	14829-002	NUT/LOCK,THIN,3/8-16NC,NYL INS
24	2	EA	14969-000	LABEL/CAUTION MOVING EQUIPMENT
6	4	EA	16679-006	NUT/RIVET,AL,1/4-20,.165 GRIP
25	50	FT	18432-000	CABLE/ 18/4,SEOW,600V
15	1	EA	19675-007	MOUNT BRACKET/ULTRASONIC,FRONT
14	1	EA	19675-009	MOUNT BRACKET/ULTRASONIC,REAR
13	2	EA	19850-027	SENSOR/ULTRA-S,0-1.2KHZ,DUAL
3	2	EA	21792-002	TARGET/SS,TROLLEY
21	1	EA	22027-008	SERIAL PLATE/RADIUS,208/230V
7	1	EA	23790-009	TERMINAL BOX ASSY/GANTRY,HV

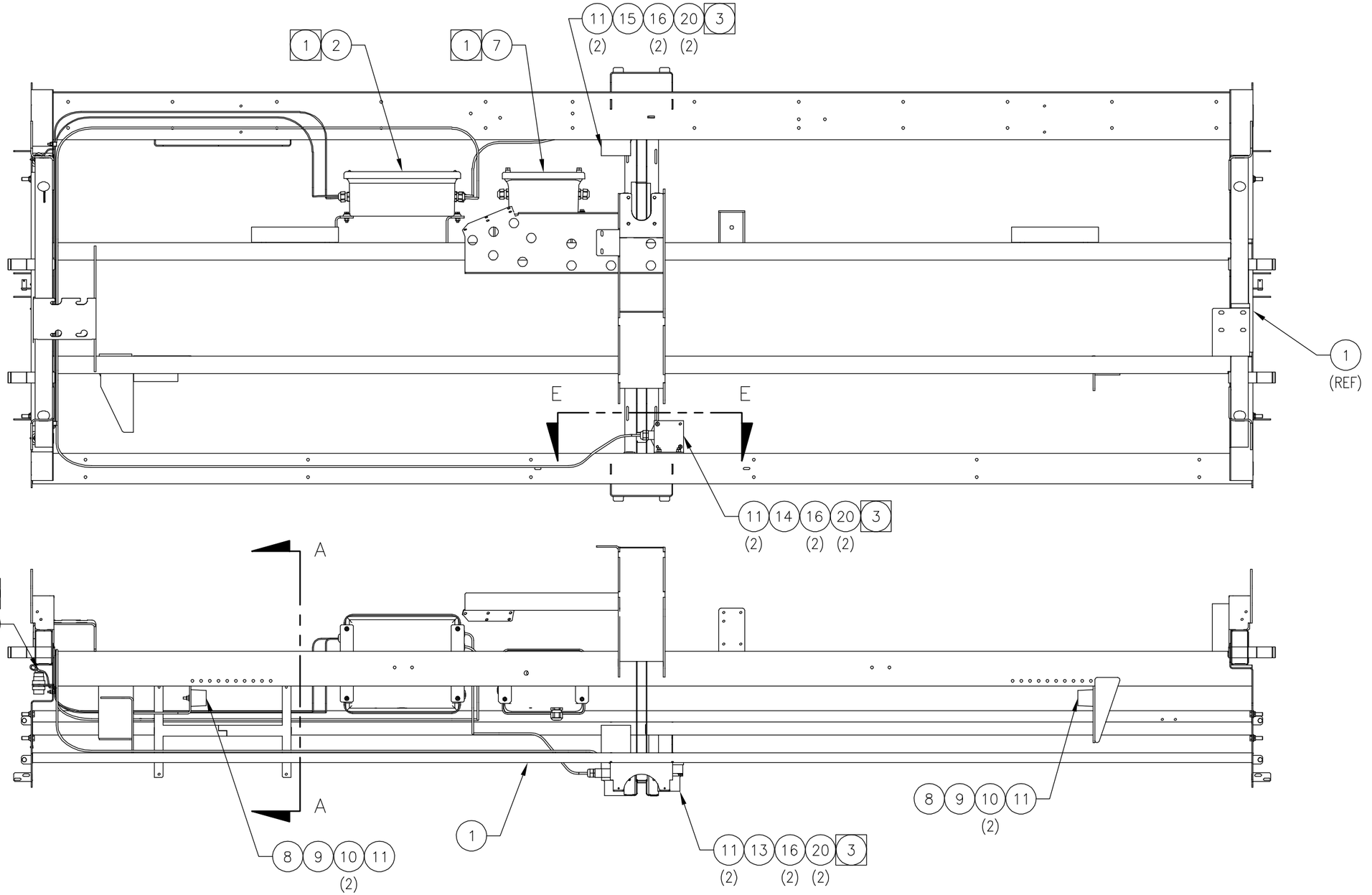
GANTRY ASSY/RADIUS

PART NO. 24250-016 REVISION A

ITEM	QTY.	UOM	PART NO.	DESCRIPTION
2	1	EA	23790-011	TERMINAL BOX ASSY/GANTRY,LV
1	1	EA	24232-031	FRAME WELDMENT/GANTRY

NOTES:

1. USE HARDWARE THAT COMES WITH THE TERMINAL BOX (ITEM #2) TO SECURE IT TO THE FRAME.
2. SEE **DETAIL D** FOR WIRING OF TERMINAL BOX. THIS PRINT WILL BE USED FOR WIRING OF OTHER COMPONENTS INSTALLED ON OTHER ADDITIONS.
3. SEE **VIEW E–E** FOR INSTALLATION OF SCREWS IN ULTRASONICS (ITEM #13).
4. PROX SWITCH (ITEM #12) CABLE LOOP IS TO BE 1/2"±1/8" INSIDE DIAMETER.
5. WIRE TIES (ITEM #23) ARE PROVIDED TO SECURE CABLES AND POLYTUBING TO TOP OF SUPPORT TRAY OF ITEM #1.
6. ADD LABELS/LIFT HERE TO THE SHIPPING SKID ASSEMBLY. PLACE A LABEL ON EACH LONG SPREADER CHANNEL, FACING OUTWARD, AND APPROXIMATELY IN THE MIDDLE OF THE MACHINE.



LTR	ECO	DESCRIPTION	BY	DATE	APVD
A	0307–089	ADD NOTE 7	WD	3/27/07	GDL
–	0207–016	RELEASED DRAWING	WD	2/15/07	GDL

FORM #19477–037 REV B 01/20/97

PRODUCT: RADIUS

TOLERANCES UNLESS OTHERWISE SPECIFIED

1. ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.

MATERIAL: SEE PRODUCT STRUCTURE

SCALE: NONE | DATE: 2/12/07

DRAWN: WEDDLE | CHK'D: GA

APVD | DATE: GDL 2/15/07

RYKO® MFG. CO. U.S.A.
GRIMES,IOWA 50111

GANTRY ASSY/ RADIUS

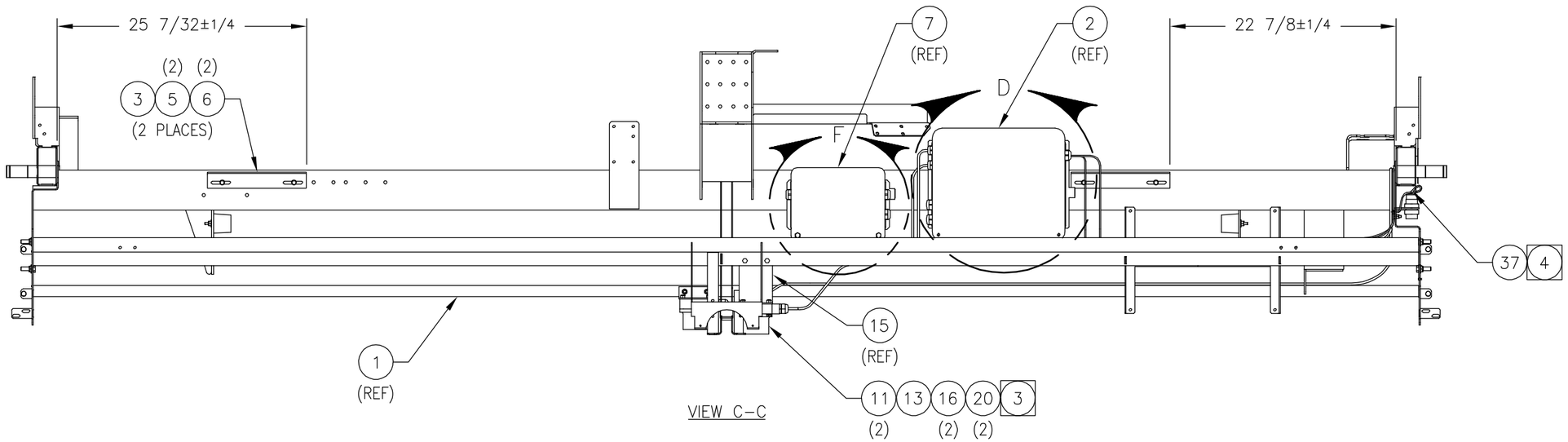
DWG. NO. 24250–016

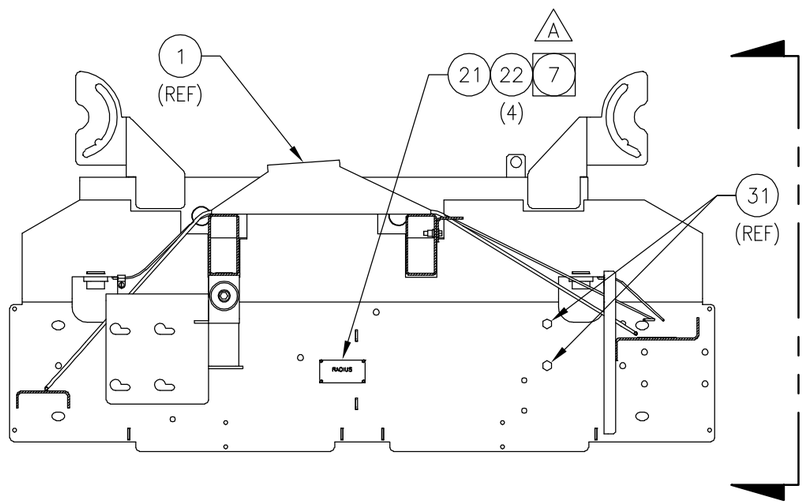
REV. A

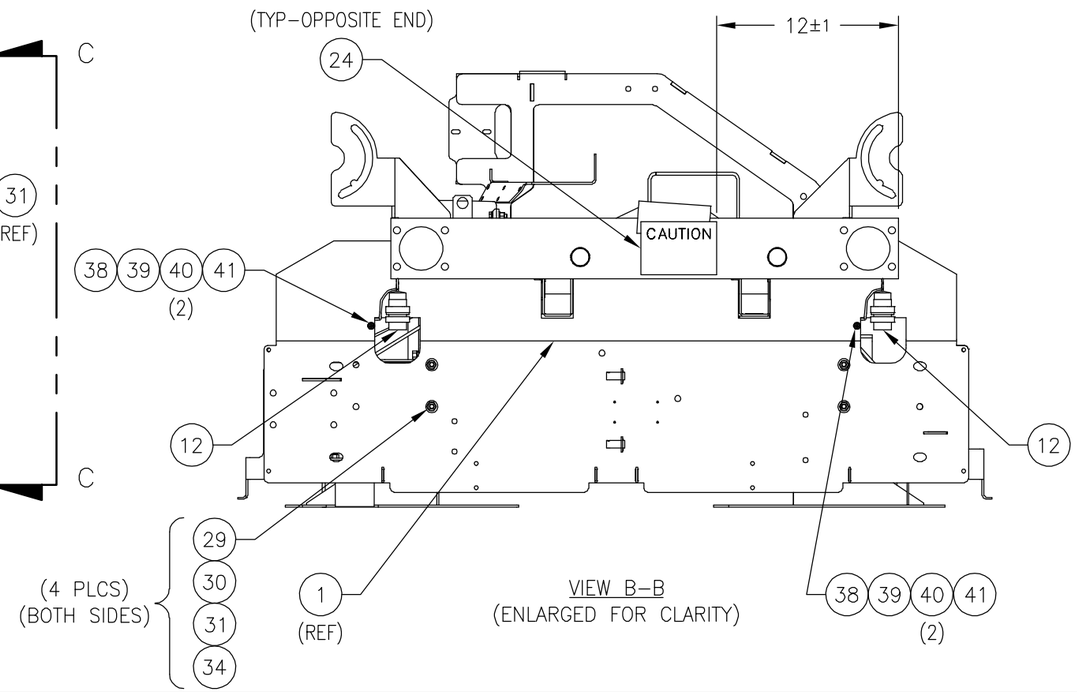
SHEET 1 OF 3

NOTE:

(7) USE SERIAL PLATE (ITEM #21) WITH SERIAL NUMBER 190050 AND GREATER.







LTR	DESCRIPTION	BY	DATE	APVD
A	0307–089 ADD NOTE 7	WD	3/27/07	GDL
–	0207–016 RELEASED DRAWING	WD	2/15/07	GDL

FORM #19477–037 REV B 01/20/97

PRODUCT RADIUS

TOLERANCES UNLESS OTHERWISE SPECIFIED

1. ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.

MATERIAL SEE PRODUCT STRUCTURE

SCALE NONE | DATE 2/12/07
DRAWN WEDDLE | CHK'D GA
APVD | DATE
GDL | 2/15/07

RYKO® MFG. CO. U.S.A.
GRIMES,IOWA 50111

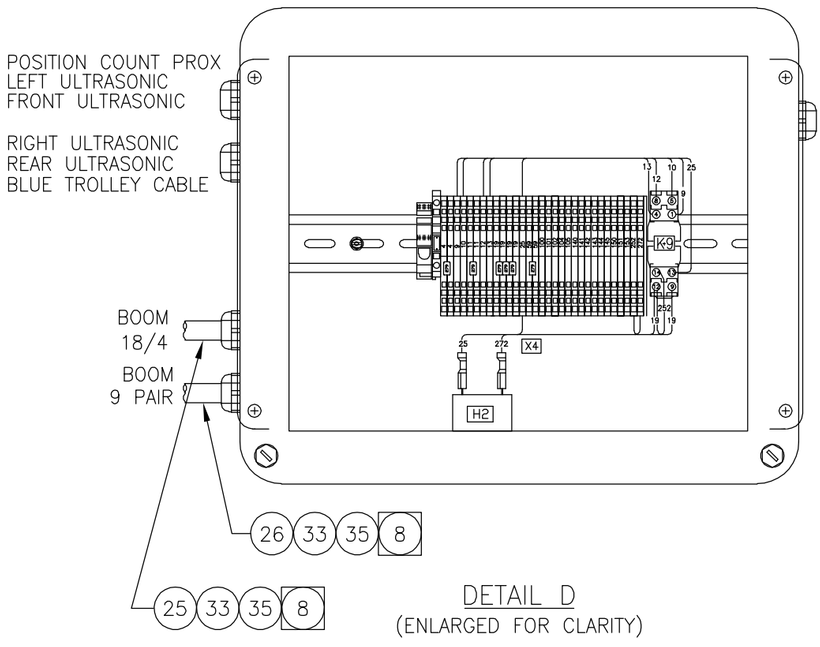
GANTRY ASSY/ RADIUS

REV. A | DWG. NO. 24250–016

SHEET 2 OF 3

NOTE:

(8) ATTACH STRAIN RELIEF AND LOCKNUT TO END OF BOOM CABLE USING A WIRE TIE.



DETAIL D
(ENLARGED FOR CLARITY)

RED 22/8 TROLLEY CABLE	
WIRE #	COLOR
19	BLUE
59	BROWN
144	ORANGE
150	YELLOW
SPARE	GREEN
SPARE	RED
145	WHITE
SPARE	BLACK

FRONT ULTRASONIC	
WIRE #	COLOR
4	RED
10	GREEN
11	SHIELD
19	BLACK
19	ORANGE
102	WHITE

REAR ULTRASONIC	
WIRE #	COLOR
4	RED
11	SHIELD
19	BLACK
19	ORANGE
13	GREEN
105	WHITE

BLUE 22/8 TROLLEY CABLE	
WIRE #	COLOR
19	BLUE
59	BROWN
140	ORANGE
141	YELLOW
142	GREEN
143	RED
SPARE	WHITE
SPARE	BLACK

FRONT END STOP PROX	
WIRE #	COLOR
19	BLUE
59	BROWN
151	BLACK

POSITION COUNT PROX	
WIRE #	COLOR
19	BLUE
59	BROWN
100	BLACK

LEFT ULTRASONIC	
WIRE #	COLOR
4	RED
9	GREEN
11	SHIELD
19	BLACK
NC	ORANGE
101	WHITE

9 PAIR BOOM CABLE	
WIRE #	COLOR
25	BLACK
100	RED
101	BLACK
102	WHITE
104	BLACK
105	GREEN
135	BLACK
140	YELLOW
141	BLACK
142	BROWN
143	BLACK
144	ORANGE
145	RED
150	WHITE
151	RED
153	GREEN
252	BLACK
272	BLUE
11	SHEILD

REAR END STOP PROX	
WIRE #	COLOR
19	BLUE
59	BROWN
153	BLACK

18/4 BOOM CABLE	
WIRE #	COLOR
4	RED
19	BLACK
59	WHITE
GND	GREEN

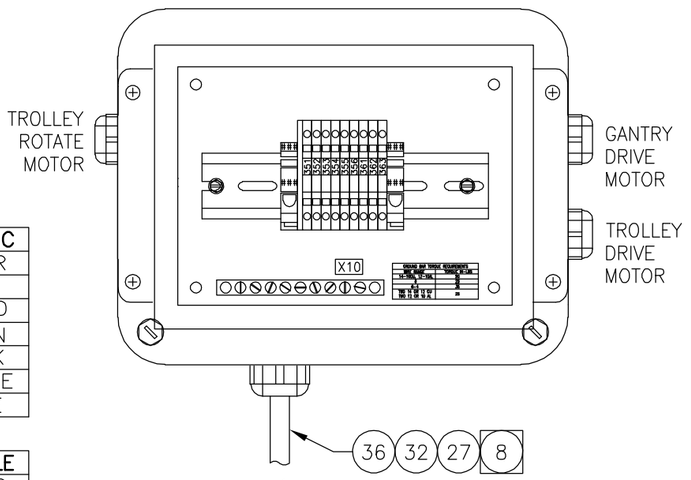
RIGHT ULTRASONIC	
WIRE #	COLOR
4	RED
11	SHIELD
12	GREEN
19	BLACK
NC	ORANGE
104	WHITE

16/10 BOOM CABLE	
WIRE #	COLOR
351	BLACK
352	WHITE
353	RED
GND	GREEN
354	ORANGE
355	BLUE
356	RED/BLK
361	WHT/BLK
362	GRN/BLK
363	ORN/BLK

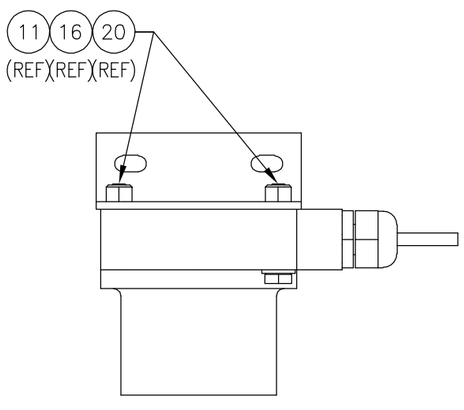
18/4 GANTRY MOTOR	
WIRE #	COLOR
351	BLACK
352	WHITE
353	RED
GND	GREEN

18/4 TROLLEY MOTOR	
WIRE #	COLOR
354	BLACK
355	WHITE
356	RED
GND	GREEN

18/4 ROTATE MOTOR	
WIRE #	COLOR
361	BLACK
362	WHITE
363	RED
GND	GREEN



DETAIL F
(ENLARGED FOR CLARITY)



VIEW E-E
(ENLARGED FOR CLARITY)
(OTHER SIDE OPPOSITE)

SHEET 3 OF 3

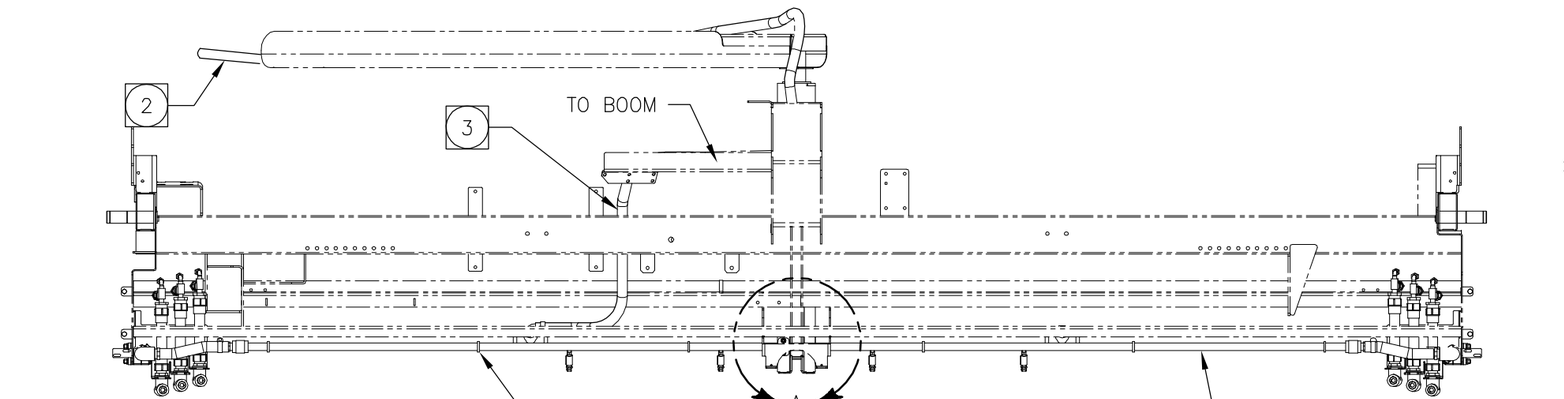
RYKO® MFG. CO. GRIMES,IOWA 50111 U.S.A.	MATERIAL SEE PRODUCT STRUCTURE	TOLERANCES UNLESS OTHERWISE SPECIFIED	PRODUCT						
GANTRY ASSY/ RADIUS	SCALE NONE	DATE 2/12/07	RADIUS						
	DRAWN WEDDLE	CHK'D GA							
REV. A	DWG. NO. 24250-016	APVD GDL	DATE 2/15/07	1. ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE. 2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.	A	0307-089	ADD NOTE 7	WD	3/27/07	GDL
					–	0207-016	RELEASED DRAWING	WD	2/15/07	GDL
					LTR	ECO	DESCRIPTION	BY	DATE	APVD

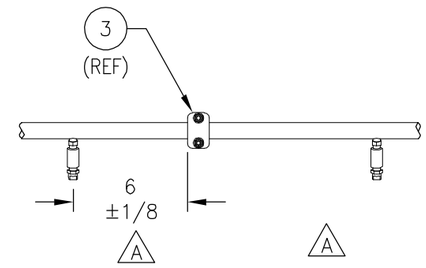
FORM #19477-037 REV B 01/20/97

RINSE ADDITION

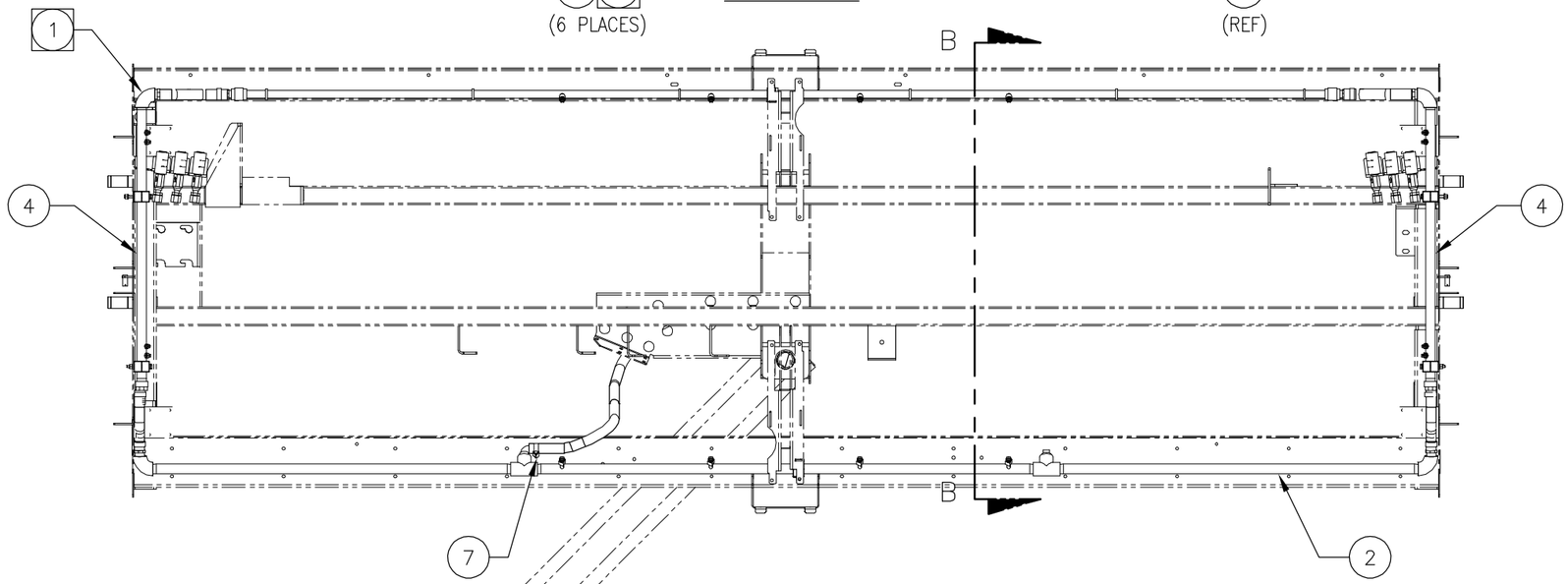
PART NO. 24268-004 REVISION C

ITEM	QTY.	UOM	PART NO.	DESCRIPTION
10	6	EA	10005-203	WIRE TIE/6",1-3/4"MAX DIA
9	1	EA	10005-205	WIRE TIE/12",3-1/2"MAX DIA
7	1	EA	10024-207	CLAMP/WORM GEAR,11/16 TO 1-1/4
8	1	EA	10384-002	TAPE/ELECTRICAL,3/4",YELLOW
6	50	FT	11065-000	HOSE/WATER,3/4ID,150PSI,BLACK
2	1	EA	24244-009	MANFOLD ASSY/GANTRY,FRONT
4	2	EA	24244-011	MANIFOLD ASSY/GANTRY,END
3	1	EA	24244-012	MANFOLD ASSY/GANTRY,REAR

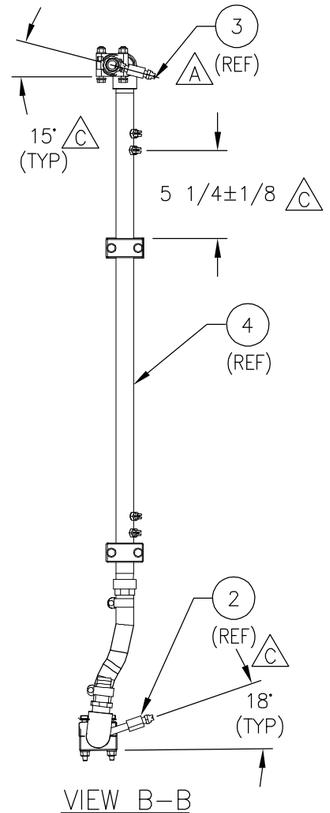




DETAIL A



BOTTOM VIEW



VIEW B–B
(TYP–2 PLACES)
(LEFT SIDE OPPOSITE)

NOTES:

1. USE HARDWARE INCLUDED WITH MANIFOLD ASSEMBLIES (ITEMS #2, #3, AND #4) TO ATTACH TO THE FRAME AS SHOWN. ROTATE ELBOW ON LEFT SIDE MANIFOLD ASSEMBLY (ITEM #4) 180° TO ALIGN WITH ELBOW ON RIGHT SIDE MANIFOLD. C
2. WRAP WATER HOSE WITH YELLOW TAPE (ITEM #8) 3" FROM EACH END OF THE HOSE.
3. LEAVE 29"±1" OF HOSE (ITEM #6) BETWEEN BOOM WELDMENT HOSE SUPPORT AND HOSE AND CABLE SUPPORT TRAY ON MACHINE. SEE BOOM PRINT FOR ROUTING OF HOSE UP TO AND THROUGH BOOM.
4. WIRE TIE ULTRASONIC CABLE TO REAR MANIFOLD (ITEM #3).

LTR	DESCRIPTION	BY	DATE	APVD
C	0507–090 REPLACE END/REAR MANIFOLDS	GA	5/31/07	GDL
B	0207–076 REPLACE ITEM #3	GA	2/27/07	GDL
A	1206–069 REP FRT MFLD, DEL SECT D–D	GA	12/28/06	MAF
–	0806–099 RELEASING DRAWING	KS	9/8/06	GDL

PRODUCT
RADIUS

TOLERANCES
UNLESS OTHERWISE SPECIFIED

1. ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.

MATERIAL SEE PRODUCT STRUCTURE

SCALE	DATE	CHK'D	DATE
NONE	8/31/06	WD/GA	9/8/06
DRAWN		APVD	
KS		GDL	

RYKO® MFG. CO. U.S.A.
GRIMES,IOWA 50111

RINSE ADDITION

DWG. NO. 24268–004
REV. C

FORM #19477–037 REV B 01/20/97

DRIVE ADDITION/GANTRY,208-230V

PART NO. 24281-022 REVISION D

ITEM	QTY.	UOM	PART NO.	DESCRIPTION
9	4	EA	10038-206	WASHER/LOCK,SPLIT RING,5/16,SS
2	2	EA	10181-219	SCREW/SET,3/8-16x3/4,SQ HD,PLD
6	4	EA	10188-203	KEYSTOCK/ 1/4"SQ x 1-1/4"LG
18	2	EA	10379-000	RING/RTNG,EXT AXIAL,1",SS
14	8	EA	10379-001	RING/RTNG,EXT AXIAL,1-1/4",SS
20	4	EA	10428-202	WASHER/FLAT,3/8"SAE,SS
23	3	EA	10428-205	WASHER/FLAT,1/4"SAE,SS
37	36	EA	10428-243	WASHER/FLAT,7/16"SAE,SS
24	6	EA	10639-207	NUT/ 1/4-20,JAM,SS
10	4	EA	10877-207	SCREW/HHC,5/16-18x1",SS
35	16	EA	10877-223	SCREW/HHC,7/16-14x1-1/2,SS
19	2	EA	10877-258	SCREW/HHC,3/8-16x4,SS
34	20	EA	10877-298	SCREW/HHC,7/16-14X5-1/2",SS
21	2	EA	10878-207	NUT/ 3/8-16,NYL INS,ZN PL
36	36	EA	10878-208	NUT/ 7/16-14,NYL INS,ZN PL
25	1	EA	11695-200	THREADLOCK COMPOUND
8	1	EA	13714-012	COUPLING/PLATED,1"DIA,NKL&CRM
26	1	EA	13956-002	LUBRICANT/GREASE,6 LB CAN
27	1	EA	14526-031	SWITCH/PROX,M18,EXT SENS,DC,NO
22	3	EA	14829-003	NUT/LOCK,THIN,1/4-20NC,NYL INS
11	4	EA	21497-002	PULLEY/TAPE DRIVE
1	1	EA	22034-007	REDUCER ASSY/DRIVE,GANTRY
16	1	EA	24176-000	BEARING/IDLER,DRIVE
12	4	EA	24216-004	WHEEL/IDLER,UHMW
4	1	EA	24253-003	SHAFT/DRIVE,GANTRY
5	1	EA	24661-005	PULLEY ASSY/DRIVE,GANTRY,RIGHT
29	1	EA	24661-006	PULLEY ASSY/DRIVE,GANTRY,LEFT
3	8	EA	25769-000	WASHER/SUPPORT,RING,1-1/4",SS
17	2	EA	25770-000	WASHER/SUPPORT,RING,1",SS
33	4	EA	26734-000	HUB ASSEMBLY/WHEEL,IDLER
15	1	EA	26831-001	MOUNT WELDMENT/TARGET,DRIVE
13	1	EA	26832-001	TARGET/DRIVE,GANTRY
32	4	EA	27149-000	PLATE/SUPPORT,WHEEL
40	4	EA	27149-002	PLATE/SUPPORT,WHEEL

NOTES:

1. BUSHING FLANGE TOWARD REDUCER:
   A. ALIGN TAPPED HOLES IN BUSHING FLANGE WITH DRILLED HOLES IN PULLEY.
   B. INSERT SCREWS THROUGH DRILLED HOLES IN PULLEY AND THREAD LOOSELY INTO TAPPED HOLES IN BUSHING FLANGE.
   C. POSITION ASSEMBLY OVER CENTER LINE OF IDLER PULLEYS (ITEM #11), AS SHOWN IN DETAIL D.
   D. TIGHTEN SCREWS WITH LOCKWASHERS PROGRESSEVELY USING A TORQUE WRENCH AND SOCKET. WHEN THE SCREW TORQUE IS AT 43–47 in–lbs MAKE TWO MORE ROUNDS OF TIGHTENING TO ASSURE ALL SCREWS ARE UNIFORMLY TIGHT.

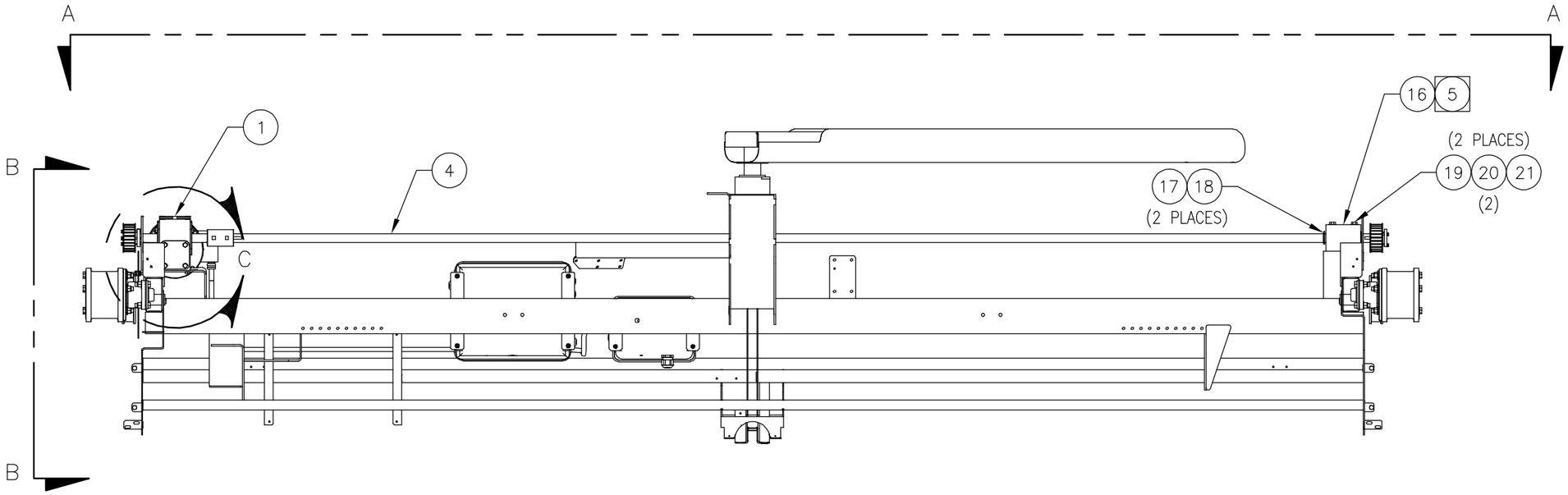
2. BUSHING FLANGE AWAY FROM IDLER BEARING:
   A. ALIGN DRILLED HOLES IN BUSHING FLANGE WITH TAPPED HOLES IN PULLEY.
   B. INSERT SCREWS WITH LOCKWASHERS THROUGH DRILLED HOLES IN BUSHING FLANGE AND THREAD LOOSELY INTO TAPPED HOLES, IN PULLEY.
   C. POSITION ASSEMBLY (ITEM #5) OVER CENTER LINES OF IDLER PULLEY (ITEM #11), AS SHOWN IN DETAIL G.
   D. TIGHTEN SCREWS AS SPECIFIED IN NOTE 1, STEP D.

4. COUPLING (ITEM #8) INSTALLATION:
   A. INSTALL THE KEYSTOCKS (ITEM #6) INTO THE KEYWAYS OF THE REDUCER AND THE SHAFT (ITEM #4). INSERT SET SCREW (ITEM #2) IN PLACE OF EXISTING COUPLING SET SCREWS.
   B. APPLY 1/16" WIDE STRIP OF THREADLOCK COMPOUND (ITEM #25) ONTO THREADS OF SET SCREWS. TIGHTEN SET SCREWS ALTERNATELY AND EVENLY. WIPE AWAY ANY EXCESS THREADLOCK.

5. APPLY A THIN COATING OF LUBRICANT (ITEM #26) TO THE ENTIRE INSIDE OF THE PULLEYS (ITEM #11), AND DRIVE BEARING (ITEM #16). WIPE OFF EXCESS LUBRICANT FROM THE SHAFTS.

B C 6. TIGHTEN NUTS (ITEM #36) ALTERNATELY AND EVENLY.

7. WIRE THE MOTOR CABLE TO THE TERMINALS IN THE TERMINAL BOX AS DESCRIBED IN THE BASIC ASSEMBLY.



LTR	DESCRIPTION	BY	DATE	APVD
D	1007–001 REPLACE PROX SWITCH	GA	10/2/07	GDL
C	0807–149 REP WASHER, TARGET & MNT WLDT	GA	8/31/07	GDL
B	0607–081 ADD NOTE 6	GA	6/25/07	GDL
A	0307–028 ADD ITEM#40, REVERSE BOLTS	GA	3/9/07	GDL
–	0207–016 RELEASED DRAWING	WD	2/15/07	GDL
	ECO	BY	DATE	APVD

PRODUCT RADIUS

TOLERANCES UNLESS OTHERWISE SPECIFIED

1. ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.

MATERIAL SEE PRODUCT STRUCTURE

SCALE NONE | DATE 2/9/07
DRAWN WEDDLE | CHK'D GA
APVD | DATE 2/15/07
GDL | 2/15/07

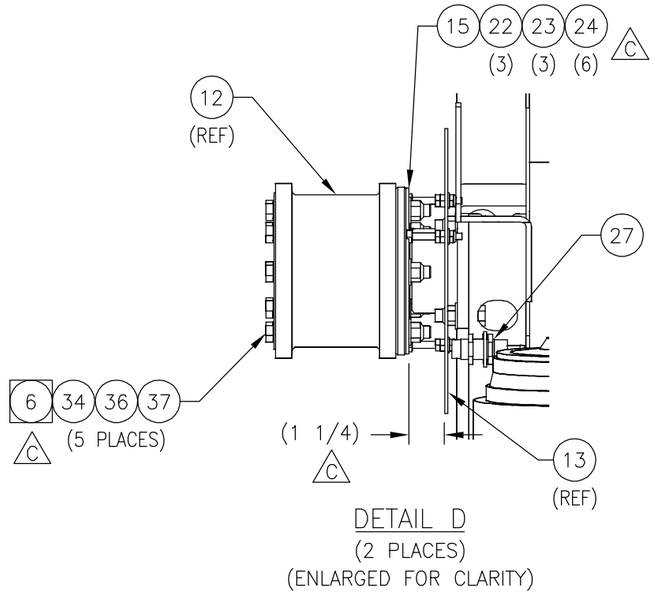
RYKO® MFG. CO. U.S.A.
GRIMES,IOWA 50111

DRIVE ADDITION/ GANTRY,208–230V

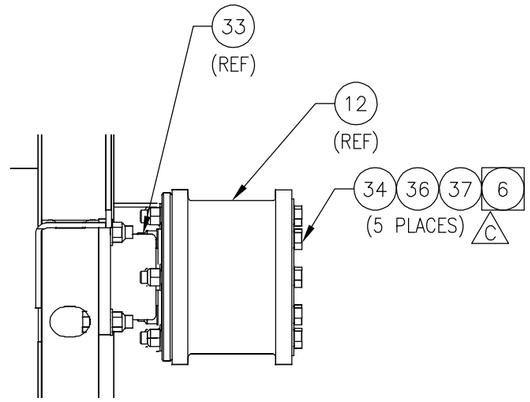
REV. D | DWG. NO. 24281–022

SHEET 1 OF 3

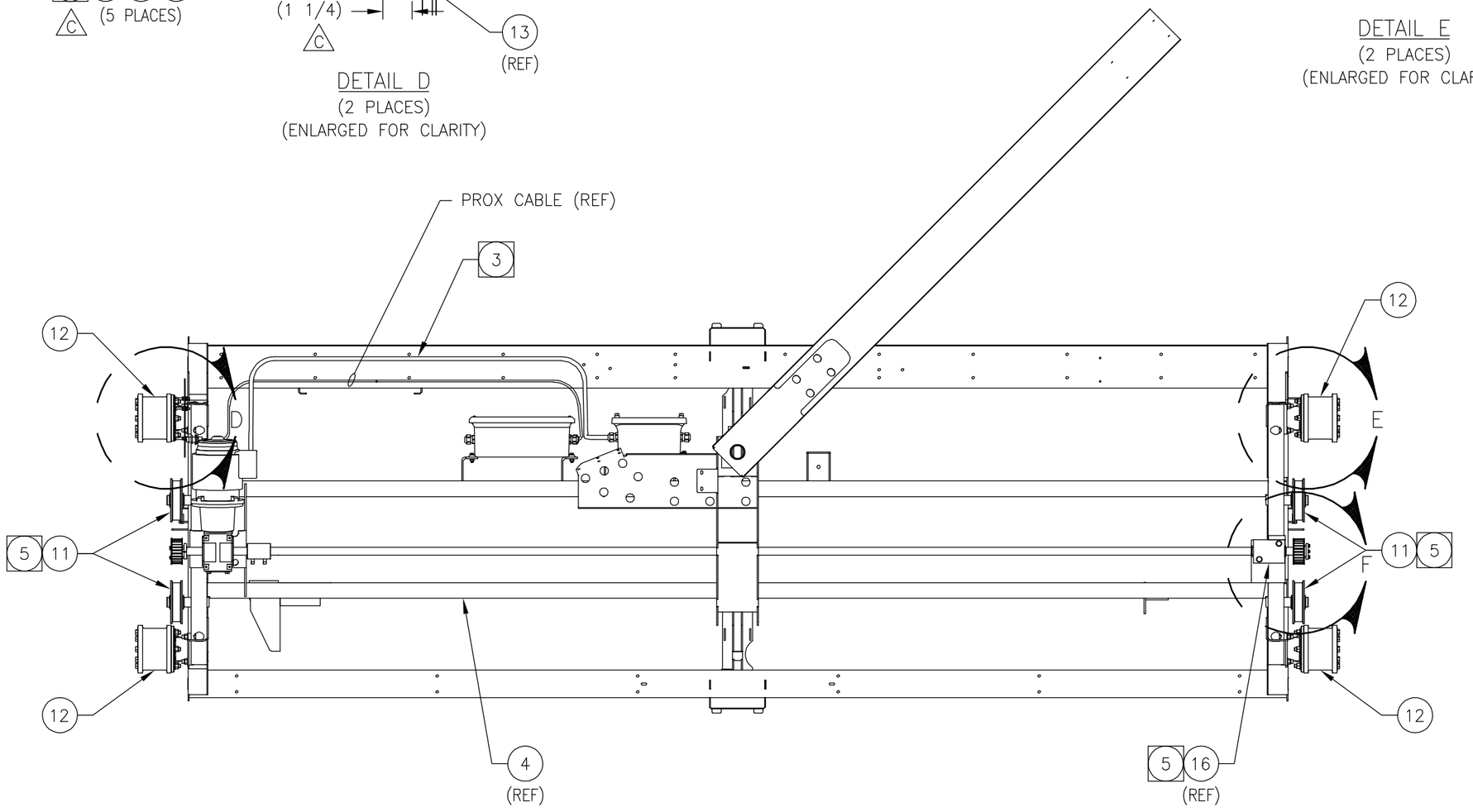
FORM #19477–037 REV B 01/20/97



DETAIL D
(2 PLACES)
(ENLARGED FOR CLARITY)



DETAIL E
(2 PLACES)
(ENLARGED FOR CLARITY)



LTR	DESCRIPTION	BY	DATE	APVD
D	1007-001 REPLACE PROX SWITCH	GA	10/2/07	GDL
C	0807-149 REP WASHER, TARGET & MNT WLDT	GA	8/31/07	GDL
B	0607-081 ADD THREADLOCK TO WHEEL BOLTS	GA	6/25/07	GDL
A	0307-028 ADD ITEM#40, REVERSE BOLTS	GA	3/9/07	GDL
–	0207-016 RELEASED DRAWING	WD	2/15/07	GDL
	ECO			

PRODUCT
RADIUS

TOLERANCES
UNLESS OTHERWISE SPECIFIED

1. ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.

MATERIAL
SEE PRODUCT STRUCTURE

SCALE NONE | DATE 2/9/07
DRAWN WEDDLE | CHK'D GA
APVD GDL | DATE 2/15/07

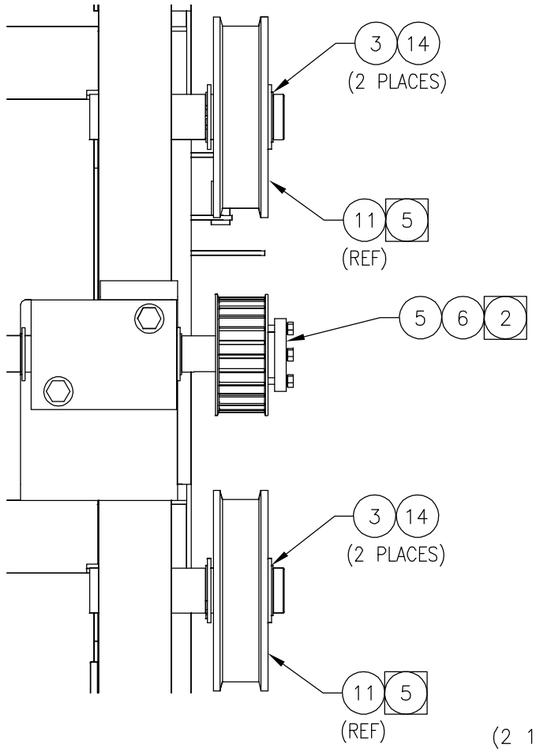
RYKO® MFG. CO.
GRIMES,IOWA 50111 U.S.A.

DRIVE ADDITION/
GANTRY,208-230V

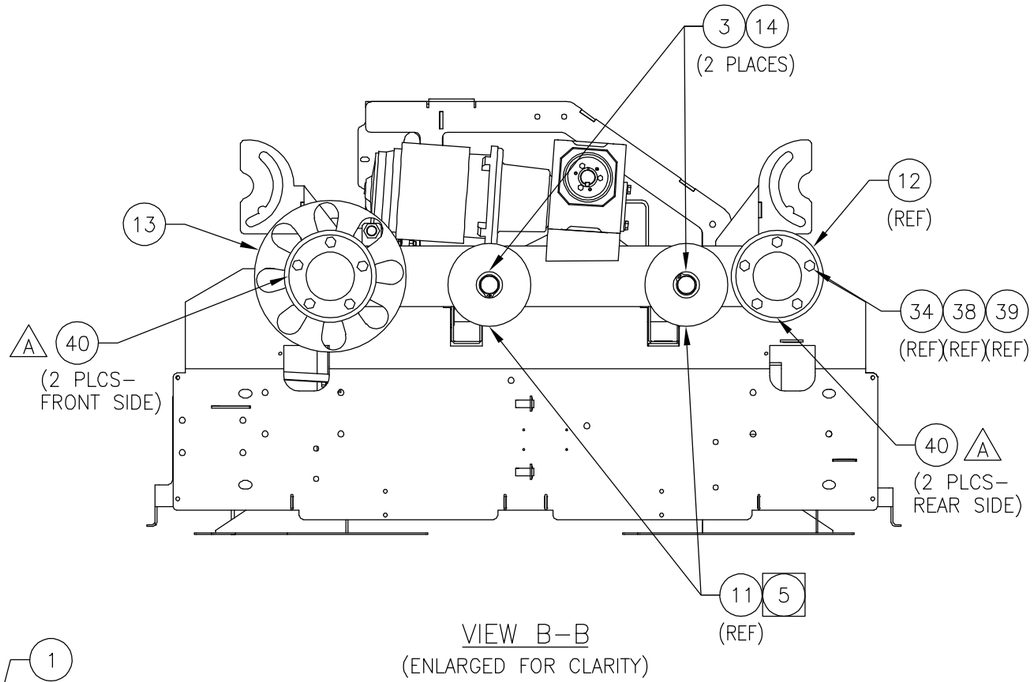
REV. D | DWG. NO. 24281-022

SHEET 2 OF 3

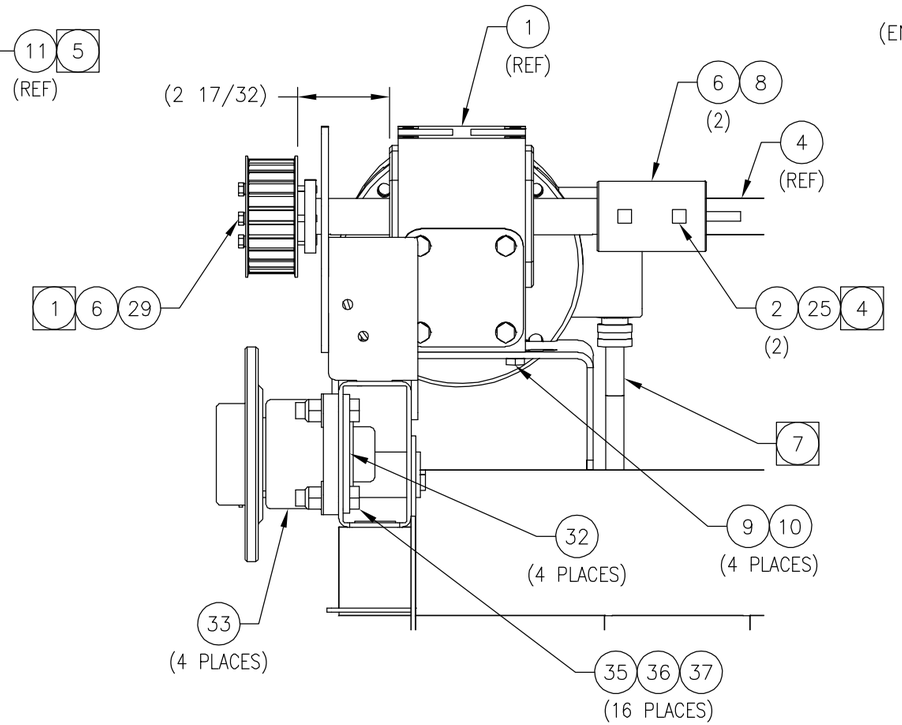
FORM #19477-037 REV B 01/20/97



DETAIL F
(ENLARGED FOR CLARITY)



VIEW B–B
(ENLARGED FOR CLARITY)



DETAIL C
(WHEELS REMOVED & ENLARGED FOR CLARITY)

LTR	DESCRIPTION	BY	DATE	APVD
D	1007–001 REPLACE PROX SWITCH	GA	10/2/07	GDL
C	0807–149 REP WASHER, TARGET & MNT WLDT	GA	8/31/07	GDL
B	0607–081 REFER TO OTHER SHEETS	GA	6/25/07	GDL
A	0307–028 ADD ITEM#40, REVERSE BOLTS	GA	3/9/07	GDL
–	0207–016 RELEASED DRAWING	WD	2/15/07	GDL
	ECO			

PRODUCT
RADIUS

TOLERANCES
UNLESS OTHERWISE SPECIFIED

1. ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.

MATERIAL SEE PRODUCT STRUCTURE
SCALE NONE
DATE 2/9/07
DRAWN WEDDLE
CHK'D GA
APVD
DATE 2/15/07
GDL

RYKO® MFG. CO.
GRIMES,IOWA 50111 U.S.A.

DRIVE ADDITION/
GANTRY,208–230V

REV. D
DWG. NO. 24281–022

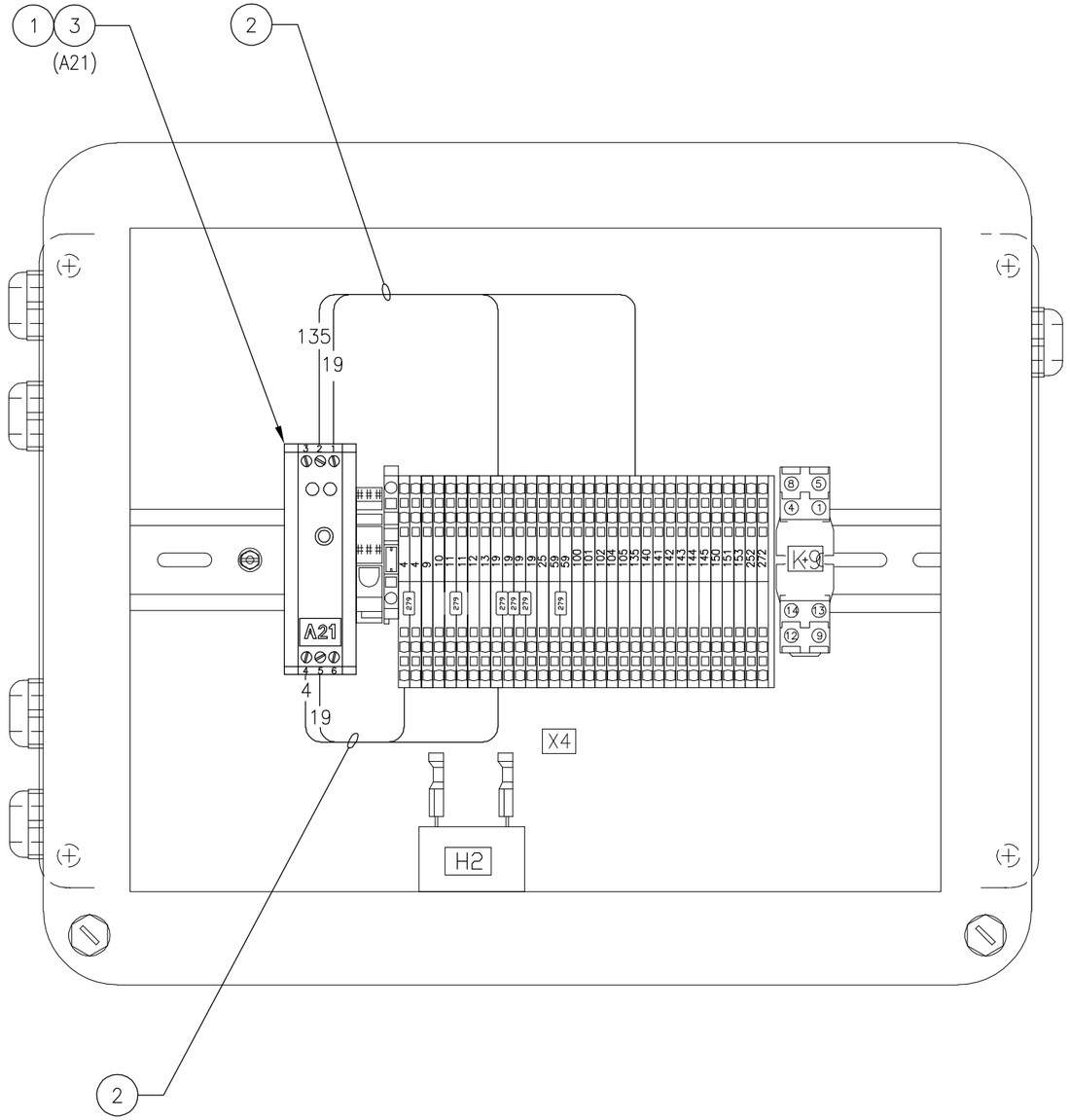
SHEET 3 OF 3

FORM #19477–037 REV B 01/20/97

GANTRY ELEC ADDN/ARM BREAKAWAY

PART NO. 24310-113 REVISION A

ITEM	QTY.	UOM	PART NO.	DESCRIPTION
2	2	FT	10279-276	WIRE/STRANDED,20GA,BLUE
3	1	EA	20085-021	LABEL/"A" ASSEMBLY ID,A21-A25
1	1	EA	24631-001	TILT SWITCH ASSY/RECEIVER,RF



(COVER REMOVED FOR CLARITY)

LTR	ECO	DESCRIPTION	BY	DATE	APVD
A	0407-093	REV WIRE #19 TO TERM BLOCK	WS	5/2/07	GDL
–	0307-046	RELEASE DRAWING	KS	3/15/07	GDL

FORM #19477-037 REV B 01/20/97

PRODUCT: RADIUS

TOLERANCES UNLESS OTHERWISE SPECIFIED

MATERIAL: SEE PRODUCT STRUCTURE

SCALE: NONE | DATE: 3/14/07

DRAWN: KS | CHK'D: SWS

APVD | DATE

GDL | 3/15/07

1. ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.

RYKO® MFG. CO. U.S.A.
GRIMES,IOWA 50111

GANTRY ELEC ADDN/ ARM BREAKAWAY

REV. A

DWG. NO. 24310-113

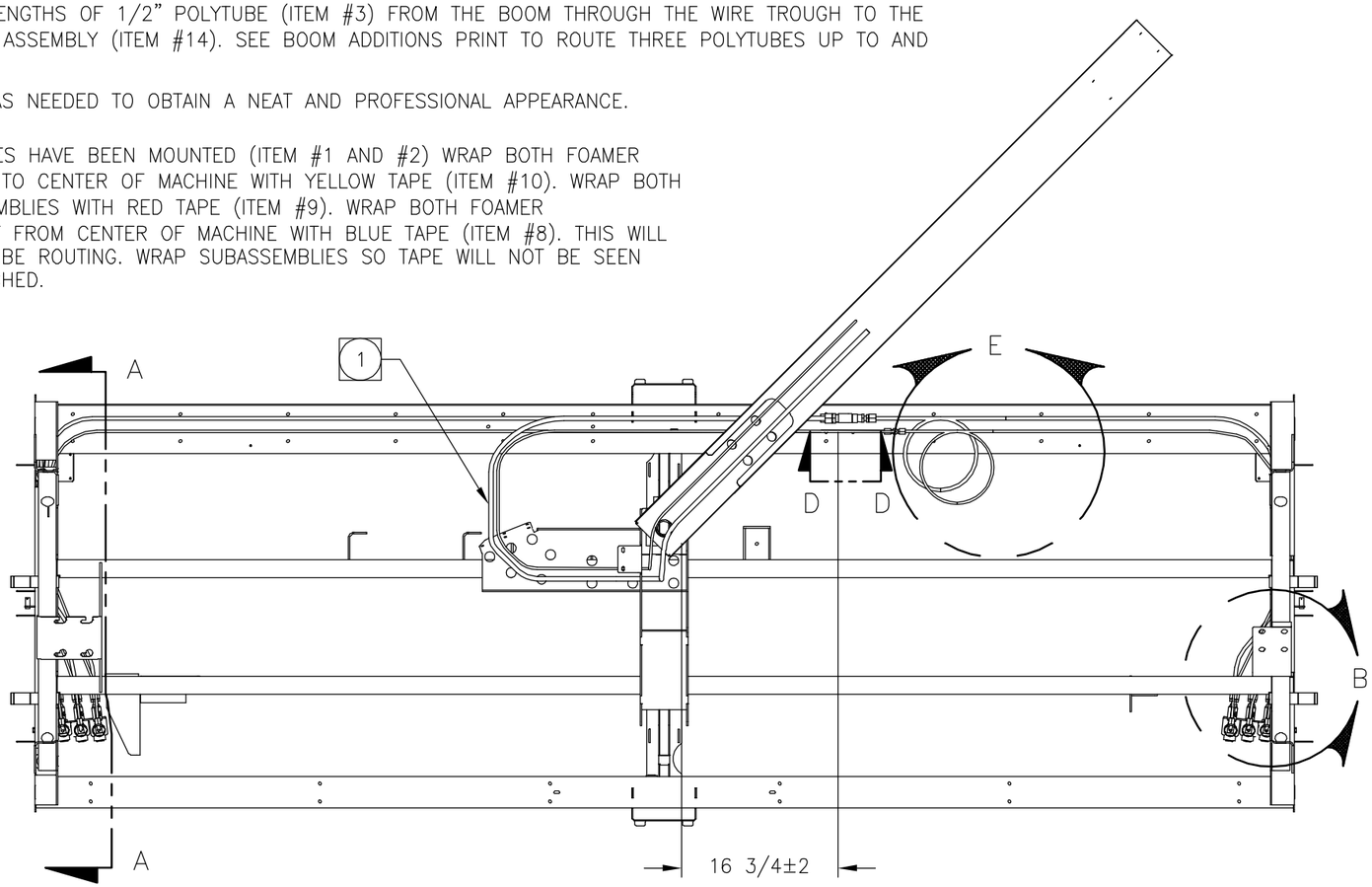
TRIFOAM OPTION

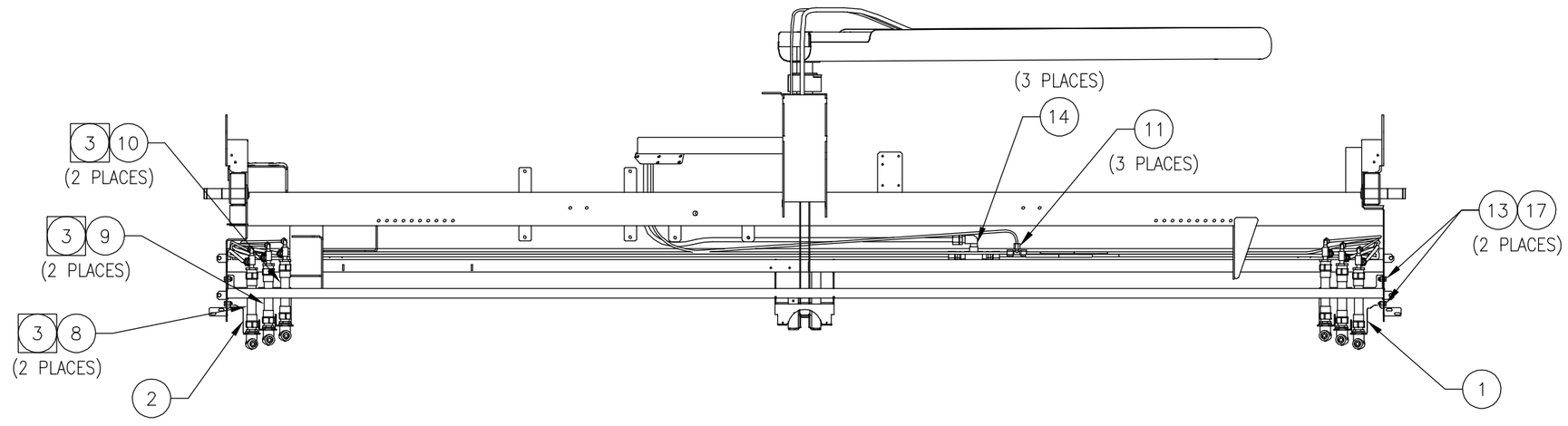
PART NO. 24316-007 REVISION C

ITEM	QTY.	UOM	PART NO.	DESCRIPTION
12	10	EA	10005-203	WIRE TIE/6",1-3/4"MAX DIA
4	63	FT	10230-201	TUBING/POLYETHYLENE,3/8"
3	149	FT	10230-202	TUBING/POLYETHYLENE,1/2"
11	3	EA	10374-210	TEE/UNION,PLS,1/4 TUBE,FERR
9	1	EA	10384-001	TAPE/ELECTRICAL,3/4",RED
10	1	EA	10384-002	TAPE/ELECTRICAL,3/4",YELLOW
8	1	EA	10384-004	TAPE/ELECTRICAL,3/4",BLUE
13	4	EA	10877-226	SCREW/HHC,5/16-18x3/4,SS
17	4	EA	10878-206	NUT/ 5/16-18,NYL INS,ZN PL
15	79	FT	15513-004	TUBING/POLY,1/4"OD,BLUE
5	79	FT	15513-008	TUBING/POLY,1/4"OD,RED
16	79	FT	15513-009	TUBING/POLY,1/4"OD,YELLOW
14	3	EA	24882-000	TEE SUBASSY/TRIFOAM WAX
1	1	EA	27183-100	FOAMER ASSY/TRIFOAM,RIGHT
2	1	EA	27183-101	FOAMER ASSY/TRIFOAM,LEFT

NOTES:

1. ROUTE THREE (49'–6") LENGTHS OF 1/2" POLYTUBE (ITEM #3) FROM THE BOOM THROUGH THE WIRE TROUGH TO THE TOP CONNECTOR ON TEE ASSEMBLY (ITEM #14). SEE BOOM ADDITIONS PRINT TO ROUTE THREE POLYTUBES UP TO AND THROUGH BOOM.
2. WIRE TIE ALL POLYTUBE AS NEEDED TO OBTAIN A NEAT AND PROFESSIONAL APPEARANCE.
3. AFTER TRIFOAM ASSEMBLIES HAVE BEEN MOUNTED (ITEM #1 AND #2) WRAP BOTH FOAMER SUBASSEMBLIES CLOSEST TO CENTER OF MACHINE WITH YELLOW TAPE (ITEM #10). WRAP BOTH MIDDLE FOAMER SUBASSEMBLIES WITH RED TAPE (ITEM #9). WRAP BOTH FOAMER SUBASSEMBLIES FURTHEST FROM CENTER OF MACHINE WITH BLUE TAPE (ITEM #8). THIS WILL HELP TO IDENTIFY POLYTUBE ROUTING. WRAP SUBASSEMBLIES SO TAPE WILL NOT BE SEEN AFTER COVERS ARE ATTACHED.





LTR	ECO	DESCRIPTION	BY	DATE	APVD
C	0307–095	UPDATE FOAMER ASSYS	GA	4/12/07	GDL
B	1106–052	UPDATE FOAMER ASSY	GA	11/28/06	GDL
A	1006–002	REROUTE WATER LINES	CP	10/5/06	GL
–	0806–109	RELEASING DRAWING	CP	9/5/06	GL

FORM #19477–037 REV B 01/20/97

PRODUCT
RADIUS

TOLERANCES
UNLESS OTHERWISE SPECIFIED

1. ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.

MATERIAL SEE PRODUCT STRUCTURE

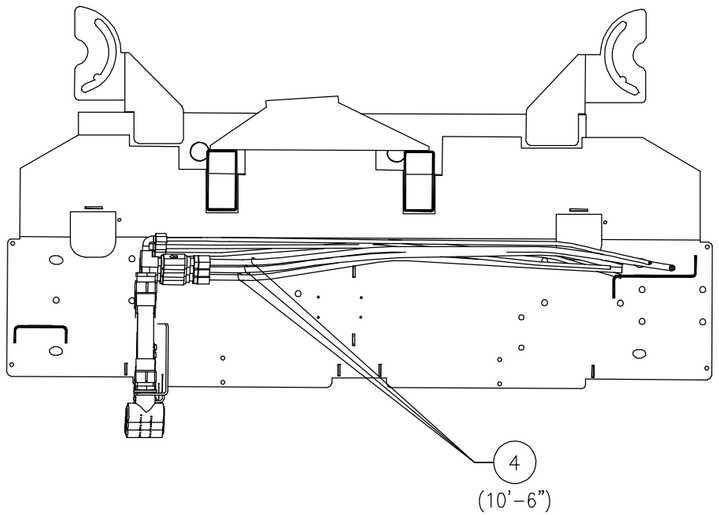
SCALE NONE | DATE 9/1/06
DRAWN CP | CHK'D WA/CP
APVD GL | DATE 9/5/06

SHEET 1 OF 3

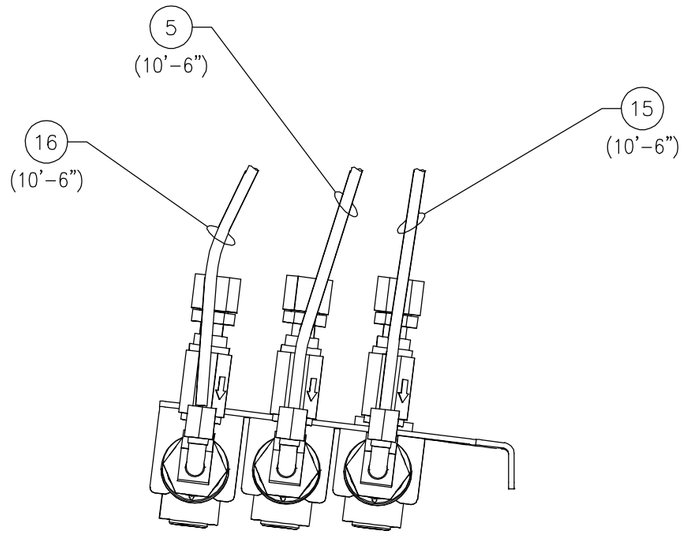
RYKO® MFG. CO. U.S.A.
GRIMES, IOWA 50111

TRIFOAM OPTION

REV. C | DWG. NO. 24316–007



SECTION A–A (B)
(SECTION ROTATED 90° CW)
(LEFT SIDE SHOWN, RIGHT SIDE OPPOSITE)
(ENLARGED FOR CLARITY)



DETAIL B (B)
(RIGHT SIDE SHOWN, LEFT SIDE OPPOSITE)
(SOME ITEMS NOT SHOWN AND ENLARGED FOR CLARITY)

LTR	DESCRIPTION	BY	DATE	APVD
C	0307–095 UPDATE FOAMER ASSYS	GA	4/12/07	GDL
B	1106–052 UPDATE FOAMER ASSEMBLY	GA	11/28/06	GDL
A	1006–002 REROUTE WATER LINES	CP	10/5/06	GL
–	0806–109 RELEASING DRAWING	CP	9/5/06	GL

PRODUCT
RADIUS
—

TOLERANCES UNLESS OTHERWISE SPECIFIED

1. ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.

MATERIAL SEE PRODUCT STRUCTURE
SCALE NONE
DRAWN CP
DATE 9/1/06
CHK'D WA/CP
APVD GL
DATE 9/5/06

RYKO® MFG. CO. U.S.A.
GRIMES,IOWA 50111

TRIFOAM OPTION

REV. C
DWG. NO. 24316–007

SHEET 2 OF 3

FORM #19477–037 REV B 01/20/97

NOTES:

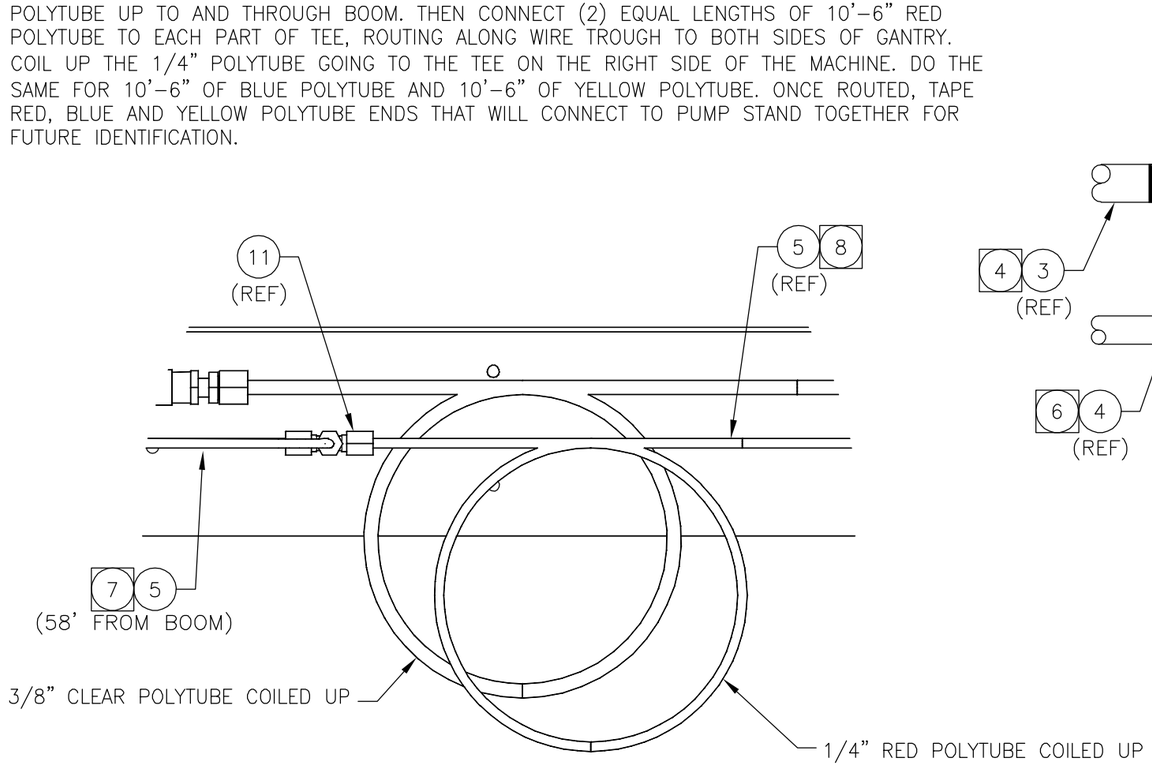
(4) ROUTED FROM BOOM.

(5) AFTER (3) 1/2" POLYTUBES HAVE BEEN ROUTED, WRAP EACH END OF ONE POLYTUBE WITH BLUE TAPE (ITEM #8), EACH END OF ONE POLYTUBE WITH RED TAPE (ITEM #9), AT EACH END OF ONE POLYTUBE WITH YELLOW TAPE (ITEM #10). INSERT A POLYTUBE END INTO EACH CONNECTOR.

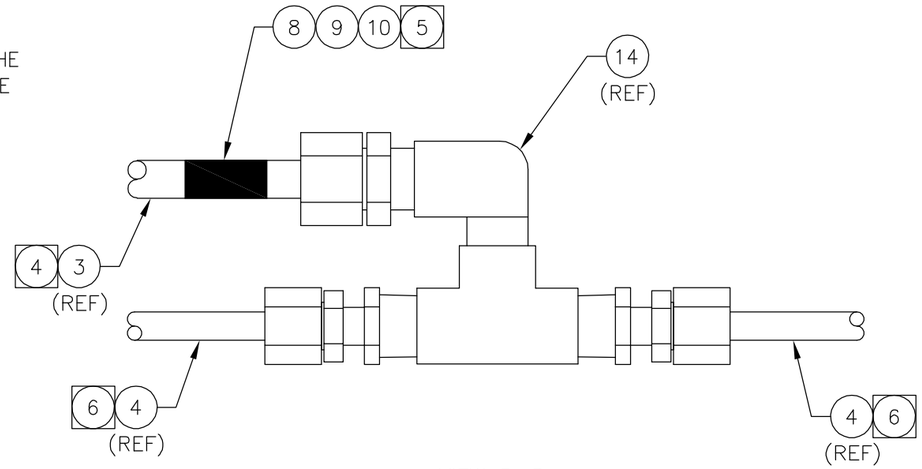
(6) ROUTE EQUAL LENGTHS OF 3/8" POLYTUBE (ITEM #4) FROM THE 3/8" TUBE CONNECTORS CONNECTED TO THE BLUE 1/2" POLYTUBE, ALONG THE WIRE TROUGH TO BOTH SIDES OF THE MACHINE. COIL UP THE 3/8" POLYTUBE GOING TO THE RIGHT SIDE. CONNECT THE 3/8" POLYTUBES TO THE BLACK 3/8" TUBE CHECK VALVE ON TRIFOAM ASSEMBLY WRAPPED IN BLUE. TRIM POLYTUBE ON THIS END AS NEEDED TO FIT APPROPRIATELY. ONCE CONNECTED, WRAP BLUE TAPE (ITEM #8) AROUND BOTH ENDS OF EACH 3/8" POLYTUBE LENGTH. REPEAT PROCEDURE FOR RED (ITEM #9) CONNECTING TO RED TAPED ASSEMBLY, AND YELLOW (ITEM #10) CONNECTING TO YELLOW TAPED ASSEMBLY.

(7) ROUTE ONE 58' LENGTH OF RED 1/4" POLYTUBE (ITEM #5), ONE 58' LENGTH OF BLUE 1/4" POLYTUBE (ITEM #15), AND ONE 58' LENGTH OF YELLOW 1/4" POLYTUBE (ITEM #16) THROUGH THE WIRE TROUGH TO A TEE UNION (ITEM #11). SEE BOOM ADDITIONS PRINT TO ROUTE 1/4" POLYTUBE UP TO AND THROUGH BOOM. THEN CONNECT (2) EQUAL LENGTHS OF 10'–6" RED POLYTUBE TO EACH PART OF TEE, ROUTING ALONG WIRE TROUGH TO BOTH SIDES OF GANTRY. COIL UP THE 1/4" POLYTUBE GOING TO THE TEE ON THE RIGHT SIDE OF THE MACHINE. DO THE SAME FOR 10'–6" OF BLUE POLYTUBE AND 10'–6" OF YELLOW POLYTUBE. ONCE ROUTED, TAPE RED, BLUE AND YELLOW POLYTUBE ENDS THAT WILL CONNECT TO PUMP STAND TOGETHER FOR FUTURE IDENTIFICATION.

(8) ROUTE 10'–6" OF RED POLYTUBE ALONG WITH RED TAPED 3/8" POLYTUBE TO THE TRIFOAM ASSEMBLIES ON BOTH SIDES. CONNECT RED POLYTUBE TO 1/4" CONNECTOR OF TRIFOAM SUBASSEMBLY THAT IS RED TAPED. DO THE SAME FOR BLUE POLYTUBE AND YELLOW POLYTUBE. TRIM AS NECESSARY FOR PROPER FIT.



DETAIL E
(ENLARGED FOR CLARITY)
(RED POLYTUBE ONLY SHOWN (ITEM #5))
(TYPICAL FOR BLUE POLYTUBE (ITEM #15) AND YELLOW POLYTUBE (ITEM #16)))



VIEW D–D
(3 PLACES)
(ENLARGED FOR CLARITY)
(SOME ITEMS REMOVED FOR CLARITY)

LTR	ECO	DESCRIPTION	BY	DATE	APVD
C	0307–095	UPDATE FOAMER ASSYS	GA	4/12/07	GDL
B	1106–052	REFER TO SHEETS 2 & 3	GA	11/28/06	GDL
A	1006–002	REROUTE WATER LINES	CP	10/5/06	GL
–	0806–109	RELEASING DRAWING	CP	9/5/06	GL

PRODUCT
RADIUS

TOLERANCES
UNLESS OTHERWISE SPECIFIED

1: ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.

MATERIAL SEE PRODUCT STRUCTURE
SCALE NONE
DRAWN CP
DATE 9/1/06
CHK'D WA/CP
APVD GL
DATE 9/5/06

RYKO® MFG. CO. U.S.A.
GRIMES,IOWA 50111

TRIFOAM OPTION

REV. C
DWG. NO. 24316–007

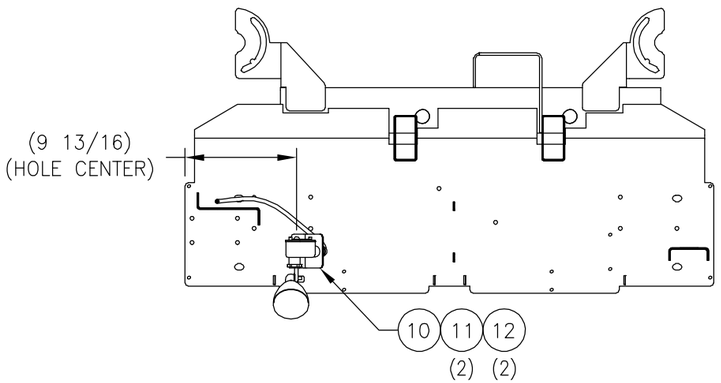
SHEET 3 OF 3

FORM #19477–037 REV B 01/20/97

TRIFOAM SPOTLIGHT OPTION

PART NO. 24316-008 REVISION B

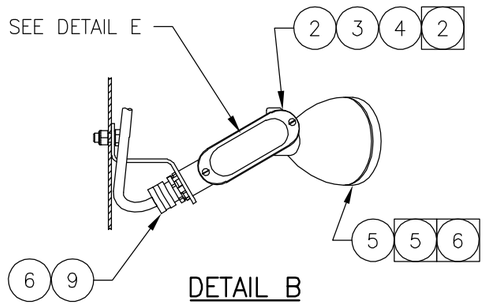
ITEM	QTY.	UOM	PART NO.	DESCRIPTION
14	6	EA	10345-202	WIRE NUT/ORANGE
9	6	EA	10362-211	CONNECTOR/STR RLF,1/2",.18-.31
6	3	EA	10363-209	CONDUIT LOCKNUT/SEAL,1/2",STL
11	4	EA	10877-226	SCREW/HHC,5/16-18x3/4,SS
12	4	EA	10878-206	NUT/ 5/16-18,NYL INS,ZN PL
5	1	EA	11476-007	LAMP/FLOOD,100W TWIN,120V,WHT
2	2	EA	14817-002	CONDUIT OUTLET BODY/LB,1/2",AL
1	1	EA	14817-003	CONDUIT OUTLET BODY/T,1/2",AL
3	3	EA	14817-004	CONDUIT OUTLET BODY GASKET
4	3	EA	14817-007	CONDUIT OUTLET BODY COVER
8	62	FT	14939-000	CABLE/18/2,TYPE SJEOW
10	2	EA	24247-003	MOUNT BRACKET/TRIFOAM LIGHT



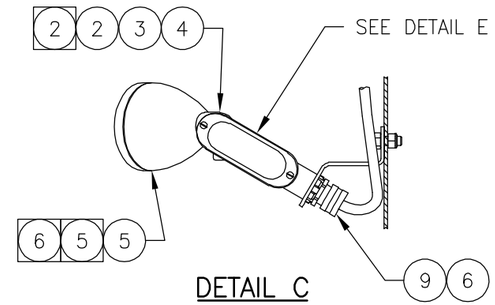
SECTION A–A
(ROTATED 90° CW)
(OTHER END SIMILAR)
(ENLARGED FOR CLARITY)

NOTES:

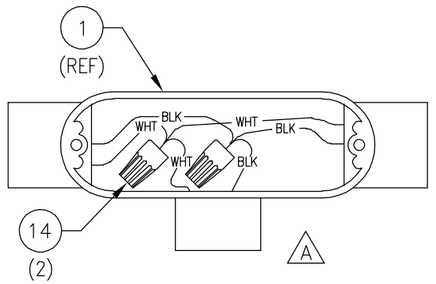
1. ROUTE CABLE THROUGH CABLE TRAY, WITH OTHER CABLES, HOSES, AND POLYTUBING THAT MAY BE PRESENT, LOOP CABLE UP THROUGH BOOM USING THE RINSE HALO HOSE AS A REFERENCE FOR LENGTH AND PROPER ROUTING, SEE BOOM ADDITION FOR MORE INFORMATION.
2. CONNECT LAMP (ITEM #5) TO CABLE (ITEM #8) USING TWO WIRE NUTS (ITEM #14) WITHIN THE CONDUIT OUTLET BODY (ITEM #2) **SEE DETAIL C**.
3. CONNECT CABLES (ITEM #8) USING TWO WIRE NUTS (ITEM #14) WITHIN THE CONDUIT OUTLET BODY (ITEM #1) **SEE DETAIL D**.
4. LAMP (ITEM #5) WILL BE MOUNTED AS SHOWN IN TOP VIEW, EACH ONE OPPOSITE OF THE OTHER WHEN ATTACHED TO OUTLET BODY L (ITEM #2).
5. REMOVE LAMP FIXTURES (ITEM #5) FROM LAMP BASE. DISCARD THE FOLLOWING ITEMS INCLUDED WITH LAMPS: LAMP BASE, GASKET, MOUNTING PLATE, SCREWS AND WIRE NUTS.
6. WHEN INSTALLING BULBS INTO LAMPS (ITEM #5) DO NOT TOUCH THE BULBS WITH BARE HANDS. INSTALL BULBS USING CLEAN PAPER, CLOTH OR GLOVES.



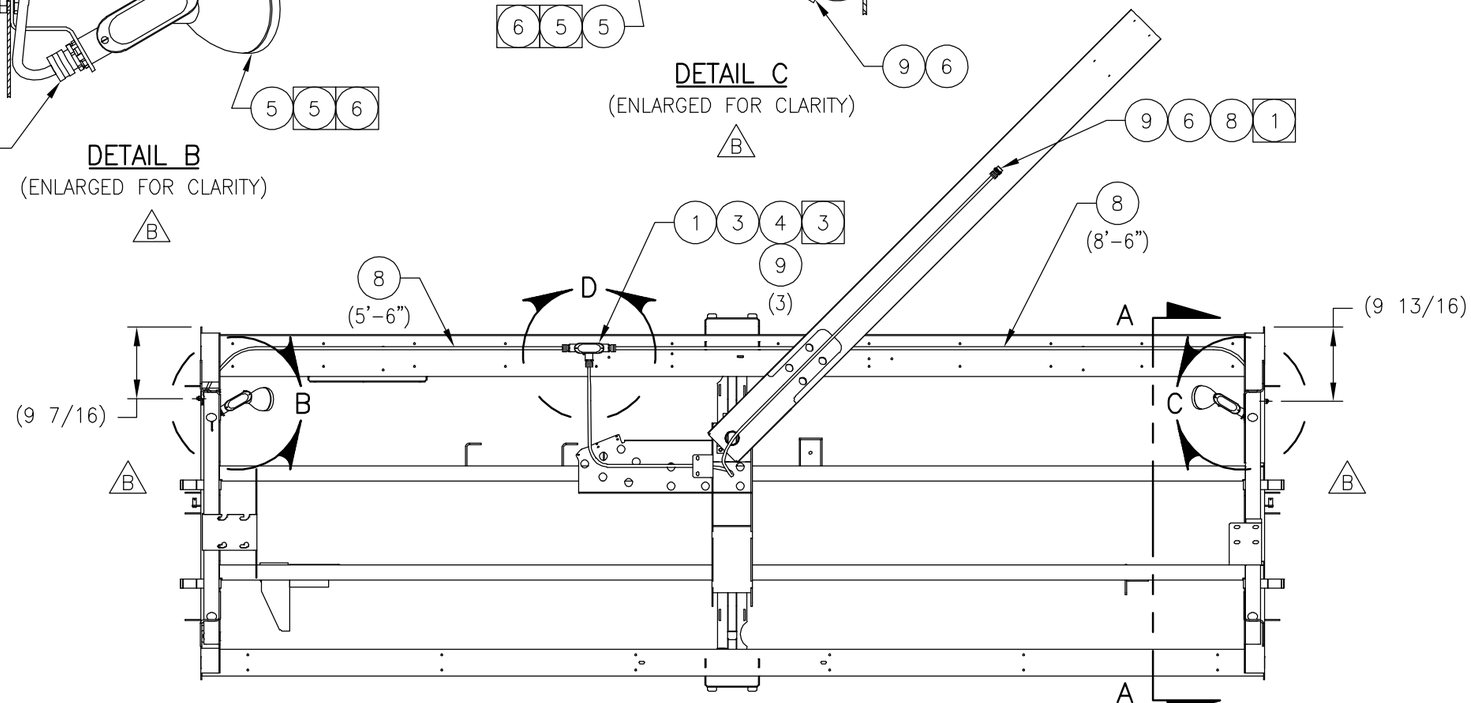
DETAIL B
(ENLARGED FOR CLARITY)
B



DETAIL C
(ENLARGED FOR CLARITY)
B



DETAIL D
(COVER REMOVED FOR CLARITY)



DETAIL E
(COVER REMOVED FOR CLARITY)
(TYP–2 PLACES)

LTR	ECO	DESCRIPTION	BY	DATE	APVD
B	0407–066	RELOCATED SPOTLIGHTS	WD	5/2/07	GDL
A	1106–041	NO GROUND WIRE AVAILABLE	TB	11/14/06	GDL
–	0906–012	RELEASING DRAWING	CP	9/8/06	GL

FORM #19477–037 REV B 01/20/97

PRODUCT
RADIUS

TOLERANCES
UNLESS OTHERWISE SPECIFIED

1. ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.

MATERIAL SEE PRODUCT STRUCTURE

SCALE	DATE	CHK'D	DATE
NONE	9/8/06	TB/CP	9/8/06
DRAWN		APVD	
CP		GL	

RYKO® MFG. CO.
GRIMES,IOWA 50111 U.S.A.

TRIFOAM
SPOTLIGHT OPTION

REV. B
DWG. NO. 24316–008

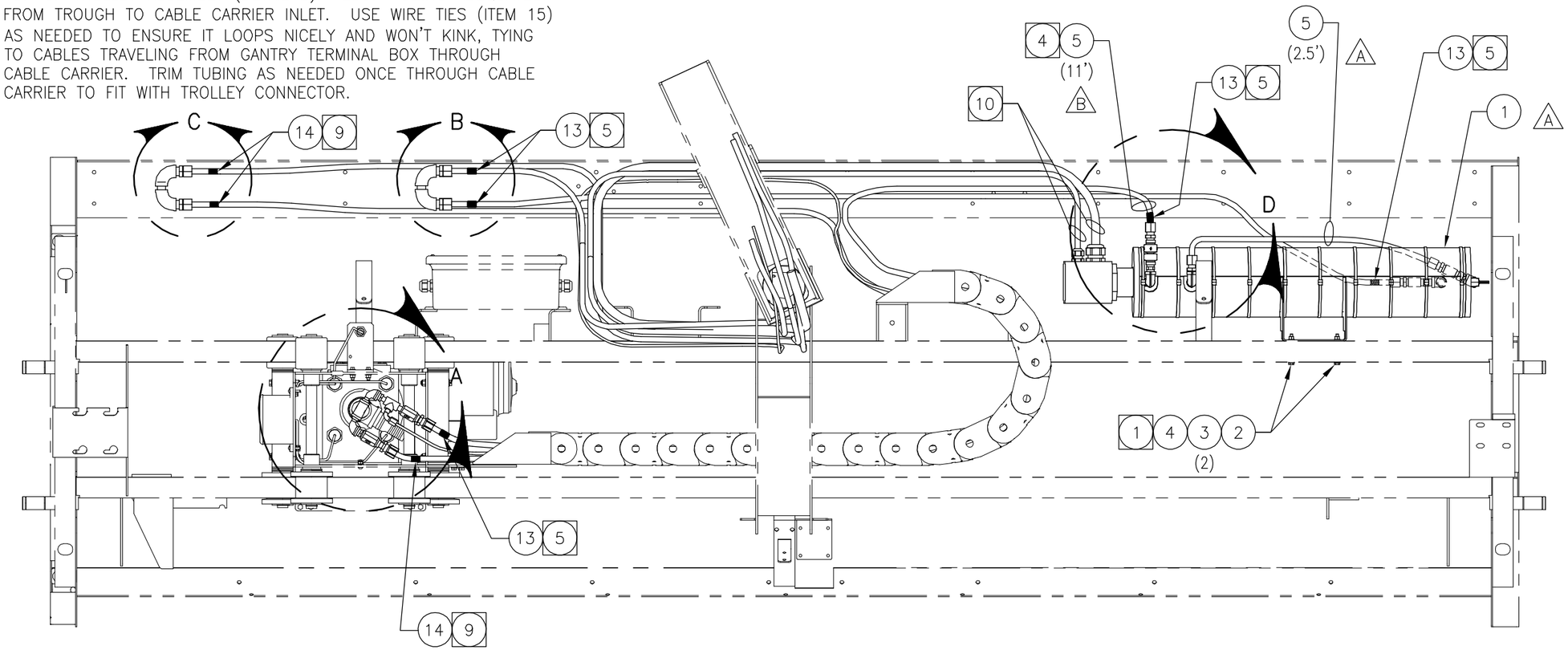
HOT PRESOAK OPT/1-HEAT,2-STEP

PART NO. 24341-018 REVISION C

ITEM	QTY.	UOM	PART NO.	DESCRIPTION
15	10	EA	10005-203	WIRE TIE/6",1-3/4"MAX DIA
17	4	EA	10101-209	ELBOW/PVC 80,1/2"THDxTHD
5	132	FT	10230-202	TUBING/POLYETHYLENE,1/2"
13	1	EA	10384-000	TAPE/ELECTRICAL,3/4",BLACK
14	1	EA	10384-003	TAPE/ELECTRICAL,3/4",GREEN
3	4	EA	10428-205	WASHER/FLAT,1/4"SAE,SS
2	2	EA	10877-283	SCREW/HHC,1/4-20X2-3/4,SS
4	2	EA	10878-205	NUT/ 1/4-20,NYL INS,ZN PL
18	4	EA	11260-226	CONN/FERR,1/2TUBEX1/2MPT,KYNAR
12	2	EA	11260-227	CONN/FERR,1/2TUBEX1/4MPT,KYNAR
10	1	EA	11261-221	ELBOW/CONN,1/4TUBEX1/4MPT,FERR
11	2	EA	11747-243	VALVE/CHK,1/4FX1/4M,PVC,EDPM
16	2	EA	12002-204	NIPPLE/PVC80,1/2xCLOSE,THD
9	1	EA	14006-002	NIPPLE/SS,1/4"xCLOSE
8	1	EA	14009-005	TEE/SS 1/4"FPT
6	60	FT	15513-010	TUBING/POLY,1/4"OD,PURPLE
7	1	EA	26839-000	TEE ASSEMBLY/TROLLEY,PS
1	1	EA	27220-002	TANK ASSY/GANTRY,2-STEP PS

NOTES:

1. PLACE SCREWS (ITEM 2) THROUGH TUBE SO SCREW HEADS ARE ON TROLLEY SIDE OF TUBE.
2. PLACE ITEMS 16, 17, & 18 IN WIRE TROUGH IN FRONT OF TERMINAL BOX. ROUTE 8'–0" OF 1/2" POLYTUBE (ITEM 5) FROM INLET OF TANK HEATER (ITEM 1) (INLET IS THE ELBOW CONNECTED TO THE SIDE OF TANK), ALONG WIRE TROUGH TO ELBOW ASSEMBLY AS SHOWN IN **DETAIL B**. CONTINUE TO ROUTE 46' OF 1/2" POLYTUBE (ITEM 5) FROM 1/2" CONNECTOR BETWEEN ELECTRICAL BOXES, UP TROUGH BOOM MOUNT, AND THROUGH BOOM. SEE BOOM ADDITION PRINT FOR PROPER ROUTING OF 1/2" TUBING UP TO AND THROUGH BOOM.
3. ROUTE PURPLE 1/4" POLYTUBE (ITEM 6) FROM 1/4" ELBOW CONNECTOR (ITEM 10) OF TEE ASSEMBLY (1/4" ELBOW CONNECTOR IS LOCATED WITH GRAY CHECK VALVE ON TOP OF TROLLEY) THROUGH CABLE CHAIN, ALONG WIRE TROUGH, BETWEEN ELECTRICAL BOXES WITH OTHER HOSE AND CABLES, AND THROUGH BOOM. SEE BOOM ADDITION PRINT FOR PROPER ROUTING OF POLYTUBE UP TO AND THROUGH BOOM. △B
4. ROUTE 11'–0" LENGTH OF 1/2" POLYTUBE (ITEM 5) FROM OUTLET OF TANK HEATER (OUTLET IS 1/2" CONNECTOR ON TOP OF TANK AT END CLOSEST TO HEATER ENCLOSURE) ALONG WIRE TROUGH AND THROUGH CABLE CARRIER TO 1/2" CONNECTOR (ITEM 12) ON TOP OF TROLLEY ASSEMBLY (DETAIL D). LOOP TUBING ADEQUATELY FROM TROUGH TO CABLE CARRIER INLET. USE WIRE TIES (ITEM 15) AS NEEDED TO ENSURE IT LOOPS NICELY AND WON'T KINK, TYING TO CABLES TRAVELING FROM GANTRY TERMINAL BOX THROUGH CABLE CARRIER. TRIM TUBING AS NEEDED ONCE THROUGH CABLE CARRIER TO FIT WITH TROLLEY CONNECTOR. △B
5. WRAP EACH END OF BOTH LENGTHS OF 1/2" POLYTUBE (ITEM 5) THAT ARE CONNECTED TO THE TANK HEATER AND EACH END OF 46' LENGTH SHOWN IN **DETAIL B** WITH BLACK ELECTRICAL TAPE (ITEM 13).
6. ANGLE 3/8" TEE ASSEMBLY (ITEMS 7) FROM TOP OF SWIVEL IN TROLLEY ASSEMBLY AT APPROXIMATE SAME ANGLE AS HI IMPACT HOSE TO POINT TOWARDS OUTLET OF CABLE CARRIER.
7. ROUTE 14' LENGTH OF 1/2" POLYTUBE (ITEM 5) FROM OTHER 1/2" CONNECTOR, ON TOP OF TROLLEY ASSEMBLY, THROUGH CABLE CARRIER. ROUTE WITH OTHER 1/2" POLYTUBE FROM CABLE CARRIER TO WIRE TROUGH, THEN ROUTE ALONG WITH OTHER HOSES AND CABLES IN WIRE TROUGH. PLACE ITEMS 16, 17, & 18 IN WIRE TROUGH AS SHOWN IN **DETAIL C**. WIRE TIE (ITEM 15) AS NEEDED.
8. ROUTE 53' LENGTH OF 1/2" POLYTUBE (ITEM 5) FROM ELBOW ASSEMBLY, AS SHOWN IN **DETAIL C**, THROUGH WIRE TROUGH, ALONG WITH OTHER HOSES AND CABLES, AND THROUGH BOOM. SEE BOOM ADDITION PRINT FOR PROPER ROUTING OF POLYTUBE UP TO AND THROUGH BOOM. △B
9. WRAP EACH END OF BOTH LENGTHS OF 1/2" POLYTUBE (ITEM 5) THAT ARE ROUTED TO TANK ASSEMBLY AND EACH END OF 50' LENGTH, SHOWN IN **DETAIL C**, WITH GREEN ELECTRICAL TAPE (ITEM 14).
10. ROUTE CABLES FROM HEATER ASSEMBLY TERMINAL BOX TO CABLE TROUGH, THEN ROUTE THROUGH BOOM WITH OTHER CABLES AND HOSES. SEE BOOM ADDITION PRINT FOR PROPER ROUTING OF CABLES UP TO AND THROUGH BOOM.



LTR	DESCRIPTION	DATE	BY
C	REP ITEM 1	5/2/07	MAF
B	REV CABLE & POLY LENGTHS	3/20/07	GDL
A	REP ITEMS 1 & 16	11/21/06	MAF
–	RELEASED DRAWING	9/19/06	MAF
	ECO		APVD

FORM #19477–037 REV B 01/20/97

PRODUCT
RADIUS

TOLERANCES
UNLESS OTHERWISE SPECIFIED

1. ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.

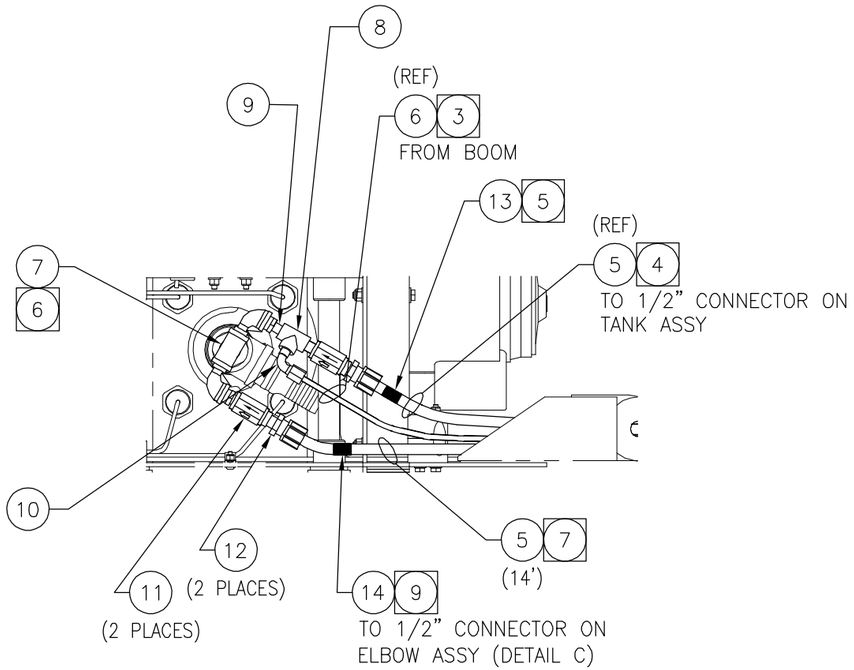
MATERIAL SEE PRODUCT STRUCTURE
SCALE NONE
DRAWN GA
DATE 9/15/06
CHK'D GA
APVD
DATE 9/19/06
MAF

SHEET 1 OF 2

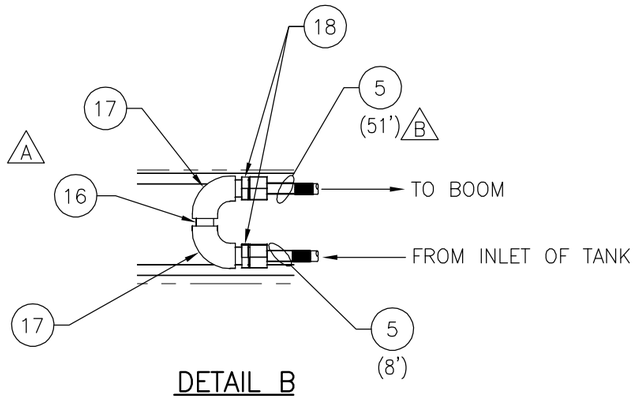
RYKO® MFG. CO. U.S.A.
GRIMES,IOWA 50111

HOT PRESOAK OPT/ 1–HEAT,2–STEP

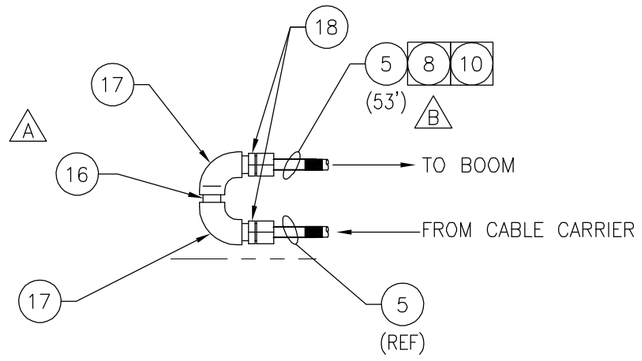
REV. C
DWG. NO. 24341–018



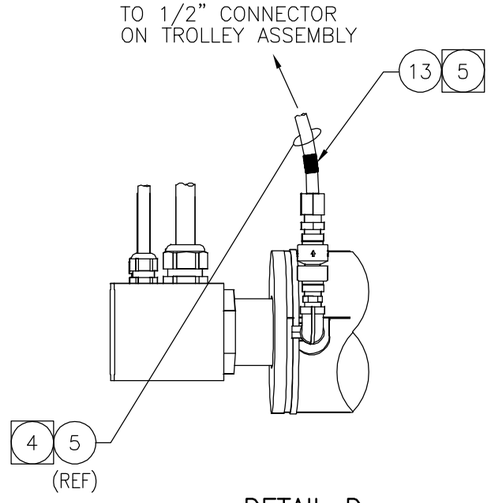
DETAIL A
(ENLARGED FOR CLARITY)



DETAIL B
(ENLARGED FOR CLARITY)
2



DETAIL C
(ENLARGED FOR CLARITY)
8



DETAIL D
(ENLARGED FOR CLARITY)

LTR	DESCRIPTION	DATE	APVD
C	0407-066 REP ITEM 1	5/2/07	MAF
B	0307-017 REV DETAILS B & C	3/20/07	GDL
A	1006-038 REP ITEMS 1 & 16	11/21/06	MAF
–	0906-024 RELEASED DRAWING	9/19/06	MAF

PRODUCT
RADIUS

TOLERANCES UNLESS OTHERWISE SPECIFIED

1. ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.

MATERIAL SEE PRODUCT STRUCTURE
SCALE NONE
DRAWN GA DATE 9/15/06
CHK'D GA
APVD DATE
MAF 9/19/06

RYKO® MFG. CO. U.S.A.
GRIMES,IOWA 50111

HOT PRESOAK OPT/ 1-HEAT,2-STEP

REV. C
DWG. NO. 24341-018

SHEET 2 OF 2

FORM #19477-037 REV B 01/20/97

FOAMER SUBASSY/TRIFOAM WAX

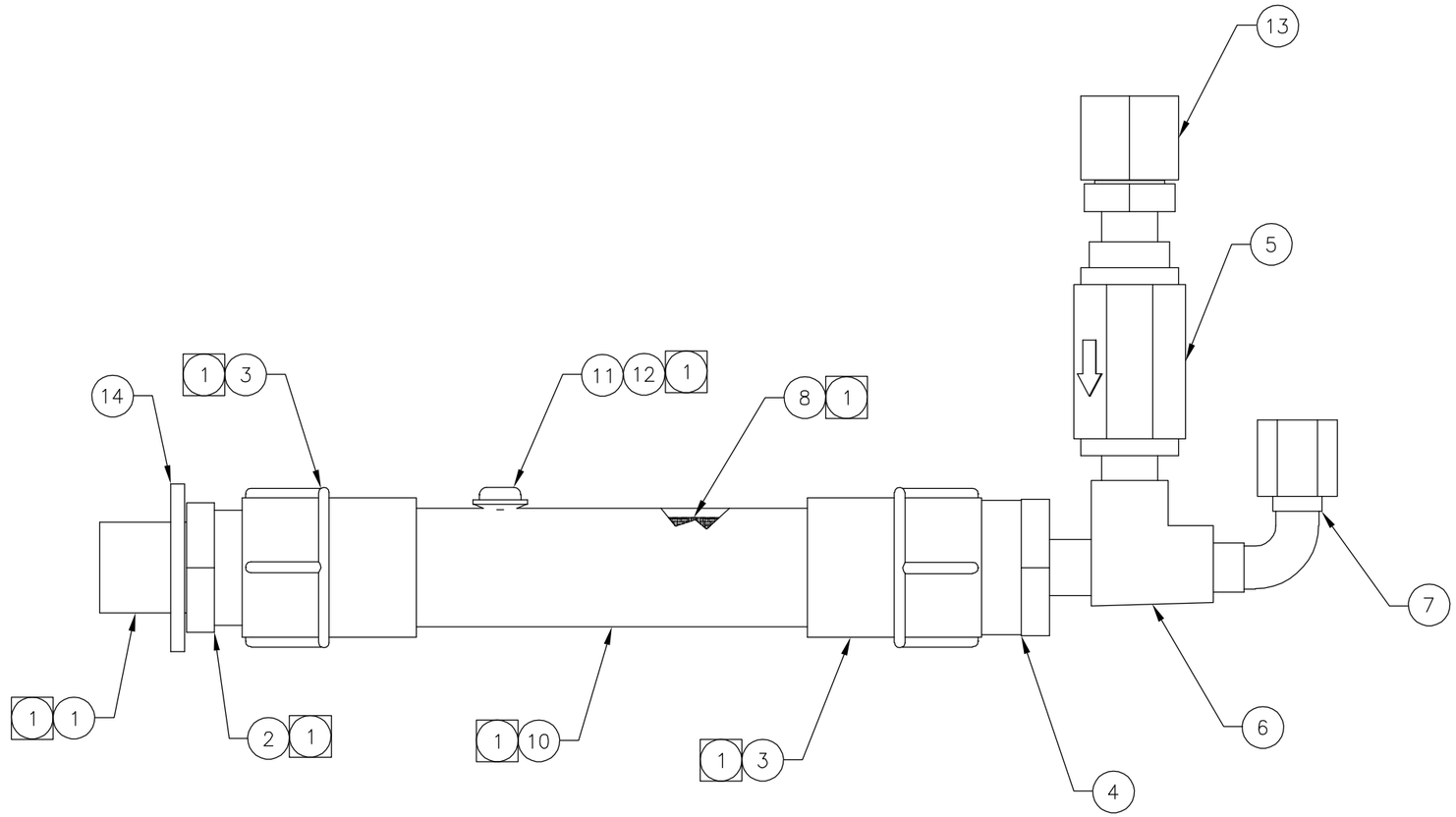
PART NO. 24502-002 REVISION -

ITEM	QTY.	UOM	PART NO.	DESCRIPTION
9	1	EA	01225-001	TEST PROC/FOAMER PACKING
4	1	EA	10104-223	BUSHING/RDCR,PVC,3/4MPTX1/4FPT
11	1	EA	10192-213	SCREW/TPG,#10x1",PAN HD,SS
14	1	EA	10754-014	SPACER/AL,1/8X1-1/2"ODX7/8"ID
13	1	EA	11260-221	CONN/FERR,3/8TUBEX1/4MPT,NYL
7	1	EA	11261-221	ELBOW/CONN,1/4TUBEX1/4MPT,FERR
1	1	EA	11263-201	NIPPLE/BRS,1/2xCLOSE
6	1	EA	11264-204	TEE/STREET,BRS,1/4"
2	1	EA	11265-210	BUSHING/RDCR,HEX,BRS,3/4x1/2
5	1	EA	11747-243	VALVE/CHK,1/4FX1/4M,PVC,EDPM
10	1	EA	11911-241	PIPE/PVC80,3/4x5",1 HOLE
12	1	EA	12971-012	WASHER/DISH,BONDED NEO,#10
8	1	EA	13322-008	FOAMER PAD/PLASTIC,3GRAM
3	2	EA	18381-005	CONDUIT ADP/PVC,3/4SKT X3/4FPT

NOTE:

(1) TO ASSEMBLE:

1) ASSEMBLE ITEMS #1, #2, (2)#3, #10, #11, AND #12.
2) REFER TO TEST PROCEDURE (ITEM #9) TO PACK THE FOAMER (ITEM #8) INTO THE COUPLING.
3) COMPLETE THE ASSEMBLY.



LTR	ECO	DESCRIPTION	BY	DATE	APVD
–	0307–095	RELEASED DRAWING	GA	4/12/07	GDL

FORM #19477–037 REV B 01/20/97

PRODUCT RADIUS –

TOLERANCES UNLESS OTHERWISE SPECIFIED

1. ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.

MATERIAL SEE PRODUCT STRUCTURE

SCALE NONE | DATE 3/29/07
DRAWN GA | CHK'D GA
APV'D | DATE 4/12/07
GDL

RYKO® MFG. CO. U.S.A.
GRIMES,IOWA 50111

FOAMER SUBASSY/ TRIFOAM WAX

REV. –
DWG. NO. 24502–002

TILT SWITCH ASSY/TRANSMTR,RF

PART NO. 24631-000 REVISION A

ITEM	QTY.	UOM	PART NO.	DESCRIPTION
812	1	EA	T04336	T:HOLDING DEVICE LOC:SS
5	1	EA	01222-000	TEST PROC/RF TRANSMITTER
2	1	EA	13620-001	SHOP PROC/PACKAGING OF ESD DEV
1	1	EA	15447-029	PCB ASSY/TRANSMITTER,ARM
6	1	EA	24642-000	LABEL/RF TRANSMITTER
4	1	EA	24654-000	SEALANT/POTTING,EPOXY,BLACK

NOTES:

DWG. NO. 24631–000

A (2) PLACE ELECTRICAL TAPE OVER THE BOTTOM OF THE POTTING FIXTURE.

(3) CUT A SMALL SLIT IN THE TAPE JUST ENOUGH TO FIT THE WIRE THROUGH.

A (4) INSERT THE ANTENNA END (WIRE END) OF THE PC BOARD ASSEMBLY (ITEM #1) INTO THE FIXTURE,INSERTING THE WIRE THROUGH THE SLIT IN THE TAPE.

(5) PULL THE WIRE AND THE PC BOARD ASSEMBLY DOWN INTO THE FIXTURE UNTIL THE CONNECTOR IS 3/8" FROM THE END OF THE FIXTURE.

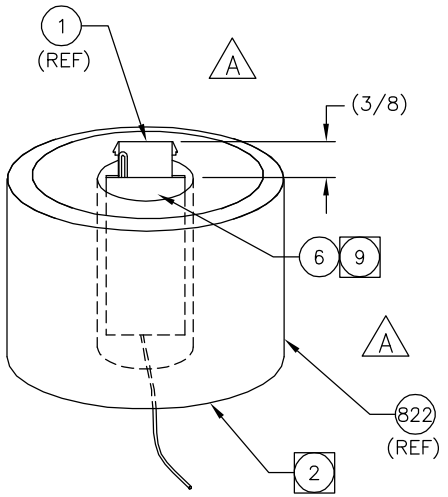
A (6) MIX UP THE EPOXY POTTING RESIN (ITEM #4) PER THE MANUFACTURER'S INSTRUCTIONS AND POUR, FILL ALL OF VOIDS. AVOID AIR BUBBLES IN THE RESIN. PULL THE SMALL LOOP OF WIRE NEAR THE CONNECTOR AWAY FROM THE CONNECTOR SO THAT IT TOUCHES THE INSIDE OF THE TUBE. MAKE SURE THAT THE RESIN DOES NOT GET INTO THE CONNECTOR.

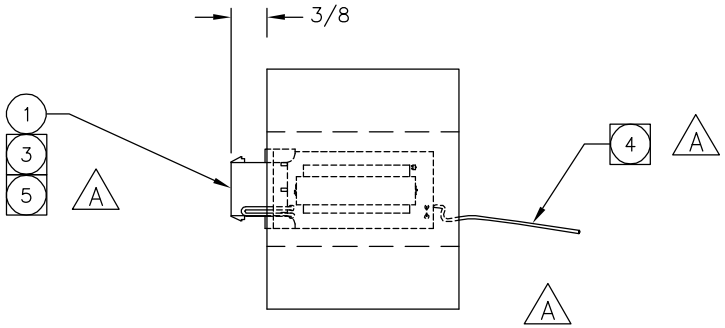
(7) ALLOW THE RESIN TO CURE PER THE MANUFACTURER'S RECOMMENDATIONS.

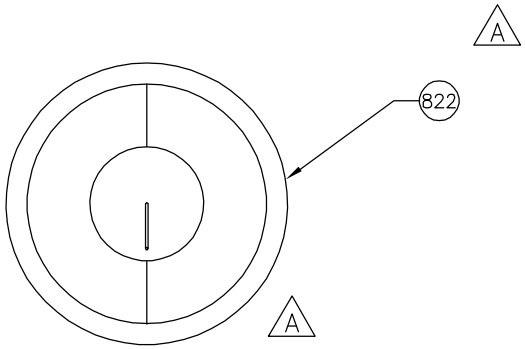
A (8) AFTER THE RESIN HAS CURED, TAKE APART THE FIXTURE, REMOVE THE TAPE FROM THE FIXTURE AND THE ASSEMBLY.

A (9) APPLY THE LABEL (ITEM #6) TO THE OUTSIDE OF THE TUBE.

(10) AFTER THE RESIN HAS CURED, REMOVE THE TAPE FROM THE END OF THE TUBE.







LTR	ECO	DESCRIPTION	BY	DATE	APVD
A	0102–085	REV STATUS TO 3 & REV DWG	LS	2/13/02	RB
–	0801–046	RELEASING DRAWING	LS	9/7/01	RB

PRODUCT: OHD–ARM

TOLERANCES UNLESS OTHERWISE SPECIFIED
LOCATIONS: ±1/16

1. ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.

MATERIAL: SEE PRODUCT STRUCTURE

SCALE: NONE
DATE: 8/24/01
DRAWN: LS
CHK'D: RB/DC
APVD: RB
DATE: 9/7/01

RYKO® MFG. CO.
GRIMES,IOWA 50111 U.S.A.

TILT SWITCH ASSY/ TRANSMTR,RF

DWG. NO. 24631–000
REV. A

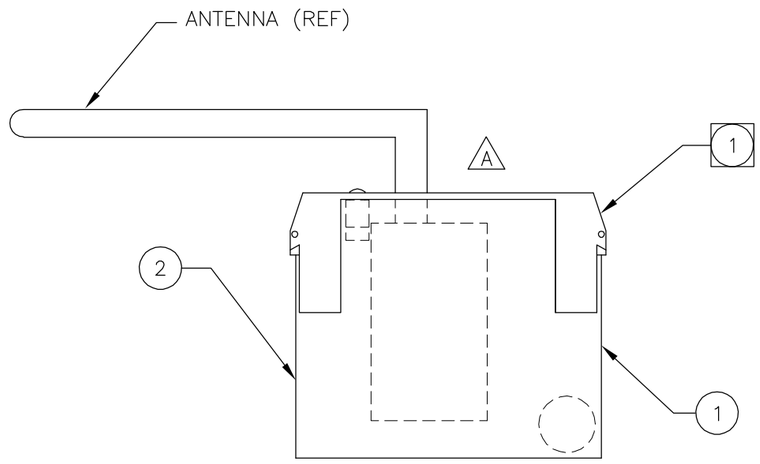
TILT SWITCH ASSY/RECEIVER,RF

PART NO. 24631-001 REVISION A

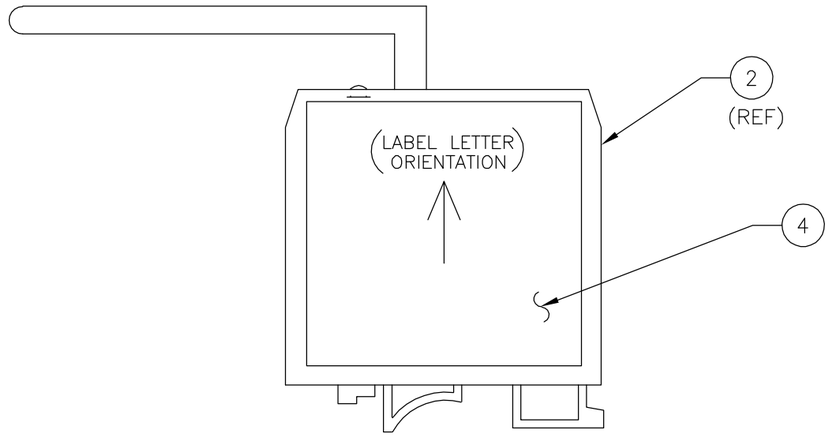
ITEM	QTY.	UOM	PART NO.	DESCRIPTION
8	1	EA	01221-000	TEST PROC/RF RECEIVER
9	0	EA	10145-277	TERMINAL MARKER/120 BLANK
6	1	EA	13620-001	SHOP PROC/PACKAGING OF ESD DEV
1	1	EA	15447-028	PCB ASSY/RECEIVER,ARM
2	1	EA	20089-002	ENCLOSURE/MODIFIED,RX,ARM
7	1	EA	23639-000	LABEL/ESD SENSITIVE,1.5"X.375"
3	1	EA	24627-000	ELEC SCHEM/TX AND RX,ARM
4	1	EA	24636-001	LABEL/RF RECEIVER

NOTES:

1. SOLDER TERMINAL BLOCK WITH 3 HOLES OF ITEM #1 TO P.C. BOARD (ITEM #2).

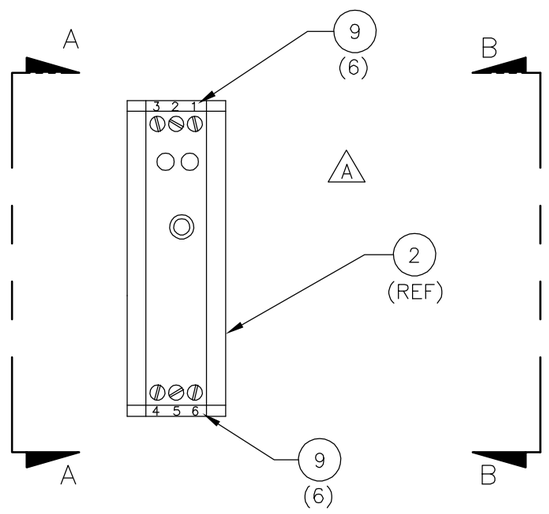


STEP 1



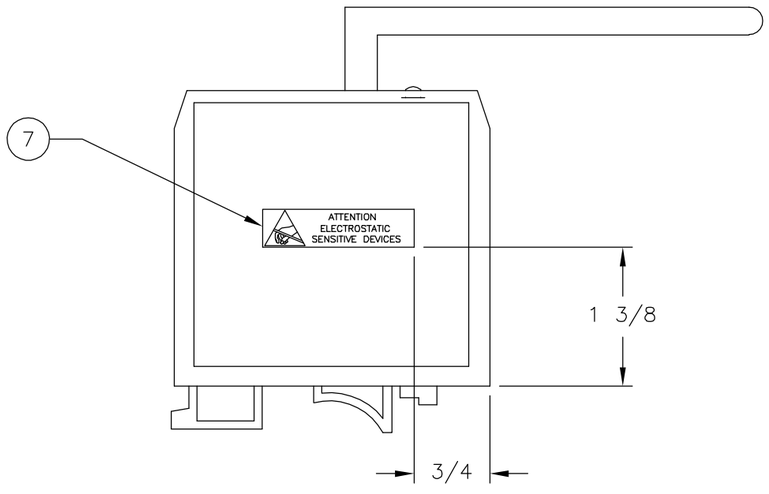
VIEW A–A

(VIEW ROTATED 90 DEGREES FOR CLARITY)



STEP 2

(ANTENNA NOT SHOWN FOR CLARITY)



VIEW B–B

(VIEW ROTATED 90 DEGREES FOR CLARITY)

LTR	ECO	DESCRIPTION	BY	DATE	APVD
A	0406–058	REP ITEM 4	WD	4/21/06	GDL
–	0801–046	RELEASING DRAWING	LS	9/7/01	RB

PRODUCT: OHD–ARM

TOLERANCES UNLESS OTHERWISE SPECIFIED
LOCATIONS: ±1/16

1. ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.

MATERIAL: SEE PRODUCT STRUCTURE
SCALE: NONE
DRAWN: LS DATE 08/22/01
CHK'D: RB/DC
APVD: RB DATE 9/7/01

RYKO® MFG. CO. U.S.A.
GRIMES,IOWA 50111

TILT SWITCH ASSY/ RECEIVER,RF

REV: A
DWG. NO. 24631–001

FORM #19477–037 REV B 01/20/97

PULLEY ASSY/DRIVE,GANTRY,RIGHT

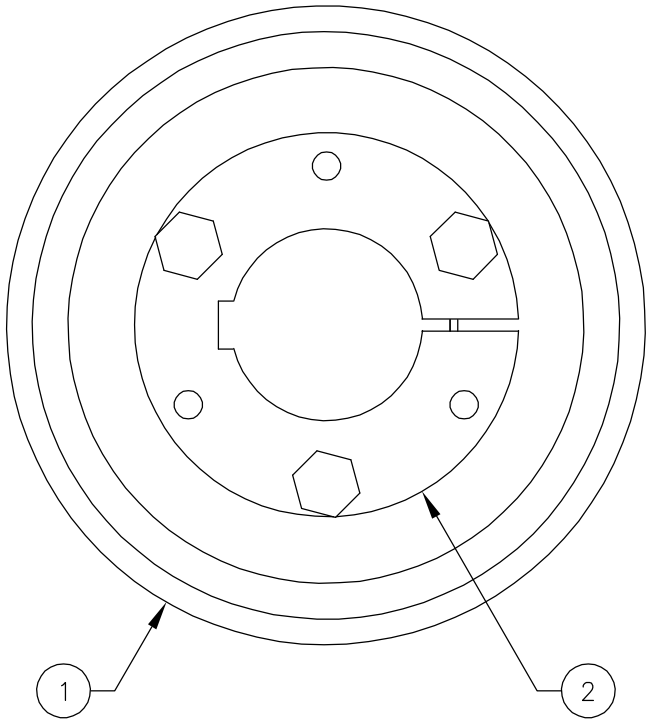
PART NO. 24661-005 REVISION -

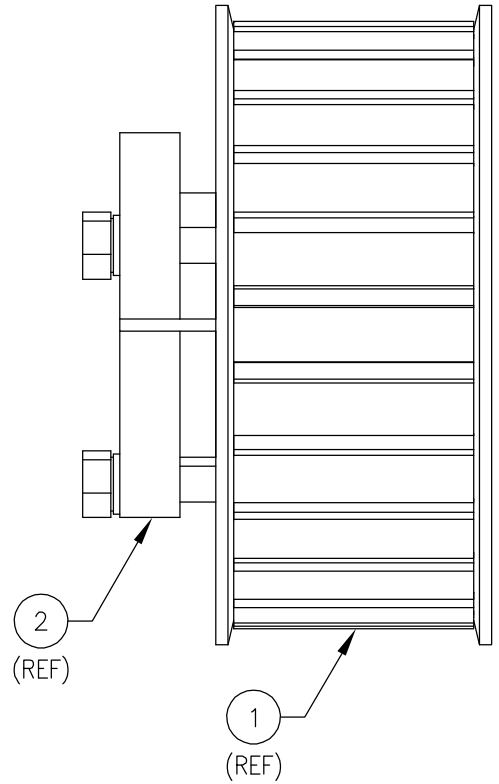
ITEM	QTY.	UOM	PART NO.	DESCRIPTION
2	1	EA	11215-214	BUSHING/TAPERLOCK,QD,1",SS
1	1	EA	21801-000	PULLEY/TIMING BELT,AT10,AL

NOTE:

(1) ALIGN DRILLED HOLES IN BUSHING FLANGE (ITEM #2) WITH TAPPED HOLES IN PULLEY (ITEM #1). INSERT NO.10-24x1"LG HEX HEAD SCREWS WITH LOCKWASHERS AND THREAD LOOSELY INTO TAPPED HOLES. DISCARD THE NO.10-24x2"LG HEX HEAD SCREWS ALSO INCLUDED WITH THE BUSHING.

DWG. NO. 24661-005





LTR	ECO	DESCRIPTION	BY	DATE	APVD	PRODUCT
						US2001-OHD
–	0504-121	RELEASING DRAWING	AM	7/6/04	GDL	

TOLERANCES UNLESS OTHERWISE SPECIFIED

1. ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.

MATERIAL SEE PRODUCT STRUCTURE

SCALE	DATE
NONE	5/27/04
DRAWN AMULLEN	CHK'D KC/GA
APVD GDL	DATE 7/6/04

RYKO® MFG. CO.
GRIMES,IOWA 50111 U.S.A.

PULLEY ASSY/ DRIVE,GANTRY,RIGHT

DWG. NO. 24661-005 REV. –

FORM #19477-036 REV A 01/18/96

PULLEY ASSY/DRIVE,GANTRY,LEFT

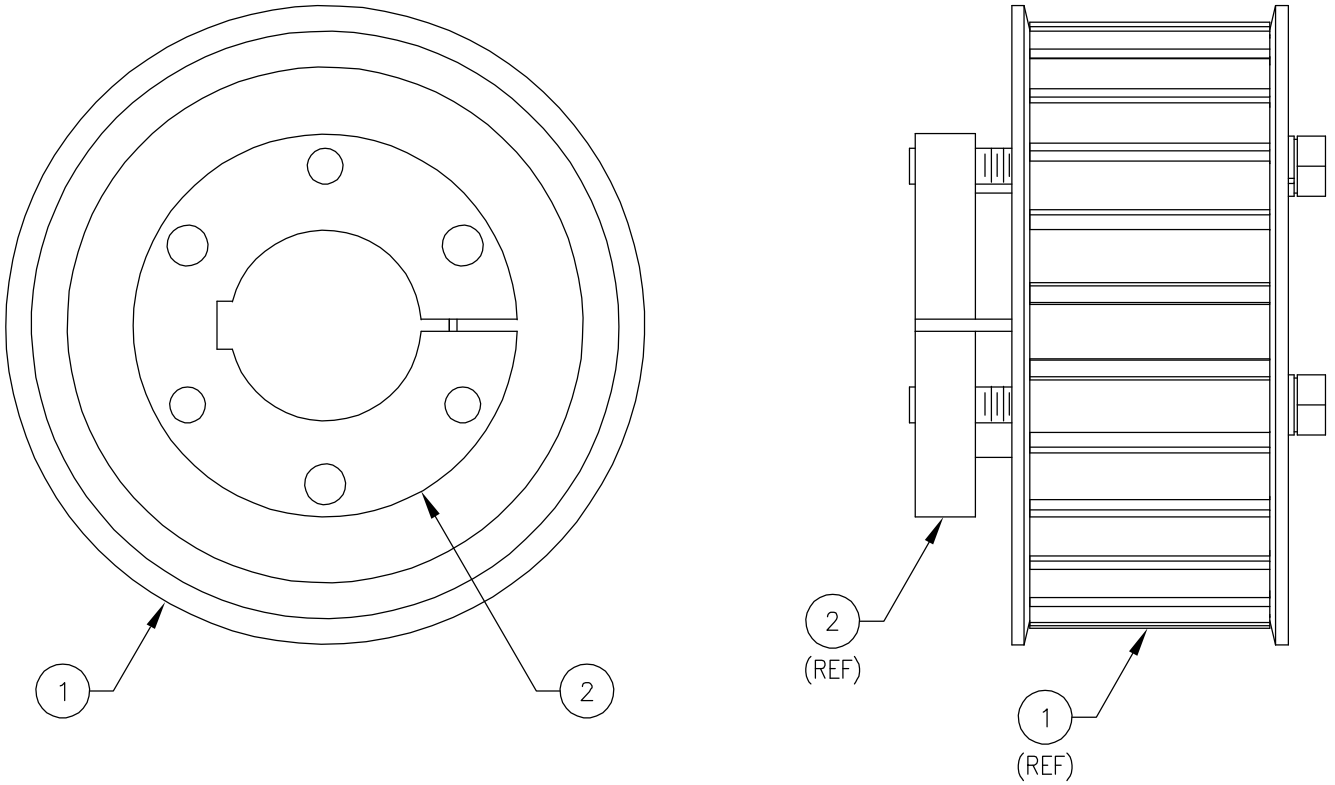
PART NO. 24661-006 REVISION A

ITEM	QTY.	UOM	PART NO.	DESCRIPTION
2	1	EA	11215-214	BUSHING/TAPERLOCK,QD,1",SS
1	1	EA	21801-000	PULLEY/TIMING BELT,AT10,AL

DWG. NO. 24661–006

NOTE:

(1) ALIGN TAPPED HOLES IN BUSHING FLANGE (ITEM #2) WITH DRILLED HOLES IN PULLEY (ITEM #1). INSERT NO.10–24x2"LG ALL THREAD HEX HEAD SCREWS WITH LOCKWASHERS AND THREAD LOOSELY INTO TAPPED HOLES. DISCARD THE NO.10–24x1"LG HEX HEAD SCREWS ALSO INCLUDED WITH THE BUSHING.



LTR	ECO	DESCRIPTION	BY	DATE	APVD
A	1004–057	REV NOTE	KC	10/13/04	GDL
–	0504–121	RELEASING DRAWING	AM	7/6/04	GDL

PRODUCT: US2001–OHD; LIBERTY

TOLERANCES UNLESS OTHERWISE SPECIFIED

1. ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.

MATERIAL: SEE PRODUCT STRUCTURE

SCALE: NONE | DATE: 5/27/04

DRAWN: AMULLEN | CHK'D: KC/GA

APVD: GDL | DATE: 7/6/04

RYKO® MFG. CO.
GRIMES,IOWA 50111 U.S.A.

PULLEY ASSY/ DRIVE,GANTRY,LEFT

DWG. NO. 24661–006 | REV. A

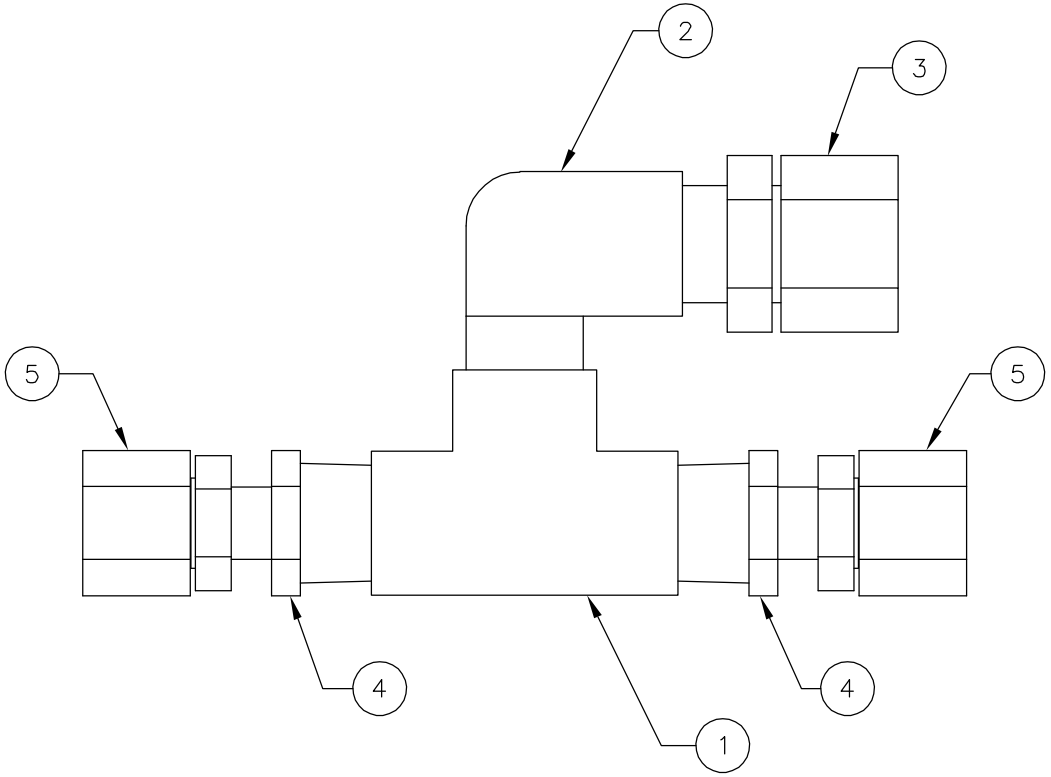
FORM #19477–036 REV A 01/18/96

TEE SUBASSY/TRIFOAM WAX

PART NO. 24882-000 REVISION -

ITEM	QTY.	UOM	PART NO.	DESCRIPTION
5	2	EA	11260-221	CONN/FERR,3/8TUBEX1/4MPT,NYL
3	1	EA	11260-229	CONN/FERR,1/2TUBEX1/2MPT,NYL
4	2	EA	11265-206	BUSHING/RDCR,HEX,BRS,1/2x1/4
1	1	EA	11536-204	TEE/BRASS,1/2"FPT
2	1	EA	11553-201	ELBOW/BRASS,STREET,1/2NPT

DWG. NO. 24882–000



						PRODUCT	TOLERANCES UNLESS OTHERWISE SPECIFIED	MATERIAL SEE PRODUCT STRUCTURE	RYKO® MFG. CO. GRIMES,IOWA 50111 U.S.A.
						US2001–OHD			TEE SUBASSY/ TRIFOAM WAX
						LIBERTY		SCALE NONE / DATE 4/2/02	
								DRAWN KS / CHK'D MB/TW	
–	0402–010	RELEASING DRAWING	KS	4/4/02	GDL		1. ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.	APVD GDL / DATE 4/4/02	DWG. NO. 24882–000 / REV. –
LTR	ECO	DESCRIPTION	BY	DATE	APVD		2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.		

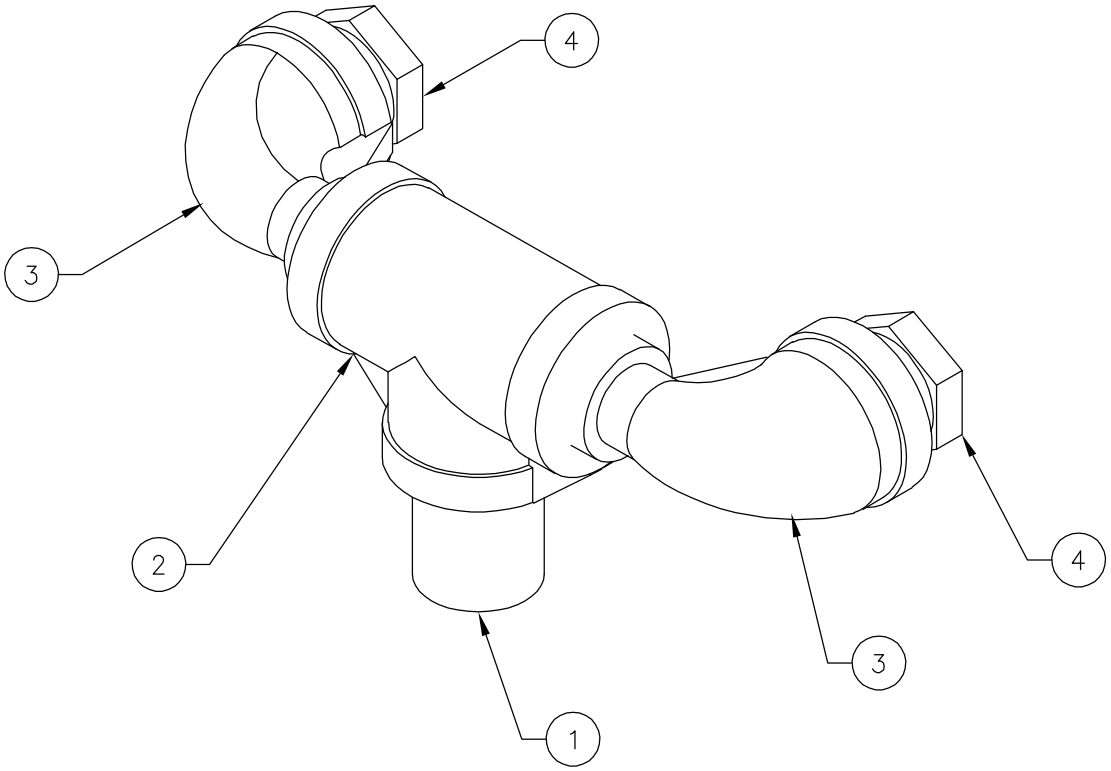
FORM #19477–036 REV A 01/18/96

TEE ASSEMBLY/TROLLEY,PS

PART NO. 26839-000 REVISION -

ITEM	QTY.	UOM	PART NO.	DESCRIPTION
4	2	EA	11724-202	BUSHING/RDCR,HEX,SS,3/8x1/4
1	1	EA	14006-003	NIPPLE/SS,3/8"xCLOSE
3	2	EA	14007-002	ELBOW/SS,STREET,3/8NPT
2	1	EA	14009-001	TEE/SS,3/8FPT

DWG. NO. 26839–000



						PRODUCT	TOLERANCES UNLESS OTHERWISE SPECIFIED	MATERIAL SEE PRODUCT STRUCTURE	RYKO® MFG. CO. GRIMES,IOWA 50111 U.S.A.	
						US2001–OHD				
								SCALE NONE	DATE 5/23/06	TEE ASSEMBLY/ TROLLEY,PS
								DRAWN GA	CHK'D KS/GA	
–	0406–096	RELEASE DRAWING	GA	7/26/06	GDL		1. ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.	APVD GDL	DATE 7/26/06	DWG. NO. 26839–000 REV. –
LTR	ECO	DESCRIPTION	BY	DATE	APVD		2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.			

FORM #19477–036 REV A 01/18/96

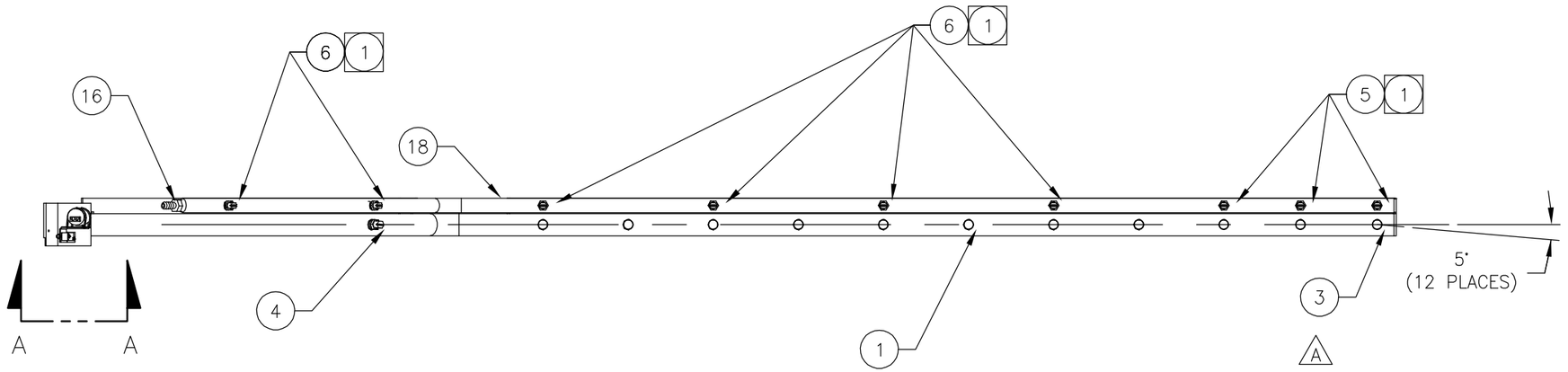
SPRAY ARCH ASSY/SIDE,W/BRK,84"

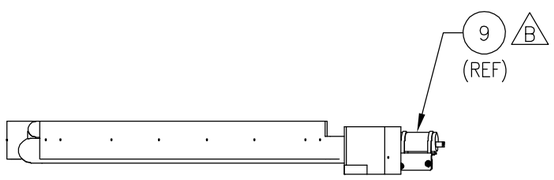
PART NO. 27154-003 REVISION B

ITEM	QTY.	UOM	PART NO.	DESCRIPTION
8	2	EA	10005-203	WIRE TIE/6",1-3/4"MAX DIA
7	2	EA	10034-254	SCREW/MACH,#4-40X3/4,PH,SS
3	1	EA	10226-250	NOZZLE/ 1/4MPTX25DEGX2GPM
4	1	EA	10226-272	NOZZLE/ 1/4MPTX40DEGX1.2GPM,SS
1	10	EA	10226-275	NOZZLE/ 1/4MPTX15DEGX1.5GPM,SS
5	3	EA	10226-305	NOZZLE/1/8MPTX65DEGX0.8GPM,PLS
6	6	EA	10226-306	NOZZLE/1/8MPTX80DEGX0.8GPM,PLS
10	4	EA	10428-212	WASHER/FLAT,#4 SAE,SS
16	1	EA	10767-207	HOSE BARB/PLS,3/8HOSEx3/8MPT
11	2	EA	10878-201	NUT/ #4-40,NYL INS,ZN PL
14	1	EA	24630-000	SWITCH ASSY/TILT,10 DEG,MINI
9	1	EA	24631-000	TILT SWITCH ASSY/TRANSMTR,RF
18	1	EA	27146-003	MANIFOLD WLDT/SIDE,W/BREAK,84"

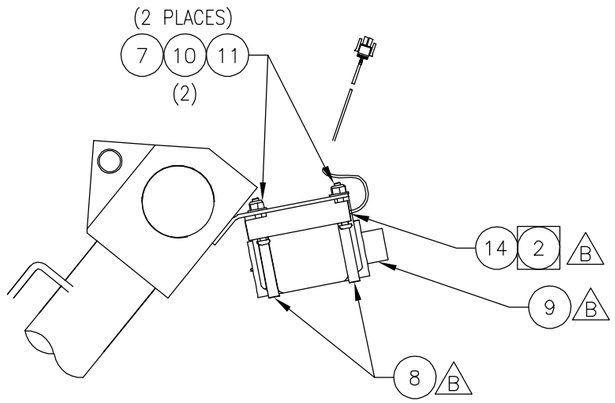
NOTES:

1. ALIGN NOZZLE SPRAY PATTERN VERTICALLY WITH THE LENGTH OF THE MANIFOLD.
2. DO NOT PLUG TILT SWITCH ASSY (ITEM 14) INTO TRANSMITTER (ITEM 9) UNTIL LATER ASSEMBLY OF SPRAY ARM ONTO MACHINE. △B





TOP VIEW



VIEW A–A
(VIEW ROTATED 90° CW)
(ENLARGED FOR CLARITY)

LTR	DESCRIPTION	BY	DATE	APVD
B	0307–073 MOVE TILT SW; ADD TRANSMITTER	GA	4/2/07	GDL
A	0906–074 REP ITEMS 1 & 3	WD	9/29/06	GDL
–	0906–020 RELEASED DRAWING	WD	9/20/06	MAF

PRODUCT
RADIUS

TOLERANCES
UNLESS OTHERWISE SPECIFIED

1. ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.

MATERIAL SEE PRODUCT STRUCTURE

SCALE NONE | DATE 9/18/06
DRAWN WEDDLE | CHK'D WD/MAF
APVD | DATE 9/20/06
MAF | 9/20/06

RYKO® MFG. CO. U.S.A.
GRIMES,IOWA 50111

SPRAY ARCH ASSY/ SIDE,W/BRK,84"

REV. B | DWG. NO. 27154–003

FORM #19477–037 REV B 01/20/97

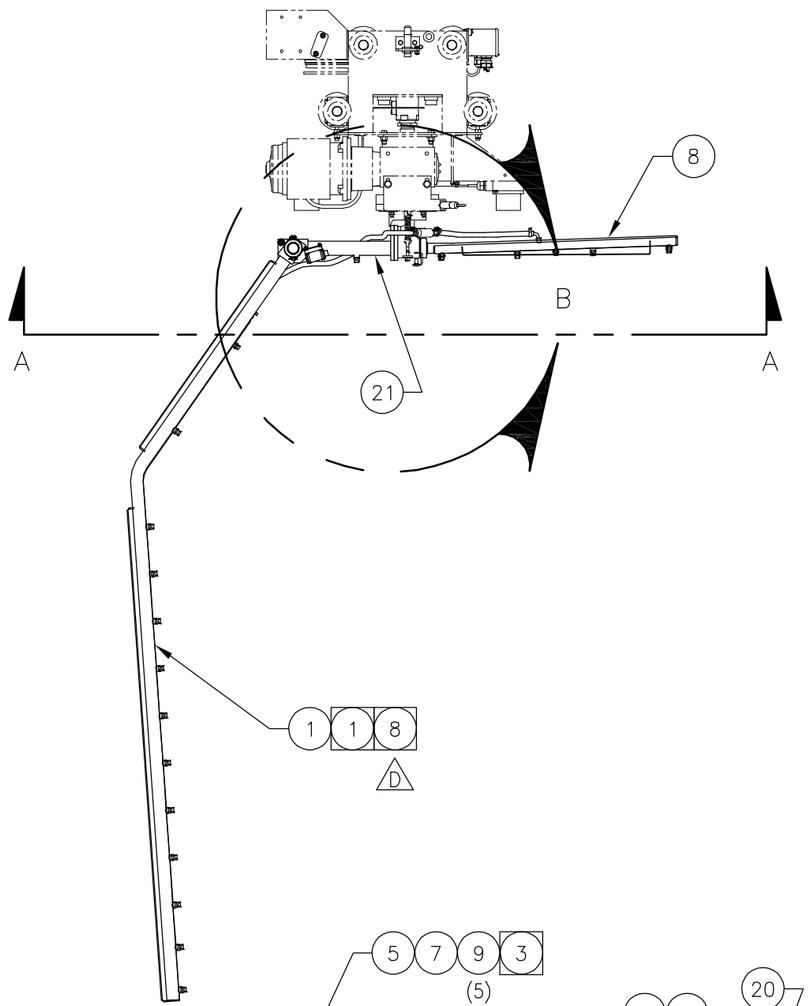
SPRAY ARCH OPTION/ W/BREAK,84"

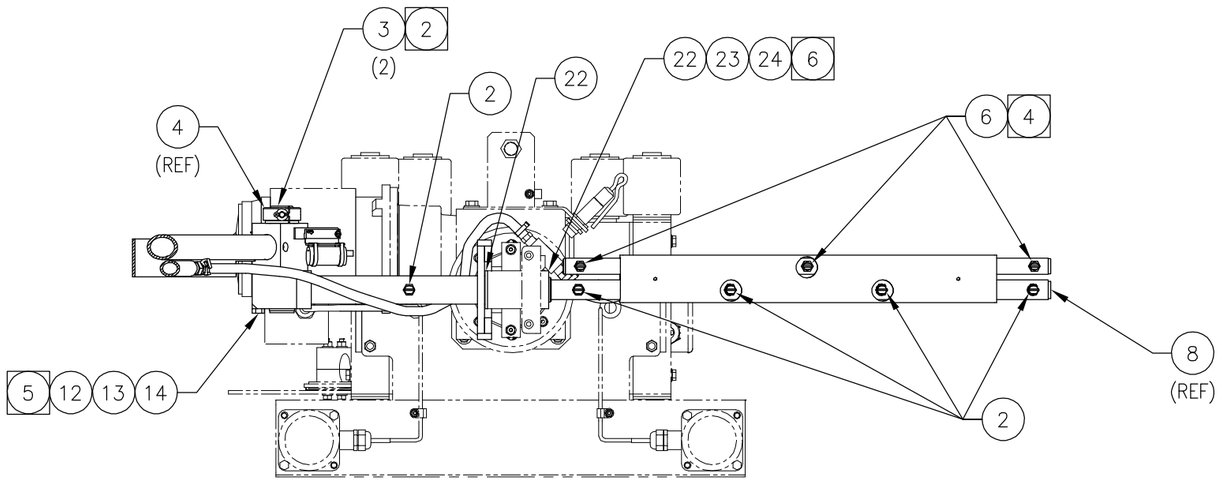
PART NO. 27155-003 REVISION D

ITEM	QTY.	UOM	PART NO.	DESCRIPTION
4	1	EA	10170-213	COLLAR/SET,MOD,1.3"ID,SS
23	1	EA	10170-214	COLLAR/SET,1-5/16"ID,SS
5	1	EA	10185-000	PIN/CLEVIS,5/16x2-1/2
7	1	EA	10186-209	PIN/COTTER,1/8X1",SS
2	5	EA	10226-274	NOZZLE/ 1/4MPTX25DEGX1.5GPM,SS
6	3	EA	10226-306	NOZZLE/1/8MPTX80DEGX0.8GPM,PLS
13	1	EA	10428-202	WASHER/FLAT,3/8"SAE,SS
9	5	EA	10428-203	WASHER/FLAT,5/16"SAE,SS
18	4	EA	10764-205	CLAMP/HOSE,SNAP,3/8",PLS
20	1	EA	10766-202	ELBOW/PLS,1/4HOSEx1/8MPT
16	3	FT	10779-000	HOSE/AIR,1/4",150PSI,BLACK
3	2	EA	10951-209	O-RING/ 1-1/4IDX1-1/2OD
24	1	EA	11695-200	THREADLOCK COMPOUND
10	1	EA	12748-004	WASHER/PLS,1.75ODX1.319IDX1/8
22	2	EA	12748-005	WASHER/PLS,2.00ODX1.536IDX1/8
14	1	EA	14829-002	NUT/LOCK,THIN,3/8-16NC,NYL INS
21	1	EA	21856-011	MANIFOLD WLDT/SPRAY ARCH,SWV
12	1	EA	24598-001	BOLT/SHEAR,SPRAY ARCH
8	1	EA	27146-004	MANIFOLD WLDT/SPRAY ARCH,TOP
1	1	EA	27154-003	SPRAY ARCH ASSY/SIDE,W/BRK,84"

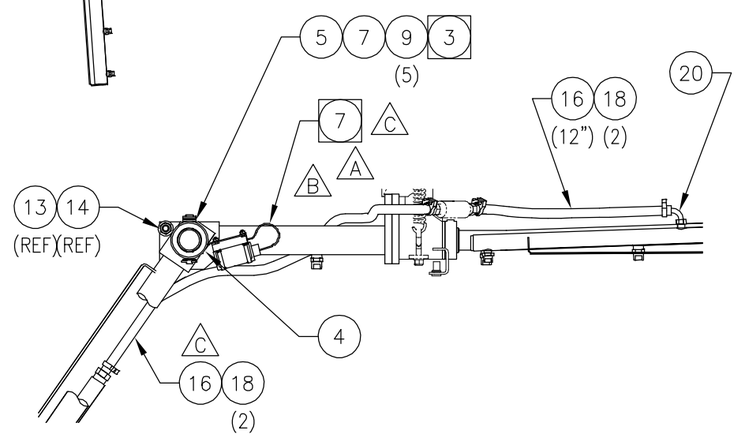
NOTES:

1. THE ARM BREAKAWAY FORCE WILL BE MEASURED IN BOTH DIRECTIONS. THE FORCE TO ROTATE THE VERTICAL ARM OUT OF ITS DETENTED POSITION WILL BE 10 TO 15 POUNDS. THE FORCE WILL BE APPLIED TO THE SPRAY ARCH ASSEMBLY (ITEM #1) IMMEDIATELY ABOVE THE BOTTOM NOZZLE. ADJUSTMENTS CAN BE MADE BY LOOSENING OR TIGHTENING THE SPRINGS THAT HOLD THE PLUNGER DOWN.
2. CLEAN THE END OF HORIZONTAL SPRAY MANIFOLD WELDMENT WITH A FINE GRIT UTILITY CLOTH (200 GRIT MAXIMUM) BEFORE INSTALLING SIDE MANIFOLD ASSEMBLY (ITEM #1). APPLY SOAP AND WATER SOLUTION (25% MAXIMUM SOAP CONTENT) INSIDE SIDE MANIFOLD ASSEMBLY TO LUBRICATE O-RING FOR ASSEMBLY.
3. PUT FOUR (4) WASHERS (ITEM #9) UNDER HEAD OF CLEVIS PIN (ITEM #5).
4. ALIGN NOZZLE SPRAY HORIZONTALLY WITH THE TOP MANIFOLD WELDMENT (ITEM #8).
5. DO NOT INSTALL WASHER UNDER HEAD OF SHEAR BOLT (ITEM #12). DRAW THE TWO HALVES OF THE SWIVEL CONNECTION TOGETHER BY TIGHTENING THE NUT (ITEM #14). LOOSEN THE NUT APPROXIMATELY 1/4 TURN, UNTIL THE WASHER CAN SPIN EITHER FREELY OR WITH LITTLE RESISTANCE.
6. APPLY A 1/16" WIDE STRIP OF THREADLOCK COMPOUND (ITEM #24) TO SET SCREW. WIPE AWAY EXCESS FROM COLLAR (ITEM #23).
7. (C) PLUG TILT SWITCH INTO TRANSMITTER, IF NOT ALREADY CONNECTED.
8. (A) THE MAXIMUM DISTANCE THE VERTICAL SPRAY ARM CAN BE ROTATED OUT OF ITS DETENT POSITION AND KEEP THE ARM TILT PROX SWITCH (B16) LIT IS 12"-20". ADJUSTMENTS TO THE ARM TILT DISTANCE SHOULD BE MADE BY LOWERING OR RAISING THE PROX MOUNT BRACKET. (D)





VIEW A-A
(ENLARGED FOR CLARITY)



DETAIL B
(ENLARGED FOR CLARITY)

LTR	DESCRIPTION	BY	DATE	APVD
D	0707-100 ADD NOTE 8	GA	7/20/07	GDL
C	0307-073 REV ITEM 1, NOTE 7 & ITEM 16	GA	4/2/07	GDL
B	0107-020 REP ITEM 15	WD	1/11/07	GDL
A	1106-049 ADD ITEM #15	TB	11/14/06	MAF
-	0906-020 RELEASED DRAWING	WD	9/20/06	MAF

PRODUCT
RADIUS

TOLERANCES
UNLESS OTHERWISE SPECIFIED

1. ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.

MATERIAL: SEE PRODUCT STRUCTURE

SCALE	DATE	APVD	DATE
NONE	9/18/06	MAF	9/20/06
DRAWN	CHK'D		
WEDDLE	WD/MAF		

RYKO® MFG. CO. U.S.A.
GRIMES,IOWA 50111

SPRAY ARCH OPTION/ W/BREAK,84"

REV. D | DWG. NO. 27155-003

FORM #19477-037 REV B 01/20/97

Parts Listing for Work Order 7527830 **P-63**

TRIFOAM WAX OPTION

PART NO. 27159-008 REVISION -

NO DRAWING

ITEM	QTY.	UOM	PART NO.	DESCRIPTION
1	1	EA	24316-007	TRIFOAM OPTION
2	1	EA	24316-008	TRIFOAM SPOTLIGHT OPTION

Parts Listing for Work Order 7527830 **P-64**

HOT PS OPT/1 HEAT,2-STEP,230V

PART NO. 27159-014 REVISION A

NO DRAWING

ITEM	QTY.	UOM	PART NO.	DESCRIPTION
1	1	EA	24341-018	HOT PRESOAK OPT/1-HEAT,2-STEP

Parts Listing for Work Order 7527830 **P-65**

SPRAY ARCH OPTION/ W/BREAK,84"

PART NO. 27159-016 REVISION -

NO DRAWING

ITEM	QTY.	UOM	PART NO.	DESCRIPTION
1	1	EA	27155-003	SPRAY ARCH OPTION/ W/BREAK,84"

Parts Listing for Work Order 7527830 **P-66**

BACKLIGHT OPTION/WHITE

PART NO. 27159-028 REVISION -

NO DRAWING

ITEM	QTY.	UOM	PART NO.	DESCRIPTION
1	1	EA	27264-000	BACKLIGHT OPTION/WHITE

Parts Listing for Work Order 7527830 **P-67**

RADIUS ASSY/208-230V

PART NO. 27159-029 REVISION A

NO DRAWING

ITEM	QTY.	UOM	PART NO.	DESCRIPTION
7	1	EA	01210-002	TEST PROC/RADIUS,FX3U
0	30	EA	10370-213	SCREW/HHC,1/2-13x1-1/2,PLATED
0	2	EA	10877-239	SCREW/HHC,1/2-13x3,SS
0	32	EA	10878-209	NUT/ 1/2-13,NYL INS,ZN PL
0	2	EA	16342-000	LABEL/LIFT HERE
0	1	EA	20118-001	CROSS CHANNEL WLDT
6	1	EA	22040-003	TROLLEY DRIVE ADDITION
5	1	EA	22110-019	TROLLEY ADDITION/208-230V
2	1	EA	22409-013	BOOM ADDITION/MACHINE
1	1	EA	24250-016	GANTRY ASSY/RADIUS
3	1	EA	24268-004	RINSE ADDITION
4	1	EA	24281-022	DRIVE ADDITION/GANTRY,208-230V
0	2	EA	24383-000	SPREADER CHANNEL WLDT
0	2	EA	24385-000	ANGLE WLDT/SHIPPING BRACE
0	2	EA	24388-000	SHIPPING BRKT WLDT/END
0	2	EA	25470-000	SHIPPING BRKT WLDT/FORKLIFT

Parts Listing for Work Order 7527830 **P-68**

GANTRY ELEC ADDN/ARM BREAKAWAY

PART NO. 27159-032 REVISION - **NO DRAWING**

ITEM	QTY.	UOM	PART NO.	DESCRIPTION
1	1	EA	24310-113	GANTRY ELEC ADDN/ARM BREAKAWAY

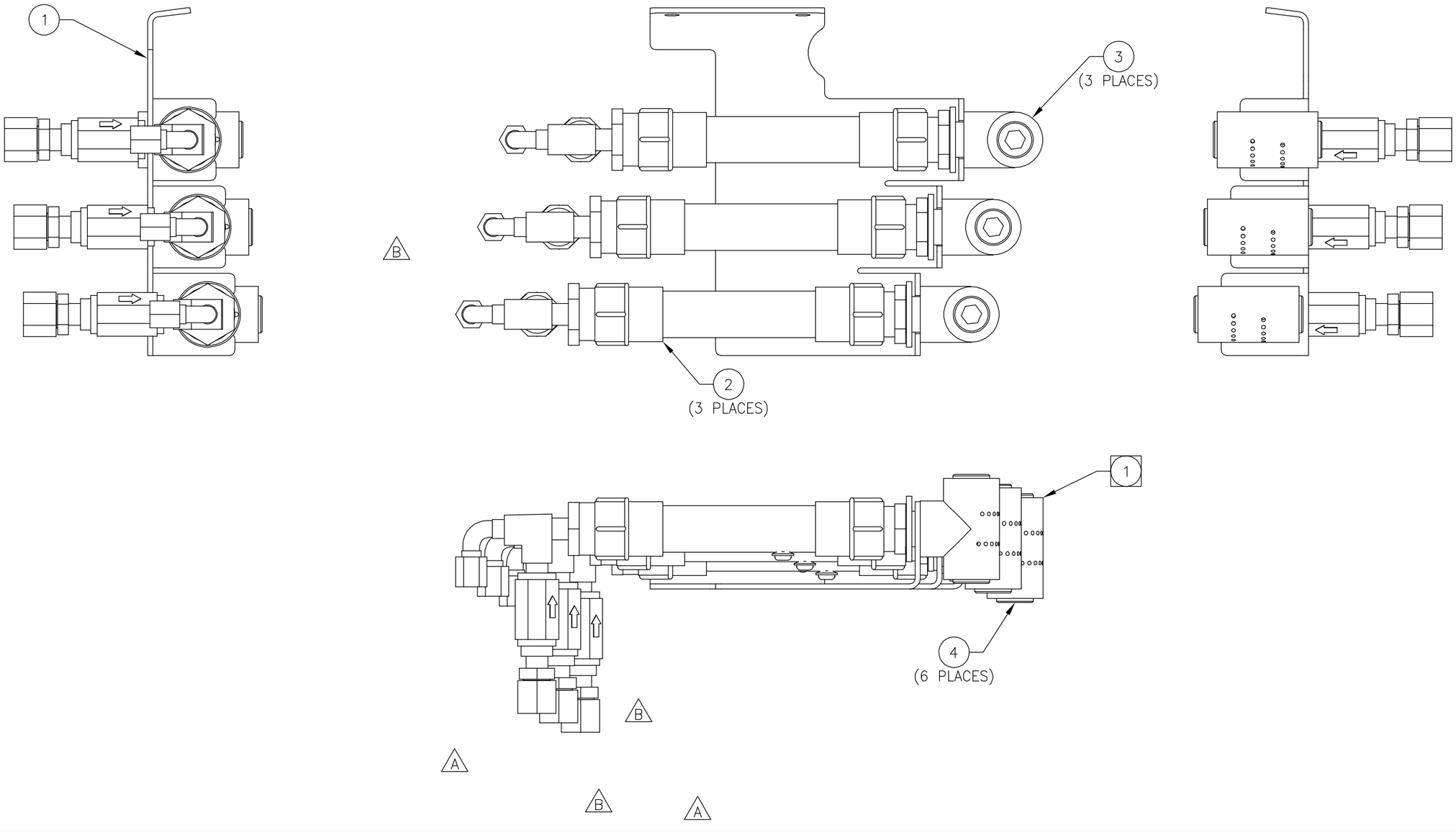
FOAMER ASSY/TRIFOAM,RIGHT

PART NO. 27183-100 REVISION C

ITEM	QTY.	UOM	PART NO.	DESCRIPTION
4	6	EA	10897-203	PLUG/PIPE,1/2 HEX SKT HD,GALV
2	3	EA	24502-002	FOAMER SUBASSY/TRIFOAM WAX
3	3	EA	24508-002	TEE MANIFOLD/TRIFOAM WAX
1	1	EA	27185-100	FOAMER BRACKET/TRIFOAM,RIGHT

NOTE:

1 ORIENT TEE WITH SPRAY HOLES AS SHOWN (3 PLACES).



LTR	ECO	DESCRIPTION	BY	DATE	APVD
C	0307-095	REP FOAMER SUBASSY ITEM #2	GA	4/12/07	GDL
B	1106-052	REPLACE FOAMER BRKT,DEL VALVE	GA	11/28/06	GDL
A	1006-002	ADD ITEM 5, 6 AND 7	CP	10/5/06	GL
–	0806-109	RELEASING DRAWING	CP	9/5/06	GL

PRODUCT

RADIUS

TOLERANCES
UNLESS OTHERWISE SPECIFIED

1. ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.

MATERIAL SEE PRODUCT STRUCTURE

SCALE NONE | DATE 8/30/06 | CHK'D WA/CP

DRAWN CP | APVD GL | DATE 9/5/06

RYKO® MFG. CO.
GRIMES,IOWA 50111 U.S.A.

FOAMER ASSY/
TRIFOAM,RIGHT

REV. C | DWG. NO. 27183-100

FORM #19477-037 REV B 01/20/97

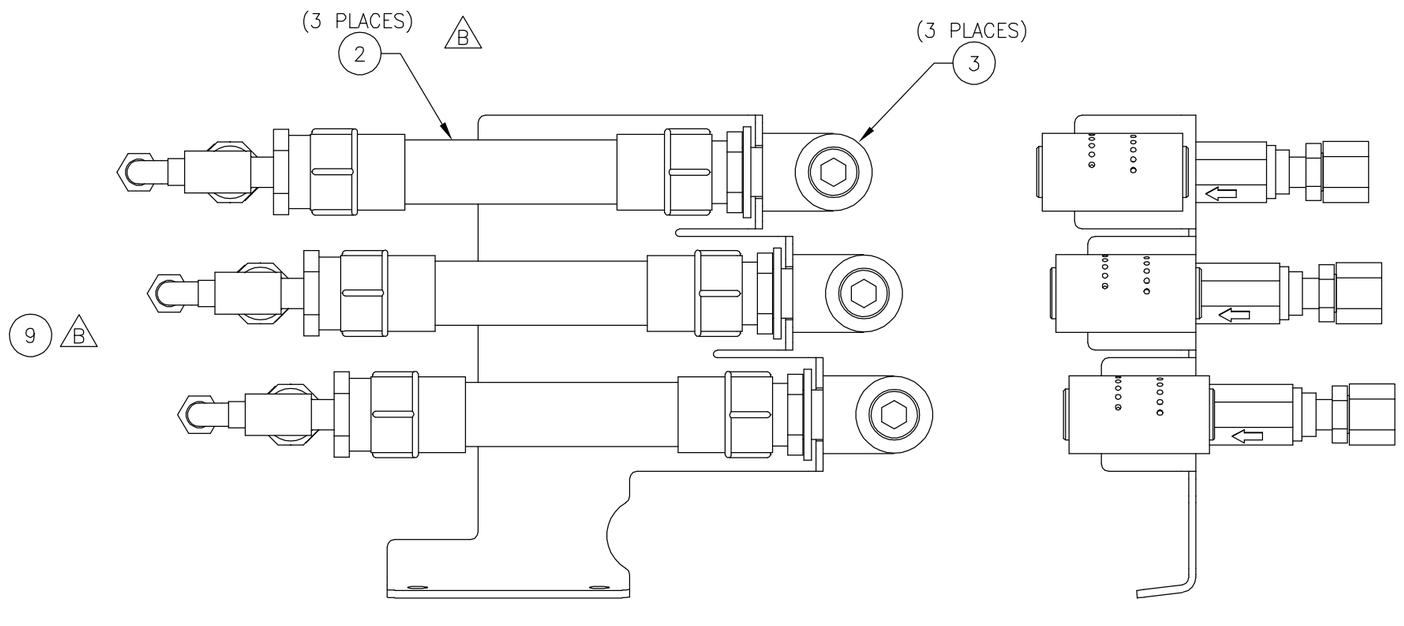
FOAMER ASSY/TRIFOAM,LEFT

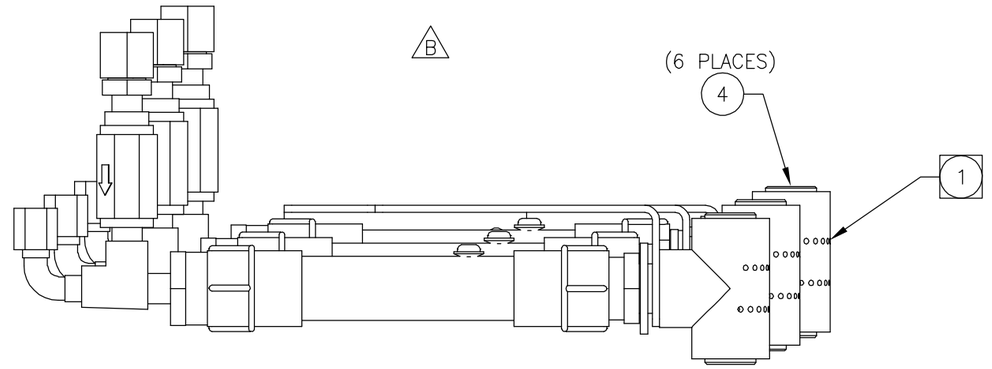
PART NO. 27183-101 REVISION C

ITEM	QTY.	UOM	PART NO.	DESCRIPTION
4	6	EA	10897-203	PLUG/PIPE,1/2 HEX SKT HD,GALV
2	3	EA	24502-002	FOAMER SUBASSY/TRIFOAM WAX
3	3	EA	24508-002	TEE MANIFOLD/TRIFOAM WAX
1	1	EA	27185-101	FOAMER BRACKET/TRIFOAM,LEFT

NOTE:

(1) ORIENT TEE WITH SPRAY HOLES AS SHOWN (3 PLACES).





LTR	ECO	DESCRIPTION	BY	DATE	APVD
C	0307-095	REP FOAMER SUBASSY ITEM#2	GA	4/12/07	GDL
B	1106-052	REPLACE FOAMER BRKT,DEL VALVE	GA	11/28/06	GDL
A	1006-002	ADD ITEM 5, 6 AND 7	CP	10/5/06	GL
–	0806-109	RELEASING DRAWING	CP	9/5/06	GL

FORM #19477-037 REV B 01/20/97

PRODUCT RADIUS

TOLERANCES UNLESS OTHERWISE SPECIFIED

MATERIAL SEE PRODUCT STRUCTURE

SCALE NONE | DATE 8/30/06

DRAWN CP | CHK'D WA/CP

APVD GL | DATE 9/5/06

1. ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.

RYKO® MFG. CO.
GRIMES,IOWA 50111 U.S.A.

FOAMER ASSY/ TRIFOAM,LEFT

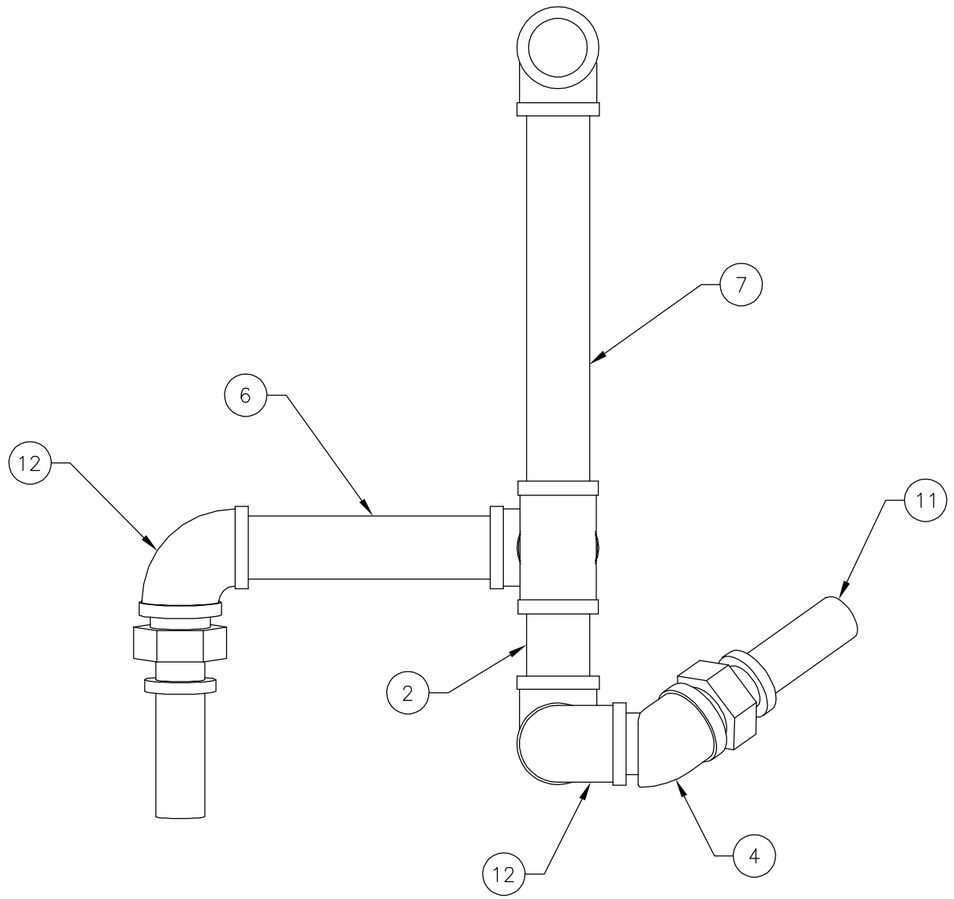
REV. C

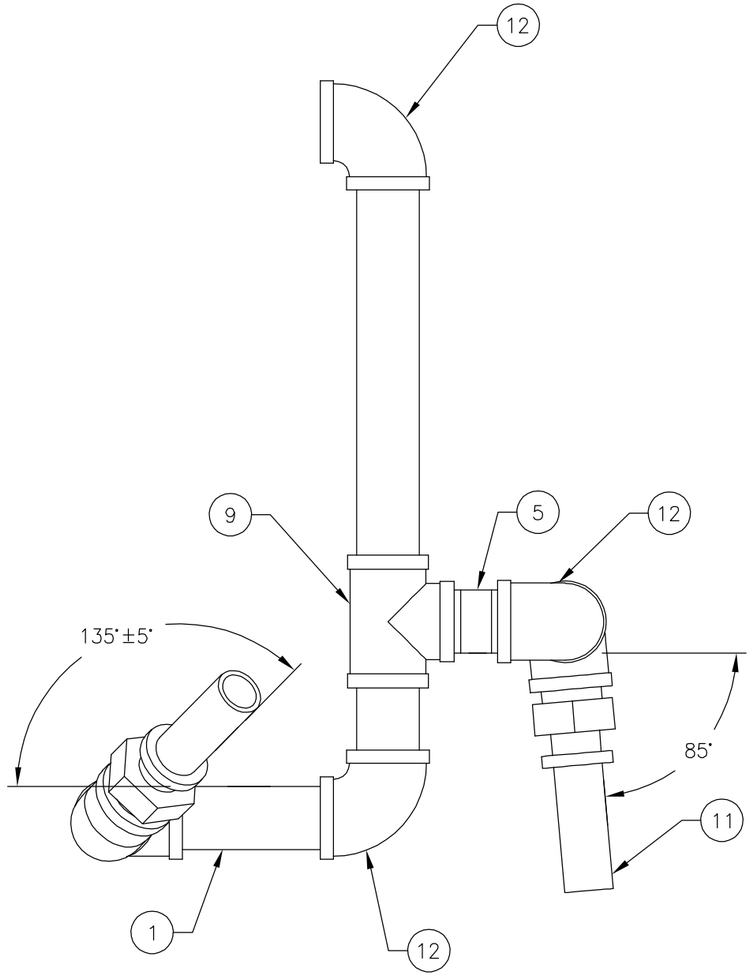
DWG. NO. 27183-101

MANIFOLD ASSY/WASH WATER

PART NO. 27190-000 REVISION A

ITEM	QTY.	UOM	PART NO.	DESCRIPTION
12	5	EA	10250-210	ELBOW/GALV,1-1/4"FPT
9	1	EA	10251-207	TEE/GALV,1-1/4"NPT
1	1	EA	10254-275	NIPPLE/GALV PIPE,1-1/4x5
5	1	EA	10254-289	NIPPLE/GALV PIPE,1-1/4X2-1/2LG
2	1	EA	10254-291	NIPPLE/GALV PIPE,1-1/4X3
11	2	EA	10259-219	HOSE BARB/PLD,1.25HOSEx1.25MPT
4	1	EA	14541-007	ELBOW/GALV,STREET,45DEG,1-1/4
6	1	EA	18030-004	PIPE/GALV,1-1/4X7-3/4L,TBE
7	1	EA	18030-006	PIPE/GALV,1-1/4X11LG,TBE





LTR	DESCRIPTION	DATE	APVD
A	0906-065 REVISED HOSE BARB LOCATION	10/4/06	GL
–	0806-108 RELEASING DRAWING	9/6/06	GL
	ECO	BY	

FORM #19477-037 REV B 01/20/97

PRODUCT: RADIUS

TOLERANCES UNLESS OTHERWISE SPECIFIED
ANGULAR: ±1°

1. ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.

MATERIAL: SEE PRODUCT STRUCTURE

SCALE	NONE	DATE	8/21/06
DRAWN	CP	CHK'D	WA/CP
APVD	GL	DATE	9/6/06

RYKO® MFG. CO. U.S.A.
GRIMES,IOWA 50111

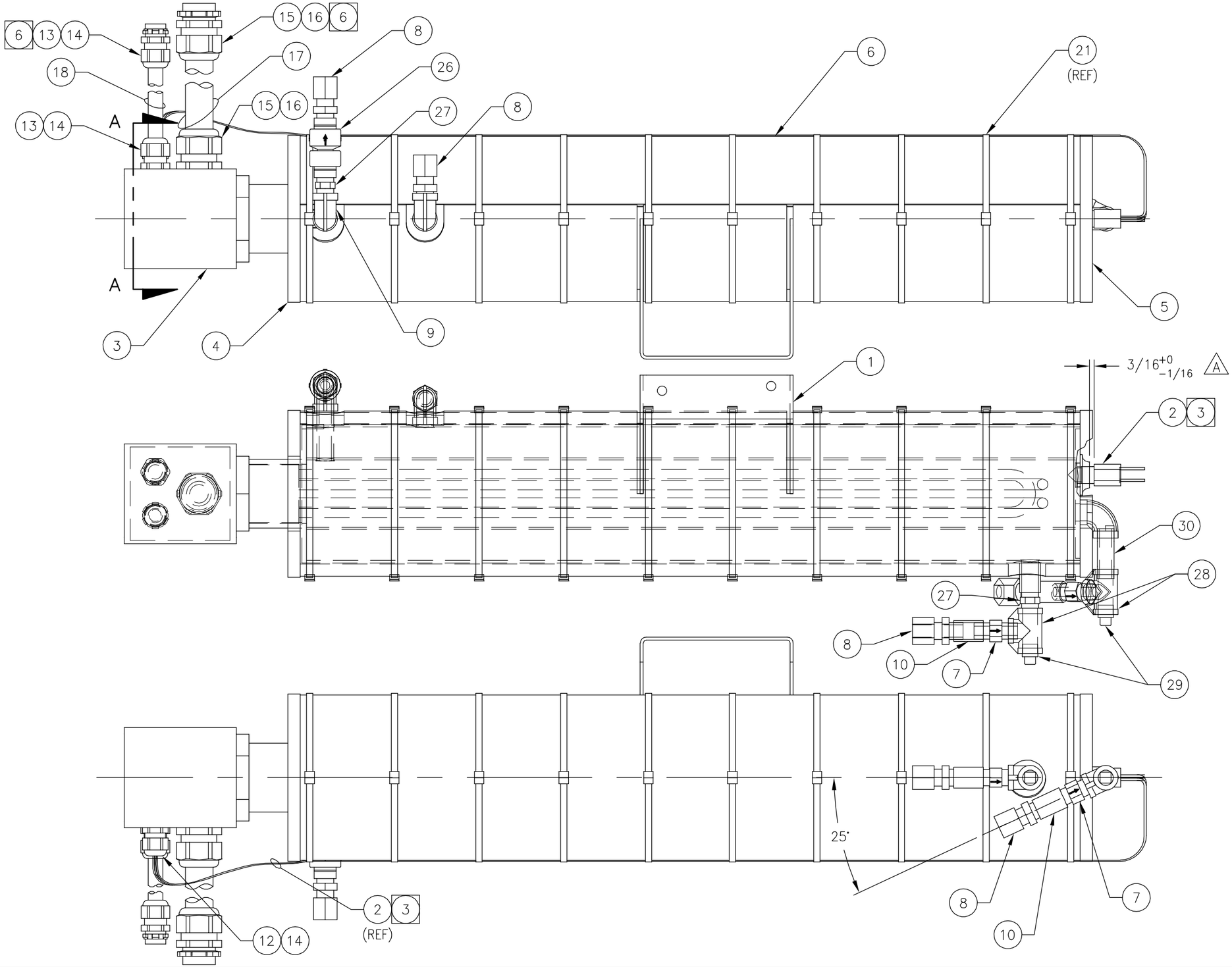
MANIFOLD ASSY/
WASH WATER

REV. A | DWG. NO. 27190-000

TANK ASSY/GANTRY,2-STEP PS

PART NO. 27220-002 REVISION A

ITEM	QTY.	UOM	PART NO.	DESCRIPTION
21	20	EA	10005-205	WIRE TIE/12",3-1/2"MAX DIA
10	2	EA	10257-212	COUPLING/PIPE,SS,3/8"
18	55	FT	10285-000	CABLE/ 18/8,600V,UL/CSA
23	4	EA	10305-204	TERMINAL/RING,#10,8G,RED
24	3	EA	10345-203	WIRE NUT/GREY
12	1	EA	10362-239	CONN/STR RLF,PLS,1/2,.197-.354
13	2	EA	10362-241	CONN/STR RLF,PLS,1/2,.394-.551
15	2	EA	10362-245	CONN/STR RLF,PLS,1.0,.551-.787
14	3	EA	10363-209	CONDUIT LOCKNUT/SEAL,1/2",STL
16	2	EA	10363-210	CONDUIT LOCKNUT/SEAL,1",STEEL
25	1	EA	10384-001	TAPE/ELECTRICAL,3/4",RED
22	2	EA	10495-201	TERMINAL/RCPT,SLIP,22-18G,RED
8	4	EA	11260-237	CONN/FERR,1/2"TUBEX3/8"MPT,KYN
27	2	EA	11263-206	NIPPLE/BRS,3/8xCLOSE,HEX
29	2	EA	11555-203	PLUG/PIPE,BRS,3/8MPT,SQ HD
7	2	EA	11747-208	VALVE/CHECK,3/8"HEX NIPPLE,SS
17	55	FT	11914-000	CABLE/ 8/4,600V,60C,UL,CSA
3	1	EA	12409-049	HEATER/TK,12KW,230/380/415/460
2	1	EA	13776-017	SWITCH/FLOAT,SIDE ENT,OPTICAL
30	1	EA	14006-001	NIPPLE/SS,3/8"x2"LG
9	1	EA	14008-001	ELBOW/SS,3/8FPT
28	2	EA	14009-001	TEE/SS,3/8FPT
4	1	EA	21869-044	INSULATION/FOAM,6.69 DIA,1 HL
5	1	EA	21869-045	INSULATION/FOAM,6.69 DIA,2 HL
6	1	EA	21869-046	INSULATION/FOAM,19.25X31.25
26	1	EA	24901-000	VALVE/ANTISIPHON,3/8 NPT
1	1	EA	27221-001	TANK WLDT/2 CHEM PS,GANTRY



LTR	DESCRIPTION	BY	DATE	APVD
A	0607-111 ADD DIMENSION	WD	7/5/07	GDL
–	0407-066 RELEASED DRAWING	WD	5/2/07	MAF

FORM #19477-037 REV B 01/20/97

PRODUCT
RADIUS

TOLERANCES
UNLESS OTHERWISE SPECIFIED
LOCATIONS: ±1/16
ANGULAR: ±5°

1. ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.

MATERIAL
SEE PRODUCT STRUCTURE

SCALE NONE | DATE 4/24/07
DRAWN WEDDLE | CHK'D WD
APVD | DATE
MAF | 5/2/07

RYKO® MFG. CO.
GRIMES,IOWA 50111 U.S.A.

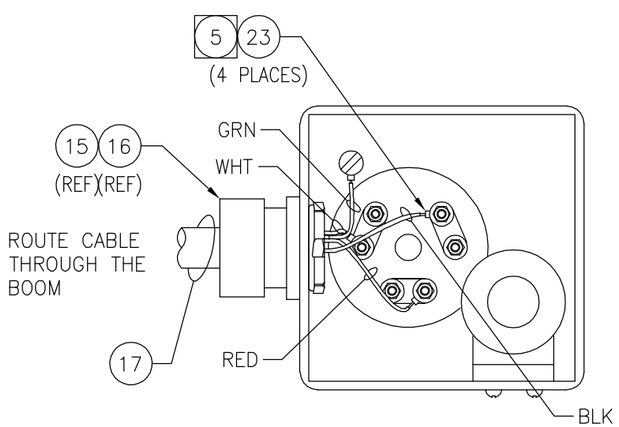
TANK ASSY/GANTRY, 2-STEP PS

REV. A | DWG. NO. 27220-002

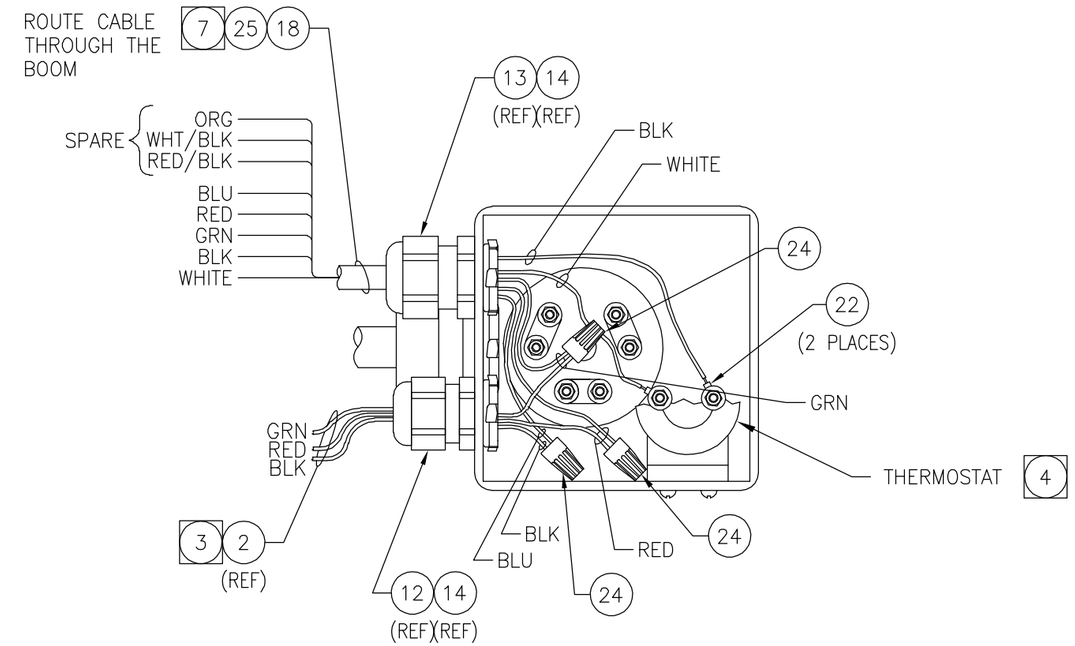
SHEET 1 OF 2

NOTES:

1. INSTALL INSULATION (ITEMS #4, 5, AND 6) BEFORE ANY ITEMS. BUTT ONE END (ITEM #6) UP AGAINST LEGS, AND WRAP AROUND PERIMETER OF TANK WELDMENT, INSTALL ITEMS 4 AND 5 ON THE ENDS, THEN PROCEED TO ADD WIRE TIES (SEE NOTE 2).
2. CONNECT (2) WIRE TIES (ITEM #21) TOGETHER AND LOOP AROUND PERIMETER OF INSULATION (ITEM 11). TIGHTEN WIRE TIES UNTIL TIGHT AROUND PERIMETER AND REPEAT 10 TIMES ALONG LENGTH OF INSULATION, SPACING EVENLY. (SEE NOTE 3 FOR FURTHER INSTRUCTIONS.)
3. RUN FLOAT SWITCH WIRES (ITEM #2) UNDER WIRE TIES ON TANK AND INTO STRAIN RELIEF (ITEM #12) AND CONNECT TO BLUE, RED, AND GREEN WIRES OF 18/8 CABLE (ITEM #18), AS SHOWN.
4. THERMOSTAT TERMINALS MAY BE ORIENTED 90° FROM POSITION SHOWN AND KNOB MAY NOT BE PRESENT DEPENDING ON MANUFACTURER.
5. RED, BLACK, AND WHITE WIRES OF 8/4 CABLE (ITEM #17) CAN BE CONNECTED TO ANY OF THE HEATER TERMINALS. CONNECT GREEN WIRE TO GROUND LUG.
6. FINGER TIGHTEN STRAIN RELIEFS (ITEMS 13 & 15) AND LOCKNUTS (ITEMS 14 & 16) TO THEIR RESPECTIVE CABLES FOR FUTURE ASSEMBLY.
7. WRAP RED TAPE (ITEM #25) AROUND BOTH ENDS OF 18/8 CABLE (ITEM #18), 12" FROM CABLE END MINIMUM. CONNECT THE CABLE WIRES TO THE THERMOSTAT SWITCH AS SHOWN. CUT OFF THE 3 SPARE WIRES ON BOTH ENDS OF THE CABLE. THE 18/8 CABLE WILL BE ROUTED THROUGH BOOM ON A FUTURE ASSEMBLY.



VIEW A–A
(COVER NOT SHOWN FOR CLARITY)
(ENLARGED FOR CLARITY)
(8/4 CABLE (ITEM #17) CONNECTIONS)



VIEW A–A
(COVER NOT SHOWN FOR CLARITY)
(ENLARGED FOR CLARITY)
(18/8 CABLE (ITEM #18), THERMOSTAT, AND FLOAT SWITCH (ITEM #2) WIRE CONNECTIONS)

LTR	ECO	DESCRIPTION	BY	DATE	APVD
A	0607–111	ADD DIMENSION (SHEET 1)	WD	7/5/07	GDL
–	0407–066	RELEASED DRAWING	WD	5/2/07	MAF

FORM #19477–037 REV B 01/20/97

PRODUCT: RADIUS

TOLERANCES UNLESS OTHERWISE SPECIFIED

1. ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.

MATERIAL: SEE PRODUCT STRUCTURE
SCALE: NONE
DRAWN: WEDDLE
DATE: 4/24/07
CHK'D: WD
APVD
DATE: 5/2/07
MAF

RYKO® MFG. CO. U.S.A.
GRIMES,IOWA 50111

TANK ASSY/GANTRY, 2–STEP PS

REV. A
DWG. NO. 27220–002

SHEET 2 OF 2

BACKLIGHT OPTION/WHITE

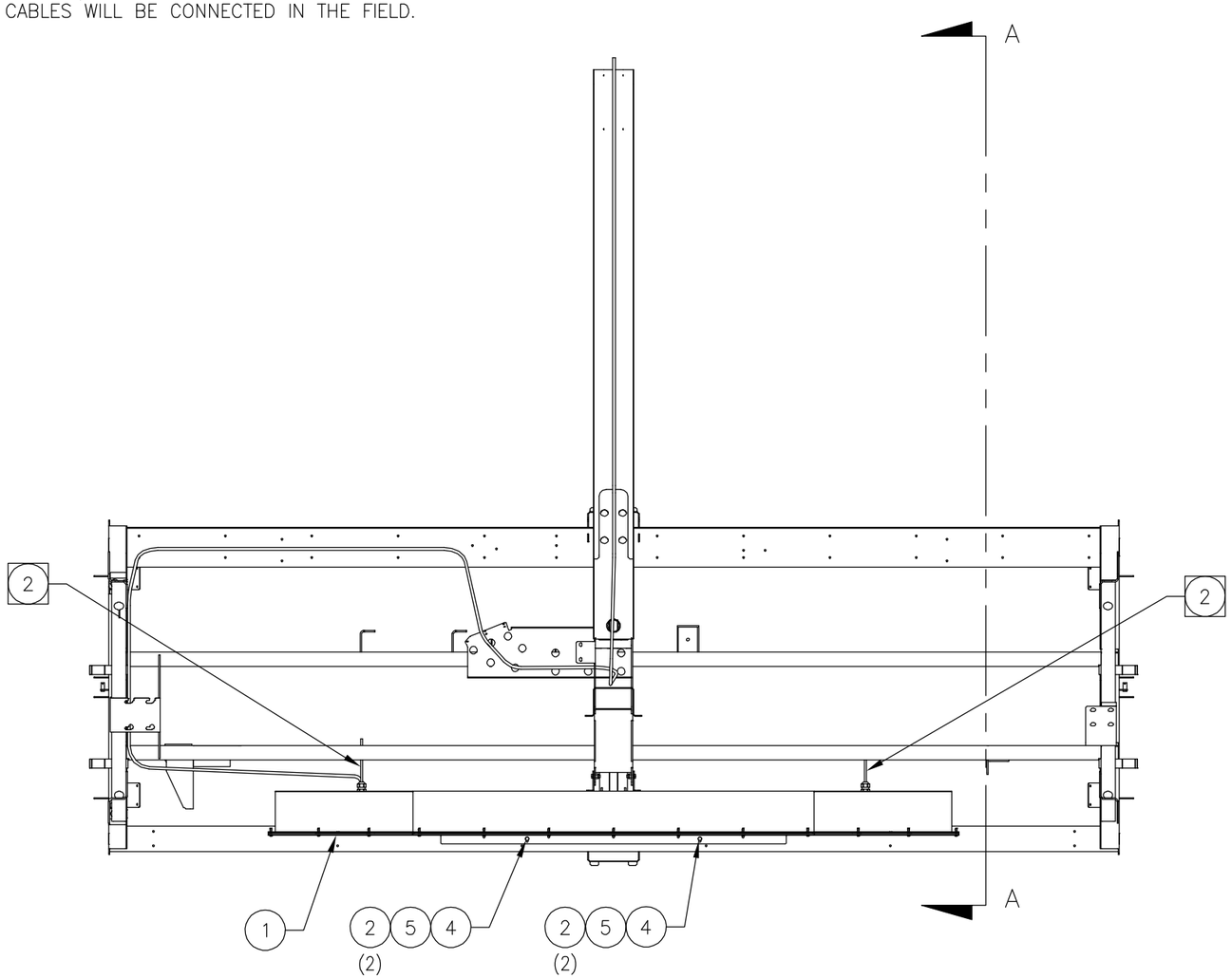
PART NO. 27264-000 REVISION -

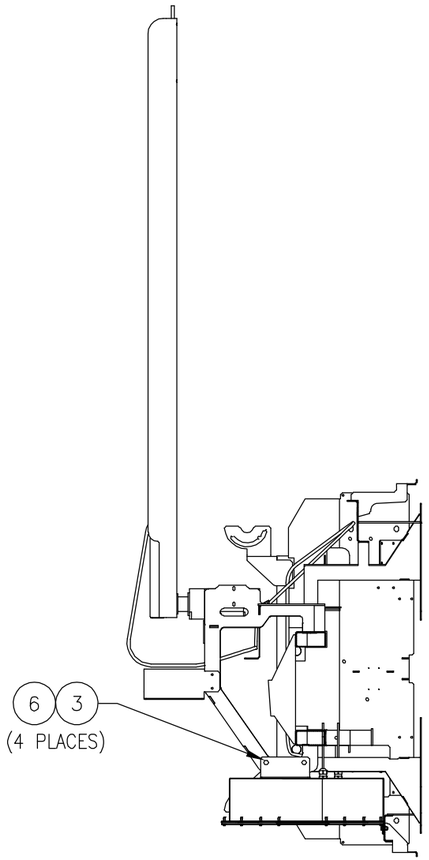
ITEM	QTY.	UOM	PART NO.	DESCRIPTION
7	10	EA	10005-203	WIRE TIE/6",1-3/4"MAX DIA
2	4	EA	10428-205	WASHER/FLAT,1/4"SAE,SS
3	4	EA	10877-206	SCREW/HHC,3/8-16x1",SS
4	2	EA	10877-220	SCREW/HHC,1/4-20x3/4,SS
5	2	EA	10878-205	NUT/ 1/4-20,NYL INS,ZN PL
6	4	EA	10878-207	NUT/ 3/8-16,NYL INS,ZN PL
1	1	EA	27265-000	LIGHT BOX ASSY/LARGE

NOTE:

1. ROUTE 14/3 CABLE THROUGH GANTRY AND BOOM. ATTACH TO GANTRY USING WIRE TIES (ITEM #7).

2. COIL 16/2 CABLES AND SECURE TO GANTRY. THESE CABLES WILL BE CONNECTED IN THE FIELD.





SECTION A–A

LTR	ECO	RELEASING DRAWING DESCRIPTION	BY	DATE	APVD
–	0107–050		CP	2/13/07	GDL

FORM #19477–037 REV B 01/20/97

PRODUCT: RADIUS

TOLERANCES UNLESS OTHERWISE SPECIFIED

MATERIAL: SEE PRODUCT STRUCTURE

SCALE: NONE — DATE: 1/17/07

DRAWN: CP — CHK'D: CP

APVD — DATE: 2/13/07

GDL

1. ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.

RYKO® MFG. CO. U.S.A.
GRIMES,IOWA 50111

BACKLIGHT OPTION/ WHITE

REV. –

DWG. NO. 27264–000

Parts Listing for Work Order 7527830 **P-80**

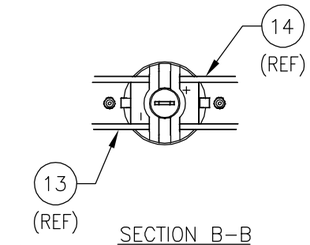
LIGHT BOX ASSY/LARGE

PART NO. 27265-000 REVISION C

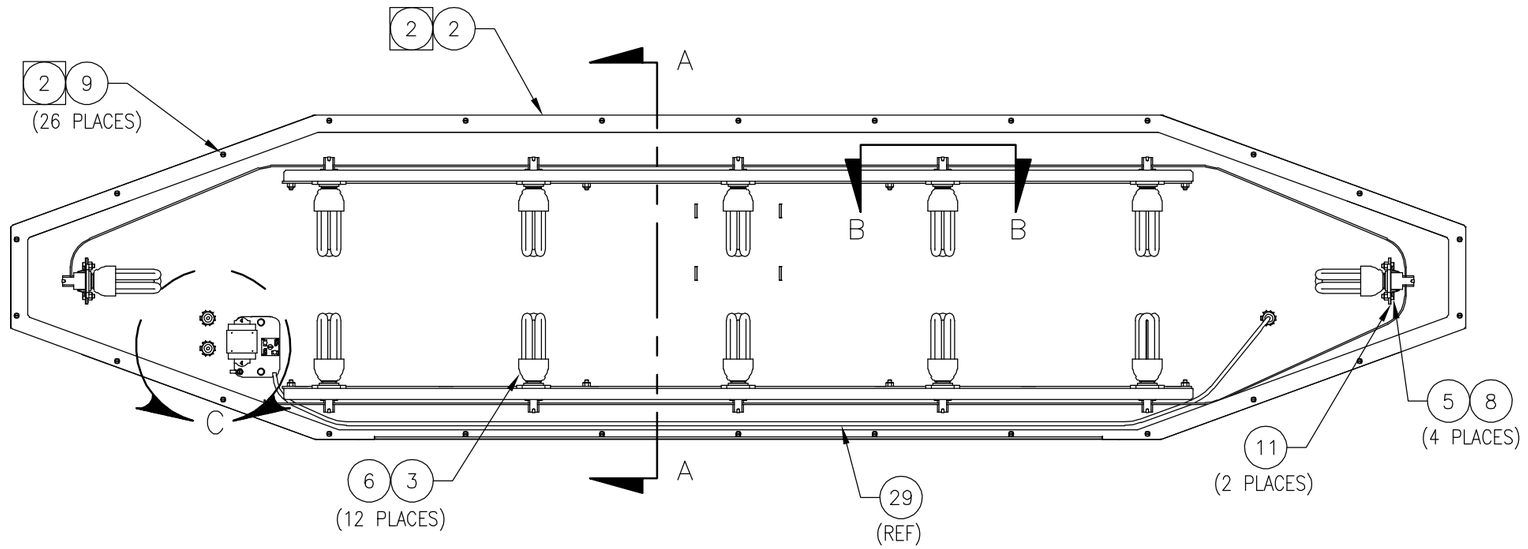
ITEM	QTY.	UOM	PART NO.	DESCRIPTION
33	2	EA	10034-248	SCREW/MACH,1/4-20x1/2,HWH,SS
17	1	EA	10034-249	SCREW/MACH,#10-24x1/2,HWH,SS
9	26	EA	10034-282	SCREW/MACH,#10-24X1,SLHWH,SS
24	2	EA	10039-206	SCREW/MACH,#8-32x1/2,PH,SS
25	1	EA	10039-213	SCREW/MACH,#10-24x3/4,PH,CR,SS
29	25	FT	10237-000	CABLE/ 16/2,SOW OR SEOW
14	15	FT	10281-240	WIRE/STRANDED,16GA,BLACK
34	1	FT	10281-242	WIRE/STRANDED,16GA,RED
13	16	FT	10281-245	WIRE/STRANDED,16GA,WHITE
16	1	EA	10305-203	TERMINAL/RING,#10,16-14G,BLUE
19	4	EA	10345-201	WIRE NUT/YELLOW
21	3	EA	10362-240	CONN/STR RLF,PLS,1/2,.276-.472
22	3	EA	10363-209	CONDUIT LOCKNUT/SEAL,1/2",STL
31	2	EA	10495-201	TERMINAL/RCPT,SLIP,22-18G,RED
30	2	EA	10495-202	TERMINAL/RCPT,SLIP,16-14G,BLUE
5	12	EA	10877-219	SCREW/HHC,1/4-20x5/8,SS
23	2	EA	10878-203	NUT/ #8-32,NYL INS,ZN PL
18	2	EA	10878-204	NUT/ #10-24,NYL INS,ZN PL
8	12	EA	10878-205	NUT/ 1/4-20,NYL INS,ZN PL
27	1	EA	11175-219	DIODE/BRIDGE,25A
3	12	EA	11943-001	SOCKET/LAMP,SNAP-IN
28	60	FT	12576-000	CABLE/ 14/3 SJO,18AMPS,300V
10	29	FT	12969-001	GASKET MATL/PSA,1/8"x1/2"
26	1	EA	13615-004	TRANSFORMER/120-12V,20VA
4	26	EA	16679-003	NUT/RIVET,AL,#10-24,.130 GRIP
32	2	EA	16679-008	NUT/RVT,AL,HEX,1/4-20,.16 GRIP
6	12	EA	17491-041	LAMP/FLUOR,100W,115V,DAYLIGHT
1	1	EA	27266-000	LIGHT BOX WLDT/LARGE
2	1	EA	27273-000	CLAMP PLATE/LENS,LIGHT BOX
7	1	EA	27274-000	LENS/WHITE,LARGE LIGHT BOX
11	2	EA	27275-000	LAMP MOUNT BRACKET/SHORT
12	2	EA	27275-001	LAMP MOUNT BRACKET/LONG
20	1	EA	27303-000	MOUNT PLATE/TRANSFORMER

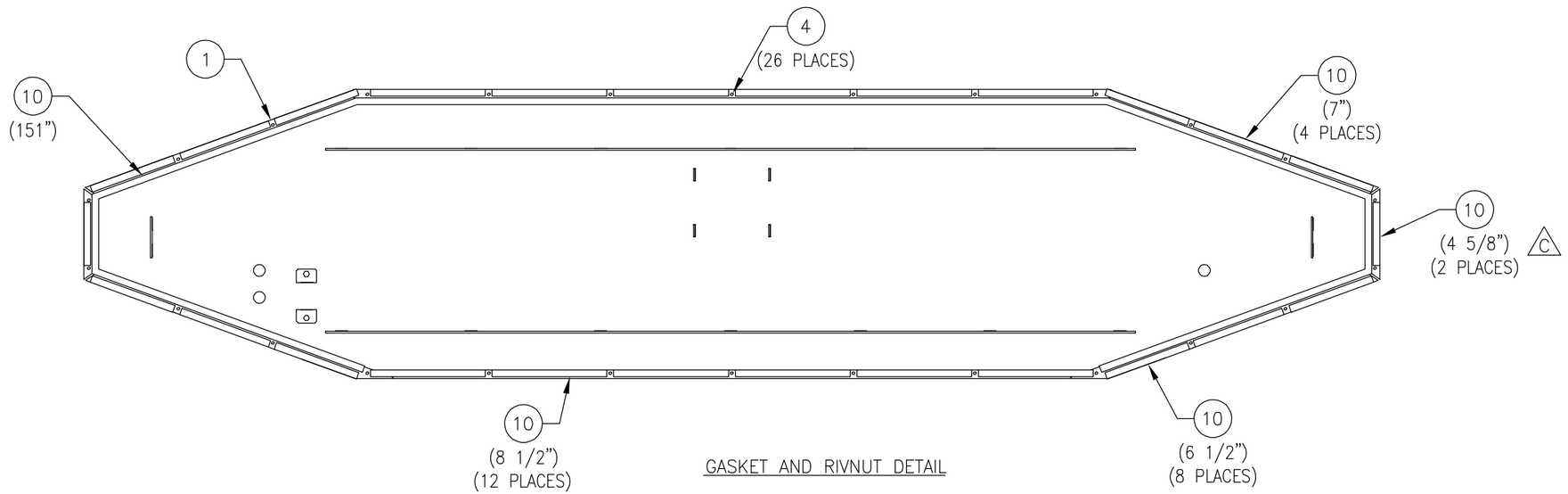
NOTES:

1. LENS (ITEM #7) NOT SHOWN FOR CLARITY. INSTALL LENS IN BETWEEN GASKET (ITEM #10) AND CLAMP PLATE (ITEM #2).
2. TIGHTEN SCREWS UNTIL CLAMP PLATE AND LENS ARE SNUG AGAINST GASKET. DO NOT OVERTIGHTEN.



SECTION B–B
(ENLARGED FOR CLARITY, TYPICAL)





GASKET AND RIVNUT DETAIL

LTR	ECO	DESCRIPTION	BY	DATE	APVD
C	0507–078	SHORTEN SIDE TRIM ITEM #10	GA	5/23/07	GDL
B	0307–072	REV ITEMS 13,14,&30;REP ITEM 31	WD	3/21/07	GDL
A	0307–017	LENGTHEN CABLE	GA	3/20/07	GDL
–	0107–050	RELEASING DRAWING	CP	2/13/07	GDL

PRODUCT: RADIUS

TOLERANCES UNLESS OTHERWISE SPECIFIED: —

1. ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE, UNLESS OTHERWISE SPECIFIED.
2. ALL DIMENSIONS ARE IN INCHES.

MATERIAL: SEE PRODUCT STRUCTURE

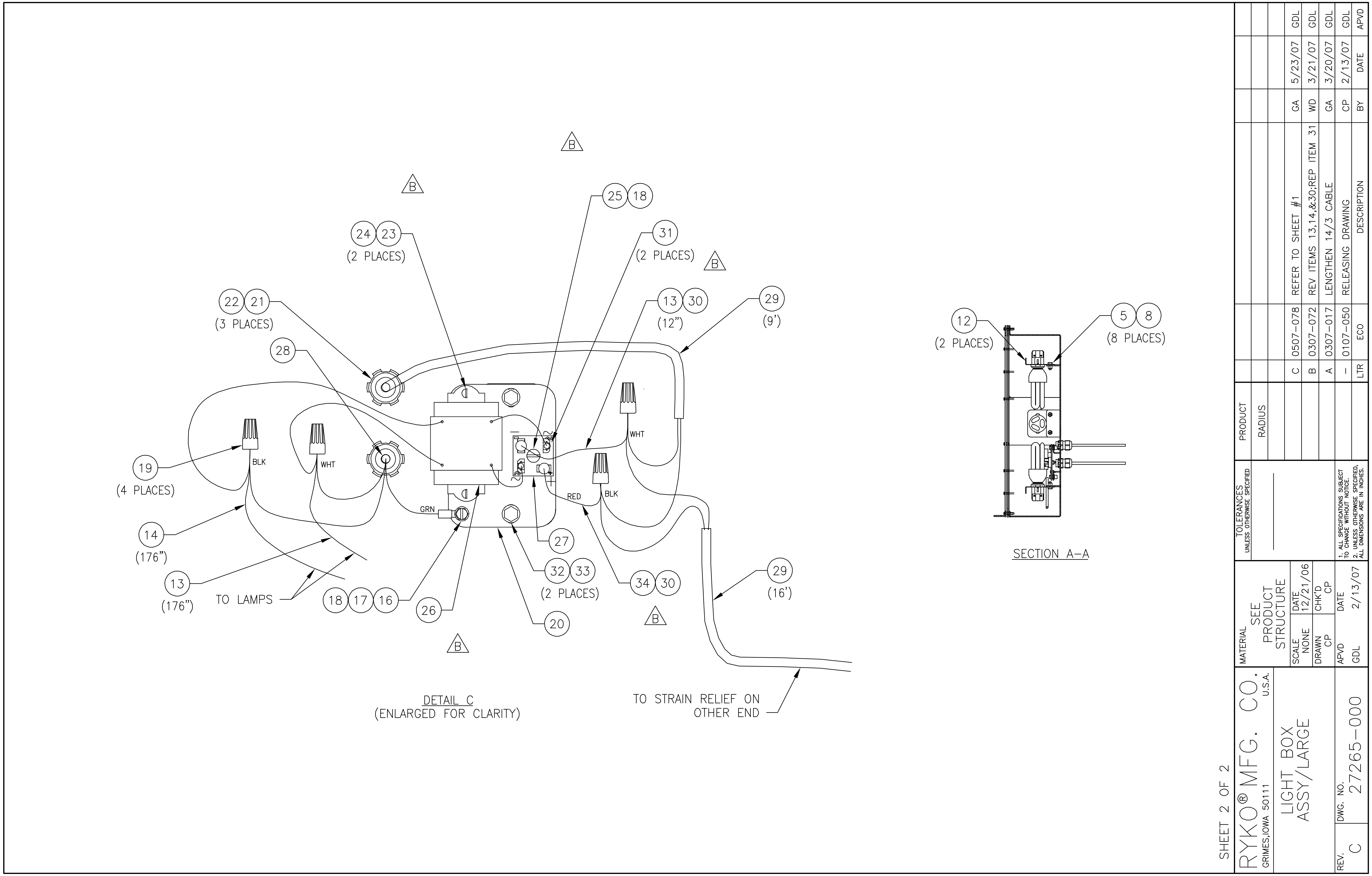
SCALE: NONE | DATE: 12/21/06
DRAWN: CP | CHK'D: CP
APVD | DATE: 2/13/07
GDL

SHEET 1 OF 2

RYKO® MFG. CO. U.S.A.
GRIMES,IOWA 50111

LIGHT BOX ASSY/LARGE

REV. C | DWG. NO. 27265–000


24 23
(2 PLACES)
25 18
31
(2 PLACES)
22 21
(3 PLACES)
13 30
(12")
29
(9')
28
19
(4 PLACES)
BLK
WHT
GRN
RED
14
(176")
13
(176")
TO LAMPS
18 17 16
26
27
32 33
(2 PLACES)
20
34 30
29
(16')
B
DETAIL C
(ENLARGED FOR CLARITY)
TO STRAIN RELIEF ON
OTHER END
12
(2 PLACES)
5 8
(8 PLACES)
SECTION A-A
SHEET 2 OF 2
RYKO® MFG. CO.
GRIMES,IOWA 50111
U.S.A.
LIGHT BOX
ASSY/LARGE
REV. C
DWG. NO. 27265-000
MATERIAL
SEE PRODUCT STRUCTURE
SCALE NONE
DATE 12/21/06
DRAWN CP
CHK'D CP
APVD GDL
DATE 2/13/07
TOLERANCES UNLESS OTHERWISE SPECIFIED
1. ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.
PRODUCT
RADIUS
C 0507-078 REFER TO SHEET #1 GA 5/23/07 GDL
B 0307-072 REV ITEMS 13,14,&30;REP ITEM 31 WD 3/21/07 GDL
A 0307-017 LENGTHEN 14/3 CABLE GA 3/20/07 GDL
– 0107-050 RELEASING DRAWING CP 2/13/07 GDL
LTR ECO DESCRIPTION BY DATE APVD

Parts Listing for Work Order 7527830 **P-83**

RADIUS GANTRY,60HZ

PART NO. 99125020 REVISION -

NO DRAWING

ITEM	QTY.	UOM	PART NO.	DESCRIPTION
1	1	EA	27159-008	TRIFOAM WAX OPTION
1	1	EA	27159-014	HOT PS OPT/1 HEAT,2-STEP,230V
1	1	EA	27159-016	SPRAY ARCH OPTION/ W/BREAK,84"
1	1	EA	27159-028	BACKLIGHT OPTION/WHITE
1	1	EA	27159-029	RADIUS ASSY/208-230V
1	1	EA	27159-032	GANTRY ELEC ADDN/ARM BREAKAWAY