If we can be of any assistant or if you have any questions, please don't hesitate to contact us at (847) 360-9170.

You may also visit our website at
https://www.diecastmachinery.com

Thank you!

RIMROCK

414 Reciprocator

Die Casting

Economical, Fast & Flexible Spray Solution



Rimrock's 414 Servo-Drive Reciprocator offers an economical choice for today's die casters. Our model 414 vertical reciprocator provides die casters with a flexible, affordable spray solution for die cast machines ranging from 200 to 600 tons. The unit can be equipped with up to six model 026 nozzles or up to 12 of our lightweight 032 nozzles with separate blow-off. Powered by a state-of-the-art brushless servo drive and controlled with a robust industrial controller, the 414 is a durable and user-friendly automated spray solution.

Key Features

- Standard maximum vertical strokes of 24", 30" and 36"
- 80" per second maximum speed
- Platen mounted pedestal support with manual swing for ease of die change
- Drive movement powered by a brushless servo motor
- Up to ten spray positions with intermediary sweeps
- Custom spray manifold with one lube capability and air blow



RIMROCK

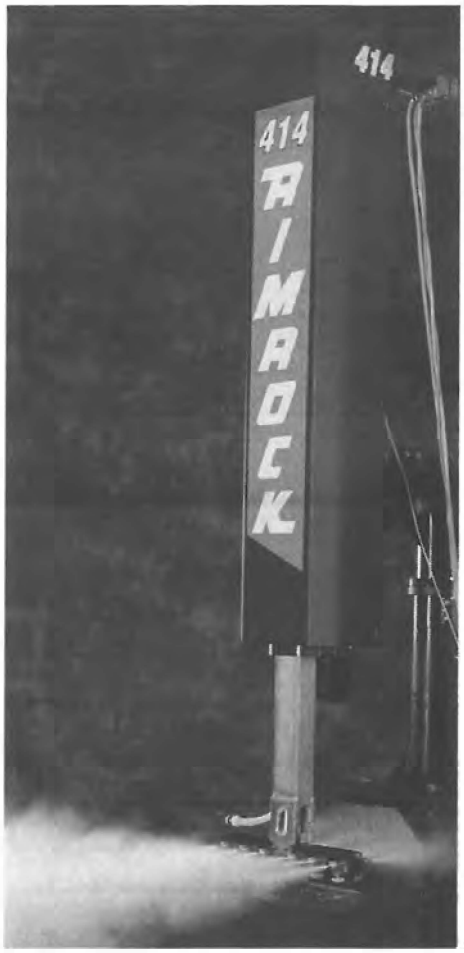
Rimrock Corporation
1700 Jetway Blvd. • Columbus, Ohio 43219
Ph: 614.471.5926 • Fax: 614.471.7388 • www.rimrockcorp.com

ABB

Preferred partner for robot-based automation.

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11/05

RIMROCK®



414 SPRAYER

Production Year 2009

Manual Version 414MPAE_01

PRODUCT MANUAL

RIMROCK CORPORATION
1700 Jetway Blvd.
Columbus, Ohio USA
43219
Tel 614-471-5926
Fax 614-471-7388

Manual Information

This is the Product Manual for the 414 Sprayer.
Manual number 414MPAE_01
Please read and understand this manual before installing or using the system or any of its components.

Associated Documents

User Manual 414MUAE_01
Pneumatic Diagram
Electrical Diagrams
Spare parts recommendations

Qualified Personnel

Only qualified personnel who have been properly trained, and have read and understand this manual should be allowed to operate this machine.
These personnel must also have knowledge of related safety codes, accident prevention measures, regulations, and service conditions and be authorized by the safety manager to perform any activity required to operate and maintain this machine.

Manual Ownership

This manual is an integral part of the product and must be kept for the entire working life of the machine. If the machine is sold, it must be accompanied by this manual.

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All rights reserved. Printed in the United States. This document and parts thereof may not be reproduced or copied without the written permission of RIMROCKCORPORATION.
Contents of this manual must not be distributed to a third party nor be used for any unauthorized purpose.
Additional copies of this manual may be obtained from RIMROCK CORPORATION.

Warning and Disclaimer

Correct usage of the machine is important to assure the expected machine capabilities and functions as well as operator's safety. Please read this manual thoroughly.

The information in this manual is subject to change without notice and should not be construed as a commitment by RIMROCK CORPORATION. RIMROCK CORPORATION assumes no responsibility for any errors that may appear in this manual.

In no event shall RIMROCK CORPORATION be liable for incidental or consequential damages arising from use of this manual or of the software and hardware described in this manual.

For questions, comments, or concerns please contact Rimrock during normal business hours -- Monday through Friday 8:00 a.m. to 5:00 p.m. Eastern Standard Time.

Rimrock Corporation
1700 Jetway Blvd.
Columbus, Ohio 43219
Phone: (614) 471-5926
Fax: (614) 471-7388
Email: sales@rimrockcorp.com
www.rimrockcorp.com

Safety Alert Symbols

Throughout this manual there are safety alert symbols. Wherever they appear, in this manual or on safety signs on the machine, the user should be alert to potential for personal injury or accidents.

Always observe safety precautions and follow recommended procedures.
The words "**CAUTION**", "**WARNING**", and "**DANGER**" are used throughout this manual and on labels on machines to indicate hazards or unsafe practices. Observe the precautions indicated whenever you see the Safety Alert Triangle, no matter which word appears next to the exclamation point symbol.

⚠ CAUTION! ⚠

Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury. It may also be used to alert against a generally unsafe practice.

⚠ WARNING! ⚠

Indicates a hazardous situation that, if not avoided, could result in serious injury or death. It may also be used to alert against a highly unsafe practice.

⚠ DANGER! ⚠

Indicates a hazardous situation that, if not avoided, is very likely to cause death or extremely serious injury.

The word "**IMPORTANT**" is used throughout this manual to indicate actions that could result in damage to the equipment.

⚠ IMPORTANT! ⚠

Indicates an action that could result in damage to the equipment or inferior process results.

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Instruction Manual

This document constitutes the INSTRUCTION MANUAL FOR USE AND MAINTENANCE based on CE Directive 98/37 EC and describes the installation and operation of the 414 Sprayer. Please read and understand this manual before installing or using the system or any of its components.

This document and parts thereof may not be reproduced or copied without the written permission of RIMROCK CORPORATION.

Contents of this manual must not be distributed to a third party nor be used for any unauthorized purpose.

Additional copies of this manual may be obtained from RIMROCK CORPORATION.

This manual is an integral part of the product and must be kept for the entire working life of the machine. If the machine is sold, it must be accompanied by this manual.

Correct usage of the machine is important to assure the expected machine capabilities and functions as well as operator's safety. Please read this manual thoroughly.

The information in this manual is subject to change without notice and should not be construed as a commitment by RIMROCK CORPORATION. RIMROCK CORPORATION assumes no responsibility for any errors that may appear in this manual.

Note:

Rimrock Corporation shall not be held responsible for possible damage or injury to people, machinery or property resulting from failure to comply with safety standards and recommendations in this manual or from unauthorized modification or changes to the machine, its controls, functions or original parameters by the user.

Symbols used in this manual

Throughout this manual there are symbols that indicate hazards, point out information, and bring attention to notices. Wherever they appear, in this manual the user should be alert to potential for personal injury or accidents.

Danger Symbols



CAUTION: GENERAL HAZARD



CAUTION: ELECTROCUTION HAZARD



CAUTION: BURN HAZARD



CAUTION: CRUSH HAZARD

Compulsory Symbols



Compulsory Action: Follow Safety Procedures



Compulsory Action: Wear Gloves and other personal safety equipment.



Compulsory Action: Wear hearing protection.



Compulsory Action: Before starting operation verify proper operation of protective interrupting devices.

Prohibition Symbols



DO NOT OPERATE THE MACHINE WITH GUARDS OR GATES OPEN.

Qualified Personnel

Only qualified personnel who have been properly trained, and have read and understand this manual should be allowed to operate this machine.
The following descriptions of the competence levels required for the machine functions.

Machine Operator – Indicates the person suitable to operate and maintain the system under normal operating conditions using the provided controls and safety interlocks.

Programmer – Indicates person who can prepare and program the system as necessary to operate the system.

Normal Maintenance person - Indicates person who can carry out normal maintenance such as cleaning, tightening, lubricating, and minor repairs.

Master Maintenance person - Indicates person who can carry out extraordinary maintenance operations such as faults in the mechanical, electrical or fluid systems. This person is qualified to operate the machinery with all foreseen precautions, without some safety devices.

⚠ CAUTION! ⚠

Rimrock cannot be held responsible for any operators, programmers or maintenance personnel chosen by the user, for their training or competence.

Training

Rimrock provides several opportunities for training:

- Classroom training at its facility in Columbus, Ohio
- Training at the customer's facility
- Training videos

Contact Rimrock for more information on training at 614-471-5926.

Definitions

Some terminology used in this manual is common to the Die Casting industry and Rimrock Corporation. Other terms are explained as they are used in this manual or can be found in the dictionary.

Reciprocator – Rimrock alternate name for the sprayer.

DCM – Acronym for Die Casting Machine.

HMI – Acronym for Human Machine Interface. The HMI is the device used to program the Rimrock machinery.

Arm – Refers to the vertical axis that carries the spray manifold.

Spray Manifold – The assembly that holds the spray nozzles and blow tubes.

Valve Package – The assembly that has the valves and filters for the spray system.

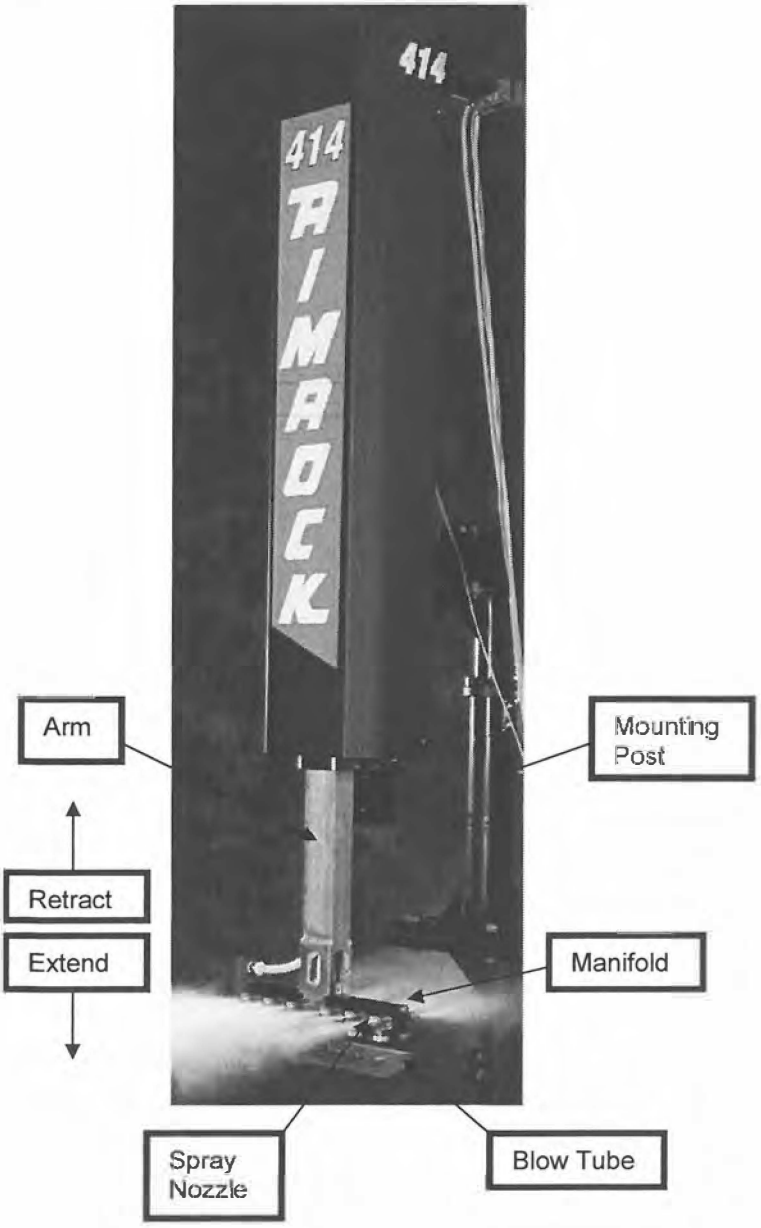
Servo Motor – The motor that operates the arm axis and provides position information back to the control system.

Hazardous Area – An area close to the machine which could be a health and safety risk for persons in that area.

Operator – The person or persons responsible for operating and maintaining of the machine.

User – The person or company that owns and is responsible for the machine.

Definitions (continued)



Machine Description

Machine identification

Machine Type: Rimrock Servo-Drive Reciprocator

Model: 414

Serial Number: _____

Year of Manufacture: 2009

Manufacturer identification

Rimrock Corporation
1700 Jetway Blvd.
Columbus, Ohio 43219
Phone: (614) 471-5926
Fax: (614) 471-7388
Email: sales@rimrockcorp.com
www.rimrockcorp.com

Intended Uses

The reciprocator is designed and built to automatically spray lubrication and blow drying air on the dies used in a pressure die casting machine.

Note:

Rimrock Corporation shall not be held responsible for possible damage or injury to people, machinery or property resulting from improper use or use outside the declared limits of the machine.

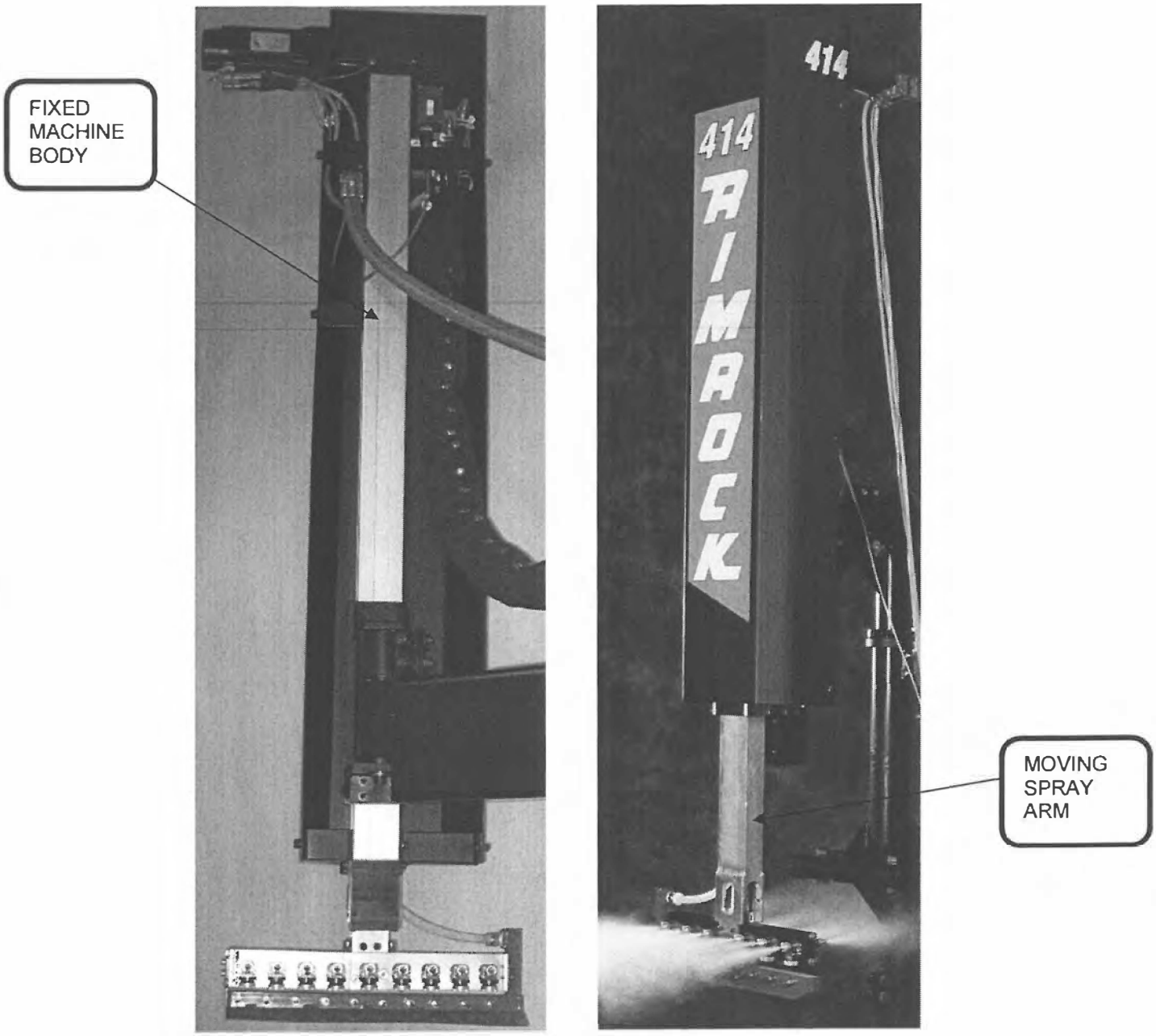
The Reciprocator

The reciprocator is basically a single axis servo controlled vertical linear slide mechanism with a spray/blow head attached at the bottom end of the moving arm.

The machine is made up of the following parts:

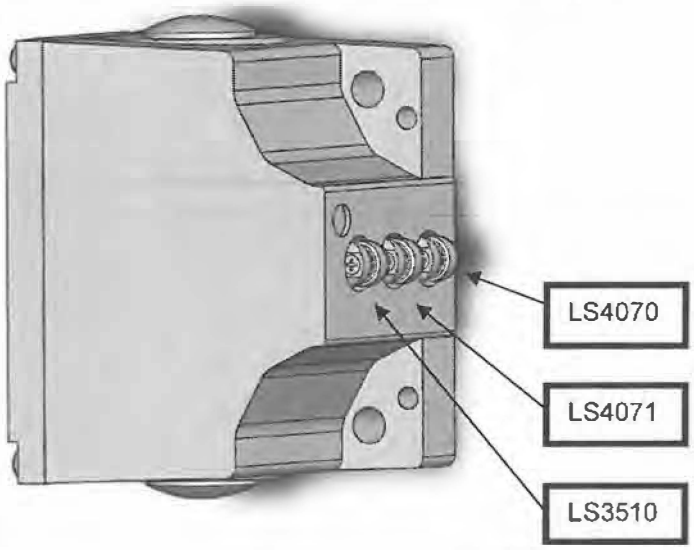
1) Fixed machine body
2) Moving spray arm
3) Spray manifold
4) Valve package
5) Control panel

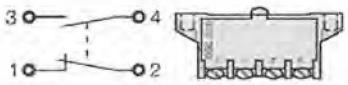
Fixed Machine Body/Moving Spray Arm



Arm Vertical Axis
Limit Switch Detail

The mechanical unit has a 3 position switch for purpose of indicating the HOME position. Two of the switches report to the PLC when the sprayer is home and the other contact is connected to terminals for use by the customer. See the electrical drawings for connections.

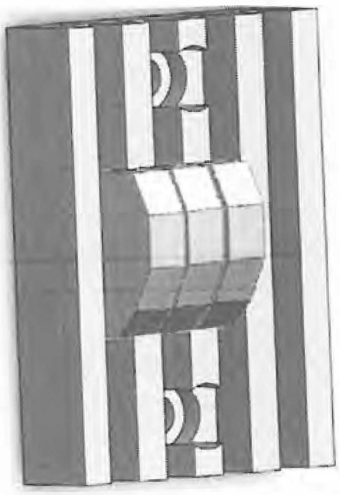


With switch element	**BSE 30.0**
Ordering code	BNS 819-B03-L12-61-12 **-10**
Wiring diagram, style	

Switch element	
Contact material	silver, gold plated
Switching principle	snap switch
Contact system	dual changeover, one normally-open and one normally-closed, galvanically isolated

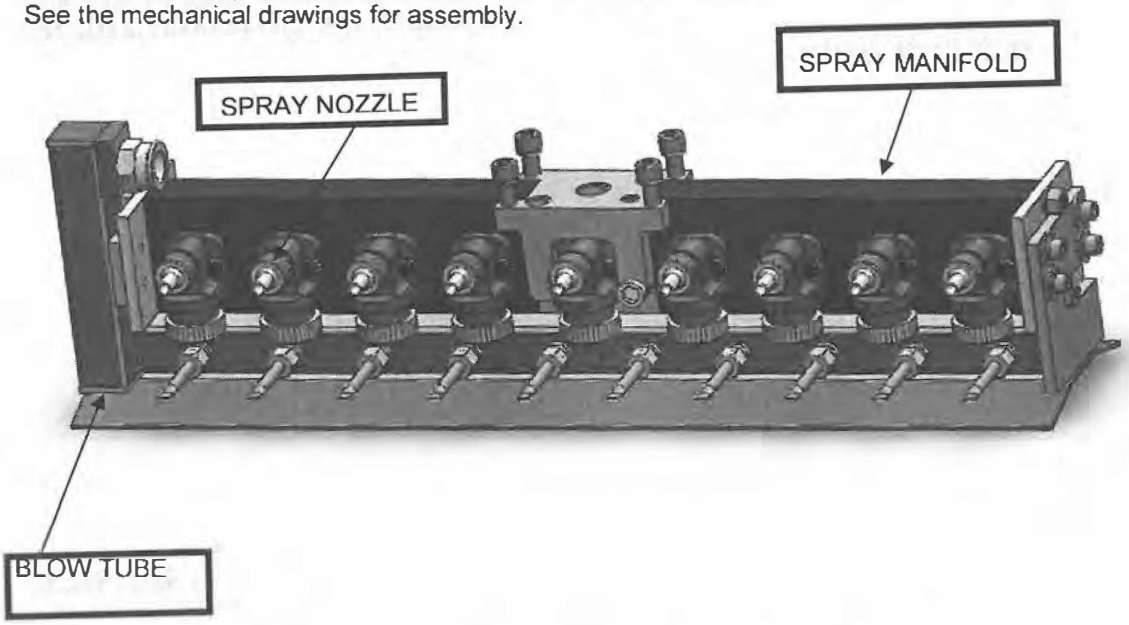
Limit Switch Cam Detail

The limit switch cams are factory set and should not be changed. If changes are necessary consult Rimrock Corporation for information.



Spray Manifold Assembly

The Rimrock Spray manifold consists of the manifold bar, spray nozzles and blow tube. See the mechanical drawings for assembly.

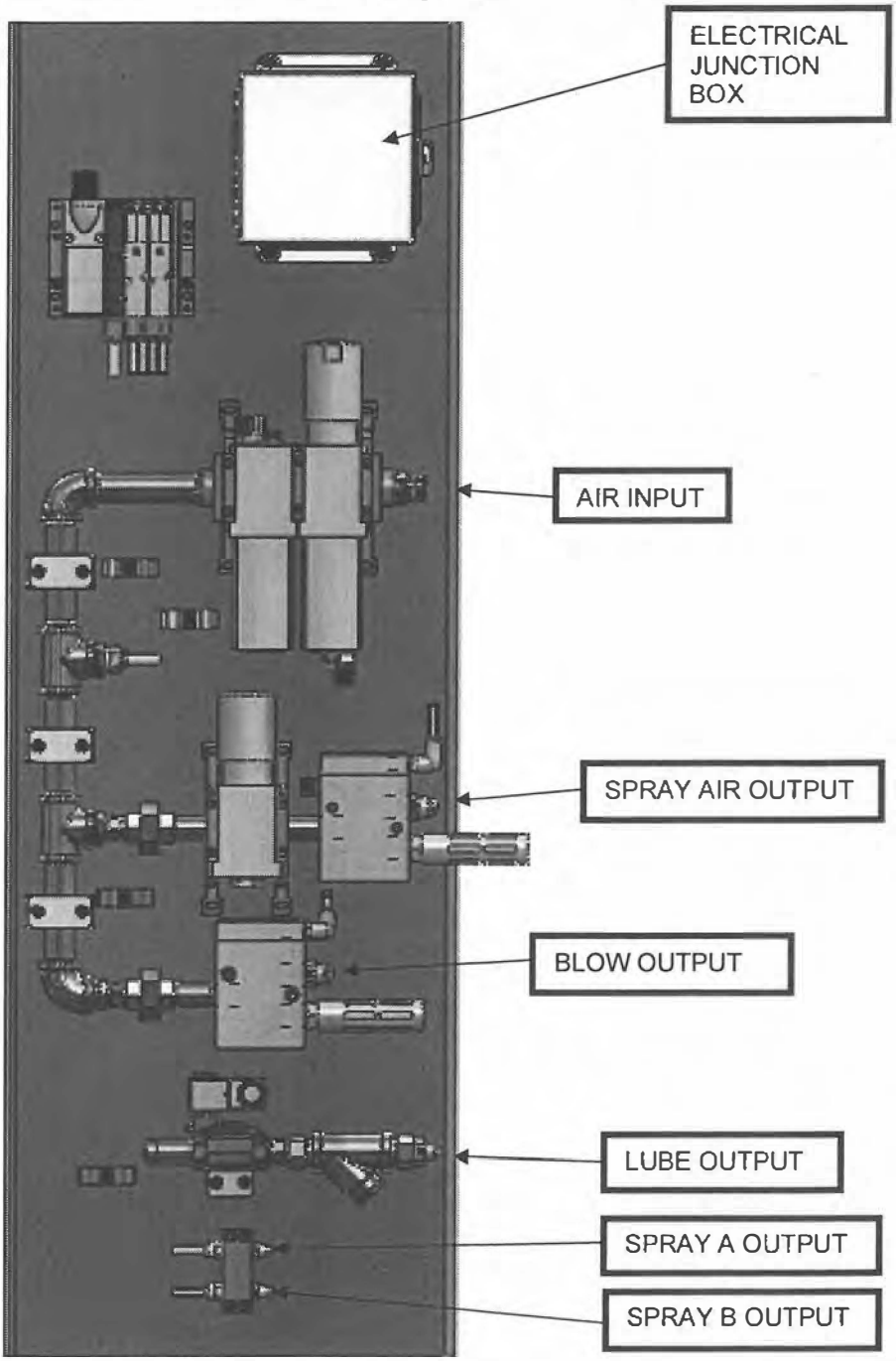


Spray Nozzles

The spray nozzles used on the 414 are Rimrock Corporation model number 032.

Valve Package

The valve package connections are BSPT. Sizes are shown on the valve package assembly drawing number 414D37854 in the mechanical drawings section of this manual.
The electrical connections are found in the electrical diagrams.



Control Panel

The control panel uses a SIEMENS S7-224XP controller and includes a door mounted HMI.
Circuit protection for the wiring to the control panel is the responsibility of the customer.
See the electrical drawings for connection details.



Manufacturers Declaration of Incorporation
According to the CE Machine Directive 98/37/EEC, Appendix II part B

The Manufacturer,

Rimrock Corporation
1700 Jetway Blvd,
Columbus, Ohio, 43219
U.S.A

Hereby declare that the construction and design of the below listed machine:

Model: 414-1200 Sprayer
ID Number:
Serial Number:
Year of Manufacture: 2009

is intended for integration with other machines into what is known by the CE Machinery Directive 98/37 as a modified machine and has been built in compliance with the following CE Directives:

98/37/CEE	Machinery Directive
89/336/CEE	EMC Directive
73/23/CEE	Low Voltage Directive

Referencing the following standards:

EN ISO 12100-1	Safety of Machinery: Basic Terminology, methodology
EN ISO 12100-2	Safety of Machinery: Technical Principals and specifications
EN 60204-1	Electrical Equipment

To ensure correct function of the new modified machine it is required that:

It must form a single unit with the final machine.

The final machine of which it becomes a component of has been identified as a modified machine and has been declared as such in compliance with the CE Machinery Directive 98/37.

CAUTION

The manufacturer declares that it is forbidden to operate the sprayer on its own.

NOTE

Rimrock Corporation declines any responsibility regarding eventual damage or injury caused to things or persons due to the improper installation, use or maintenance of the sprayer.

Signed _____ Date _____
General Manager

Machine Data

Specifications

Machine Weight

The 414-1200 can weigh up to approximately 215 kg (472 Lbs). Verify the lifting means can support the weight safely.

Valve Package Weight

The 414 Valve Package weighs approximately 32.7 kg (72 Lbs).

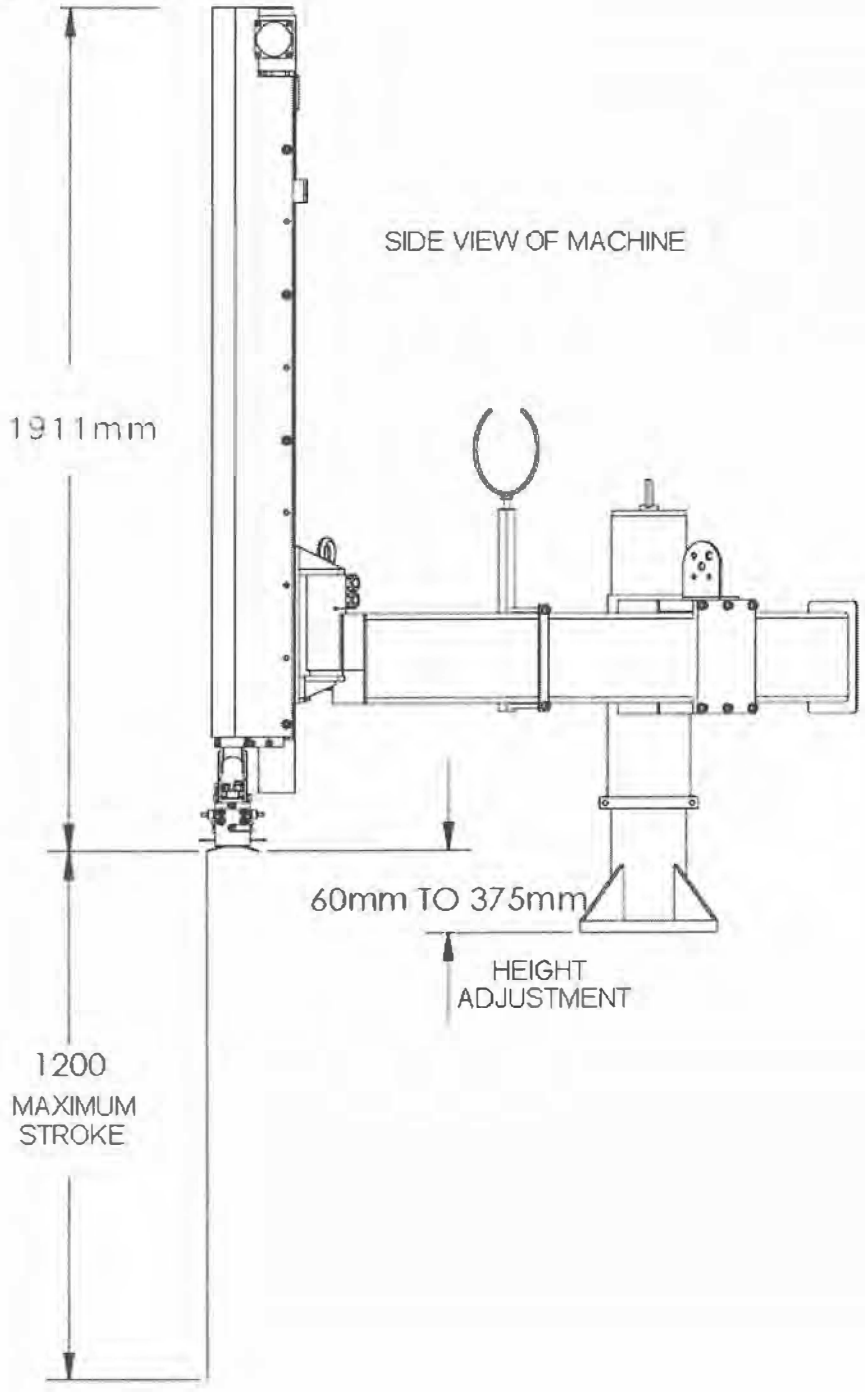
Control Panel Weight

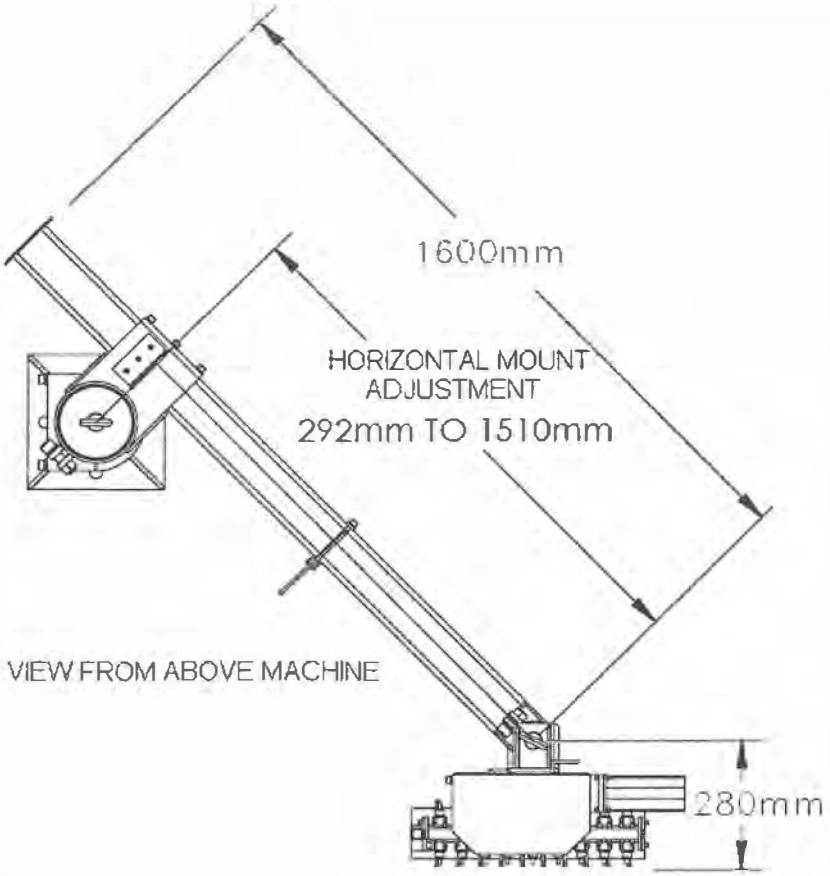
The 414 Valve Package weighs approximately 35.4 kg (78 Lbs).

System Data

	UNIT	
VERTICAL STROKE	mm	1200
INSTALLED POWER	kW	3.3
NOMINAL PNEUMATIC PRESSURE	bar	6.9
MAX. VERTICAL SPEED	m/s	1
MACHINE DIMENSIONS	mm	1911 H x 1880 L x 565 W
CONTROL PANEL DIMENSIONS	mm	600 H x 600 W x 300 D
CONTROL PANEL WEIGHT	kg	35.4
MAX SPRAY MANIFOLD WEIGHT	kg	9
TOTAL MACHINE WEIGHT	kg	275
OPERATING TEMPERATURE RANGE	°C	0-50

Machine Dimensions




1600mm
HORIZONTAL MOUNT
ADJUSTMENT
292mm TO 1510mm
VIEW FROM ABOVE MACHINE
280mm

Safety

Any machine, if not properly used, can be a hazard to people or other machines in the die cast plant.
Safety in the plant begins with training personnel to properly operate and maintain equipment. They must understand how the equipment functions in order to operate it safely. While the owner of the Rimrock equipment is responsible for all aspects of safety, Rimrock can help by providing equipment training. Contact Rimrock sales department for info on training in your plant or at Rimrock.

⚠ IMPORTANT! ⚠

This manual is intended for use by persons having electrical and mechanical training and a level of knowledge of these subjects that is generally considered acceptable in the die casting industry. Rimrock cannot be responsible nor assume any liability for injury or damage of any kind arising from the use of information in this manual.

Risk Assessment

Since Rimrock machines are installed in many plants for different applications occurring in different environments, each plant must perform its own risk assessment. Use the risk assessment to determine the safety precautions that must be applied in each individual plant and insist that all employees follow these precautions.

⚠ IMPORTANT! ⚠

The risk assessment is an important part of machine safety. Document your task – hazard pairs and select the appropriate safeguarding.

Safeguards

Safeguards are required to keep personnel from the moving parts of the equipment during operation. The type of safeguard required should be determined by your risk assessment. The safeguard can be electrically interlocked to the control system to shut-down the machinery when opened. See the installation section for more on wiring the safeguard into the control system.

⚠ IMPORTANT! ⚠

Your risk assessment will determine the safeguard needed.

General Safety Tips

Machine owners, operators, maintenance personnel, and service personnel must know that safety practices are a vital part of the job. A safety program should be implemented in the plant and should include, but not be limited to:

- Personal protective equipment
- Clean work areas
- Work areas that are free of potential hazards
- Warning labels, signs, and equipment covers
- Guards around equipment
- Proper training
- Equipment maintenance
- Lockout/tagout procedures

Safety During Maintenance or Repair

Whenever maintenance or repair is performed on the machine, all equipment in the work cell must be in a zero energy state and proper lockout/tagout procedures must be performed.

⚠ DANGER! ⚠

Tasks can involve working in extremely dangerous areas of machinery. The user must put the machine and other equipment in the work cell in a zero energy state and follow lockout/tagout procedures.

Zero Energy State

Zero Energy State is achieved by bleeding, relieving, or blocking other stored and residual energy in equipment that must be serviced by trained personnel. OSHA's hazardous energy control (lockout/tagout) standard, OSHA Div 2/Sub J 29 CFR 1910.147, requires that all energy sources for equipment be turned off, isolated (disconnected), and physically locked out and/or tagged out before attempting maintenance procedures. Finally, the last important function before maintenance begins is to verify all energy has been de-energized and/or isolated.

When putting equipment in a zero energy state, you may encounter the following energy sources:

- Electrical power
- Pressurized air
- Hydraulics
- Hydraulic accumulators that store energy even when the electrical power
- Pressured fluids such as water and die lube
- Hot surfaces
- Components that can fall via gravity
- Other potential hazards not listed

⚠ CAUTION! ⚠

When users put equipment in a zero energy state, they must remember that heat is a form of energy too. Dissipate any heat before working on hot surfaces.

Lockout/Tagout

"Lockout" is the placement of a *lockout device* on an energy isolating device, in accordance with an established procedure, **ensuring** that the energy isolating device and the equipment being controlled **cannot** be operated until the lockout device is removed.
"Tagout" is the placement of a *tagout device* on an energy isolating device, in accordance with an established procedure, **to indicate** that the energy isolating device and the equipment being controlled **may not** be operated until the tagout device is removed.

Where to Lockout the Reciprocator

The 414 Reciprocator must be electrically locked out at the disconnect switch or plug that supplies the electrical power to the 414 control system. The lube, water, and air supplies to the valve package must be locked out at their disconnecting valves. All disconnecting devices are normally supplied by the user upon installation. Rimrock can optionally supply these items. Be aware that some of the reciprocator surfaces may be hot and can also fall due to gravity. Also be aware that to work on the reciprocator other machines may require lockout.

Lockout/Tagout Procedures

Follow these steps before performing any maintenance or repair work on the equipment:

1. Shut down the equipment
2. Isolate the equipment from the energy source
3. Release residual energy
4. Apply a lockout/tagout device to the energy-isolating device
5. Verify the isolation of the equipment

There are two types of energy-isolating devices: those that can be locked and those that cannot be locked. If the energy-isolating device cannot be locked with a lockout device, apply a tagout device. In order for the tagout to be effective, the employees must be trained to follow these limitations of tags:

- Tags are warning devices only and do not supply physical restraint
- Tags are not to be removed except by the person who applied them
- Tags are never to be ignored or bypassed
- Tags must be legible
- Tags must be made of materials able to withstand the environmental conditions
- Tags must be attached securely to the energy-isolating device

Additional safety measures may be taken when tagout is used, including:

- Removing and isolating a circuit element
- Blocking a control switch
- Opening a disconnecting device
- Removing a valve handle

Lockout/Tagout Steps

To lockout or tagout the energy-isolating device, disconnect the source of energy and follow the lockout/tagout procedures implemented by the plant. Typically, to lockout or tagout the equipment, the user must:

1. Disconnect the power
2. Put a lock with a lockout tag or a tagout tag through the door to the source of the power.
3. Record the name of the person working on the equipment on the tag

Note: The person working on the equipment should be the only person having a key to unlock the equipment. This procedure ensures that another person cannot restore energy to the equipment while someone is working on it.



FIGURE 1 TAGOUT/LOCKOUT

Lockout/Tagout Removal

To remove the lockout or tagout devices and restore energy to the equipment, follow these steps:

1. Inspect the equipment to verify that all components are intact and operable.
2. Inspect the work area to ensure all tools, non-essential parts, and other unnecessary items are removed.
3. Check that all personnel are safely removed from the work area.
4. Remove the lockout or tagout device from the energy-isolating device.

⚠ CAUTION! ⚠

The lockout or tagout device must be removed only by the person who applied it.

5. Before starting the equipment, notify appropriate personnel that the lockout/tagout has ended.

Special Considerations

Special circumstances may exist when lockout/tagout procedures are used while working on the equipment.

Testing or Positioning

If testing or positioning of the equipment requires reenergization of the equipment, OSHA allows temporary removal of locks or tags. Follow these steps to reenergize the equipment:

1. Inspect the work area to ensure all tools, non-essential parts, and other unnecessary items are removed.
2. Check that all personnel are safely removed from the work area.
3. Remove the lockout or tagout device from the energy-isolating device.
4. Energize the equipment.
5. Test or position the equipment.
6. Deenergize the equipment and reapply the lockout/tagout devices.

Outside Personnel

If outside personnel are working in the plant, both the inside and outside personnel must inform each other of their lockout/tagout procedures.

Group Lockout or Tagout

Each plant must be responsible for determining the lockout/tagout procedures to be used when the equipment is worked on by a group of people.

Changes in Shift

When shift changes occur during lockout/tagout, if the person who controls lockout/tagout cannot remain, the oncoming shift must verify the deenergization and lockout/tagout.

Standards

The machine has been designed and built in compliance with the safety requirements prescribed in the following directives.

98/37/CEE Machinery Directive

89/336/CEE EMC Directive

73/23/CEE Low Voltage Directive

And with reference to the following standards:

EN 12100-1 Basic Terminology, methodology

EN 12100-2 Technical Principals and specifications

EN 60204-1 Electrical Equipment

Note:

Rimrock Corporation shall not be held responsible for possible damage or injury to people, machinery or property caused by improper use, tampering, or lack of proper maintenance of the safety devices of this machine.

Safety Devices

This machines controller has been built with certain safety devices installed to minimize risk of damage and injury to personnel.
These devices include:

Power Supply Switching Device
The Power Supply Switching Device is equipped with an interlock device that prevents the cabinet door from opening while the device is on. The switch can be padlocked to prevent supply of power during maintenance operations.

Emergency Stop button
The Sprayer is equipped with its own Emergency Stop button and monitoring relay for Category 0 (60204-1) and Category 3 (EN 954).

An emergency stop can be caused by:

1) Actuation of the sprayer Emergency Stop push button.
2) Actuation of any other Emergency Stop push button wired into the dual monitored emergency stop string.
3) Power circuit switched off by the Power Supply Switching Device.
4) Failure of one or more components of the emergency stop device detected by the emergency stop device itself.
5) Guard or gate open or unlocked.

NOTE – To reset the machine after an emergency stop the cause of the emergency stop must be eliminated first.

Work Safety

This machine has been designed and manufactured according to regulations concerning safety devices and health and safety rules to operate as a lubrication system for the dies in a die casting machine.

The operators of this machine and those responsible for its maintenance must comply with existing regulations regarding accident prevention.
Such as:

1) Use the provided personal safety devices. Safety glasses, gloves, safety helmets(for maintenance persons), protective shoes, and coveralls should be worn.
2) Do not tamper with or destroy safety devices or guards.
3) Avoid blocking access to emergency stop switches.
4) Do not wear loose clothing or jewelry and keep long hair tied back or in a hair net.
5) Avoid any work method that could jeopardize machine safety.
6) Do not use the machine above its loading, power or pressure limits.
7) Do not perform tests on the machine while it is operating.
8) Make sure the area around the machine is clear and allows easy access by operators.
9) Stop the machine any time there is damage to any part of the machine, especially the safety equipment.
10) Always replace worn or damaged parts with original equipment spares or completely compatible parts.
11) Keep the machine and its controls as clean as possible.
12) Follow manual procedures and guidelines for setup and testing the machine.

Incorrect Use Risks

The process of die casting lubrication and cooling creates hazards related to high temperatures. Smoke, vapors, high pressure sprays and molten metal splattering are dangerous to operators.

The biggest risk to the operator is when the dies are open is being set up.

Appropriate safety glasses or shields and breathing equipment must be worn to protect eyes and respiratory systems.

Since the sprayer is a suspended load, it is essential to use all safety means possible during die changes or maintenance.

⚠ DANGER! ⚠

Tasks can involve working in extremely dangerous areas of machinery. The user must put the machine and other equipment in the work cell in a zero energy state and follow lockout/tagout procedures.

Possible Emergency Situations

Fire

In case of fire the electrical supply should be *immediately* disconnected.

To extinguish the fire use a CO2 or Halogenated hydrocarbon type fire extinguisher.

Do not use water or powder type extinguishers that are not suitable with electrical fires.

Smoke or Fume Release

In case of smoke or fumes released in the area, a smoke suction device may be necessary.

Compliance with regulations and laws regarding atmospheric conditions must be followed.

Transport

This chapter contains general information for successfully transporting the Rimrock 414 Servo-Drive Reciprocator. This chapter does not contain specific instructions for all possible methods of transport.

The machine and its components may be partially dismantled for packaging, shipping, or lifting purposes.

Machine Weight & Size

The 414 can weigh up to approximately 215 kg). Verify the lifting means can support the weight safely.
The 414 Machine Main Body measures 1911 H x 280 W x 565 D

Control Panel Weight & Size

The 414 Control Panel weighs approximately 35.4kg
The 414 Control Panel measures 600 H x 600 W x 300 D

Valve Package Weight & Size

The 414 Valve Package weighs approximately 32.7 kg
The 414 Valve Package measures approximately 1219 H x 406 W x 100 D

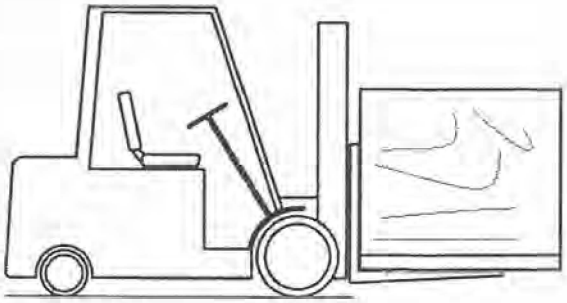
Packaging and Crating

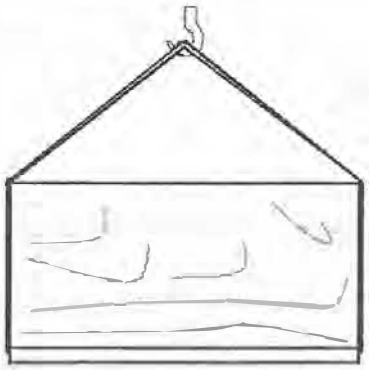
The Rimrock 414 sprayer system is shipped in a wooden crate to protect the system components from damage.

Note:

The crate must be stored in adequately protected areas and climactic conditions.

Both self moving transport (forklift trucks or cranes) as well as suitable bridge cranes can be used to move the crate.
These must be able to lift the weight of the crate.
When unpacking the machine, check all parts of the system for damage. To avoid causing damage when unpacking, remove the top of the crate first, then the sides.





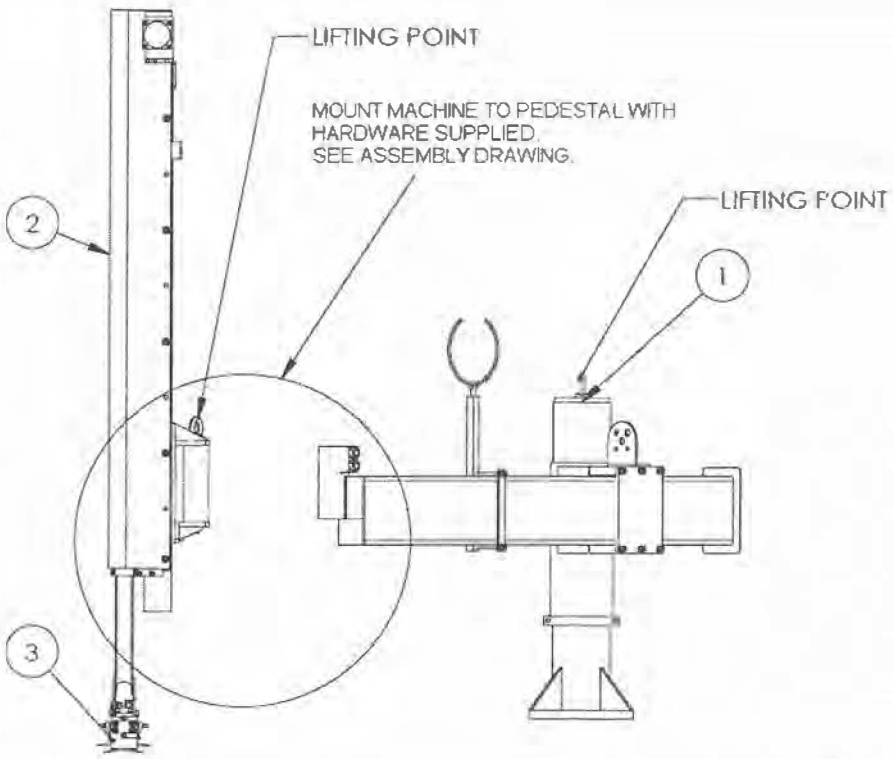
Lifting

The following equipment will be needed to install the 414 Reciprocator:

- A crane and sling rated to lift 300kg or more. A magnetic drill press to drill holes on the DCM if the DCM manufacturer has not previously drilled all necessary holes.
- Common tools to perform electrical installations
- Common tools to perform pipe fitting operations

⚠ DANGER! ⚠

Do not lift the machine anywhere but the designated lifting points.
Damage could occur if machine is lifted improperly.



WHEN LIFTING THE 414 BODY ALONE IT IS IMPORTANT TO SECURE THE TOP OF THE BODY WHEN USING THE LIFTING EYE. USE CAUTION BECAUSE THE CENTER OF GRAVITY WILL BE ABOVE THE LIFTING POINT ON THE BODY.

WHEN LIFTING THE PEDESTAL ALONE USE CAUTION BECAUSE THE CENTER OF GRAVITY IS EASILY CHANGED BY THE PEDESTAL HORIZONTAL ADJUSTMENT.

WHEN LIFTING THE 414 BODY AND PEDESTAL FULLY ASSEMBLED THE, CENTER OF GRAVITY WILL VARY DEPENDING ON THE PEDESTAL HORIZONTAL ADJUSTMENT, BUT TYPICALLY THE CENTER OF GRAVITY FALLS DIRECTLY BETWEEN OR BELOW THE TWO LIFTING POINTS.

⚠CAUTION! ⚠

Handling and transportation operations must be done by trained personnel who can operate cranes and other lifting equipment.

Installation

Safety Precautions During Install

Follow these precautions when installing the sprayer:

- Use all previously listed safety precautions
- Wear appropriate personal protective equipment such as safety glasses, ear plugs, safety harnesses, hard hat, gloves
- Follow lockout/tagout procedures
- Be sure the personnel involved in installations have read and understand this manual
- Consult the die cast machine manufacturer before making any changes to circuits
- Follow in-plant safety rules

⚠ CAUTION ⚠

Read this entire 414 Servo-Drive Sprayer User Guide before installing the Rimrock 414 Servo-Drive Sprayer. Pay special attention to "Safety" section in the user guide.

Arm Safeguard

The arm of the sprayer can fall, causing personal injury and equipment damage.
Safeguard the arm when performing repairs or maintenance on sprayers.
This can be accomplished by placing a chain or strap on the sprayer arm to prevent movement.

Path of the Sprayer

Do not work in the path of the sprayer. Discuss door-interlocking options with the die cast machine manufacturer.
A barrier as specified by applicable federal and state codes must be present to keep users out of the path of the sprayer when the sprayer moves down.

Gravity

Always be aware that the force of gravity can cause the manifold to fall. When changing the manifold, get help lifting the manifold or use a crane. Always secure the manifold properly.

⚠ WARNING ⚠

Mechanical parts that can fall (such as the sprayer arm) should be brought to their lowest position during maintenance and repair.

Liquids

Flammable or dangerous liquids should not be used with the sprayer spray system.
Follow all precautions on the material safety data sheet (MSDS) provided with the die lube.

Preliminary Steps

Perform these steps to prepare for the installation of the sprayer:

1. Make sure there is an adequate supply of compressed air, water, lube, and electric power.
    a. Check if the lines are large enough to handle the air and lube.
    b. Make sure the air compressor can handle the addition load.
    c. Find out if the present electrical system can handle the load. This is especially important if the sprayer will be installed in an older building.

2. Confirm with the die cast machine manufacturer that the proper interlock connections, logic changes, and wiring changes to work with the die cast machine have been determined.

3. Before scheduling Rimrock services for start-up assistance, please complete the tasks on the Pre-Installation Checklist For Sprayers, fill out the check list, and fax it to Rimrock. The pre-installation checklist is in the package attached to the side of the shipping crate (A copy is in the appendix). Use the pre-installation checklist to indicate the completeness of the installation. It is not a substitute for reading the manual.

4. Schedule startup assistance with Rimrock. To make the time the Rimrock representative spends on start up as effective as possible, be sure to complete all the tasks on the checklist before the representative arrives.

5. Use the drawings included with this manual for additional mounting and installation information.

Mounting

Mount the sprayer on top of and centered the stationary platen of the die cast machine on a flat surface. See the mechanical drawings supplied with this manual for dimensions.

Also refer to the layout from Rimrock to determine the mounting height, and whether spacers are required.

Connecting the 414 Machine Cable

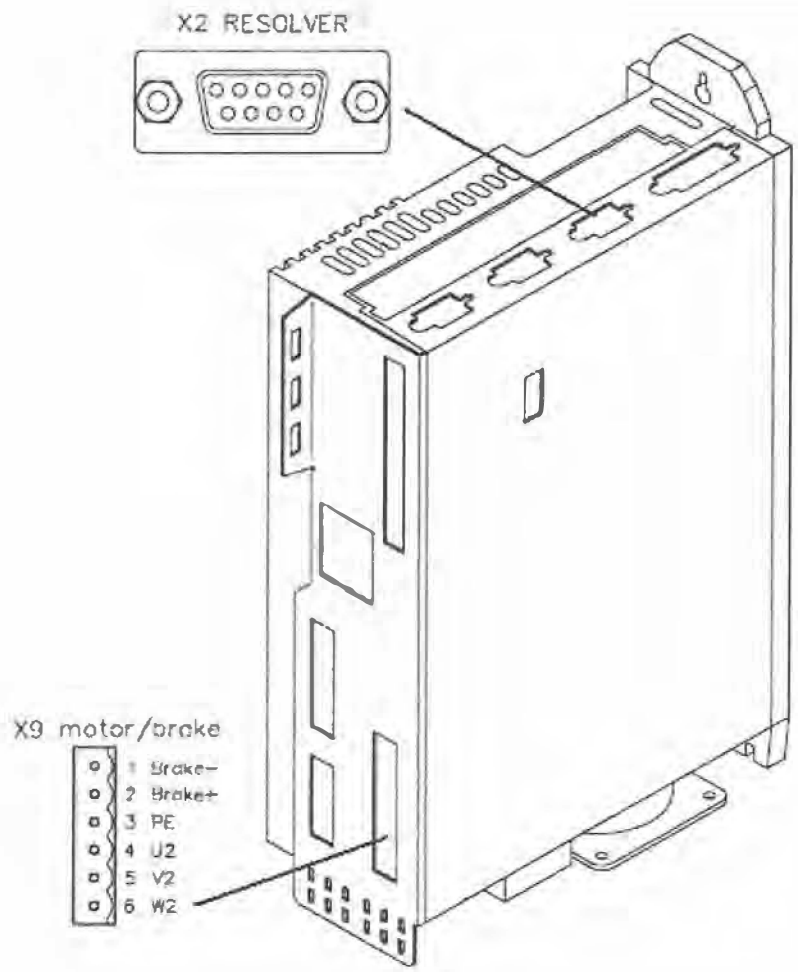
The 414 Reciprocator attaches to the controller with a special cable.

The cable is made to length and must not be shortened or lengthened. If a different length of cable is needed contact Rimrock.

The cable secures to the mechanical unit on a bracket that holds the conduit connector.

The cable has two large circular connectors and one cable with flying leads on the mechanical unit end. The large connectors attach to the motor and are keyed such that they cannot be crossed. The flying leads attached to the REST POSITION switch.





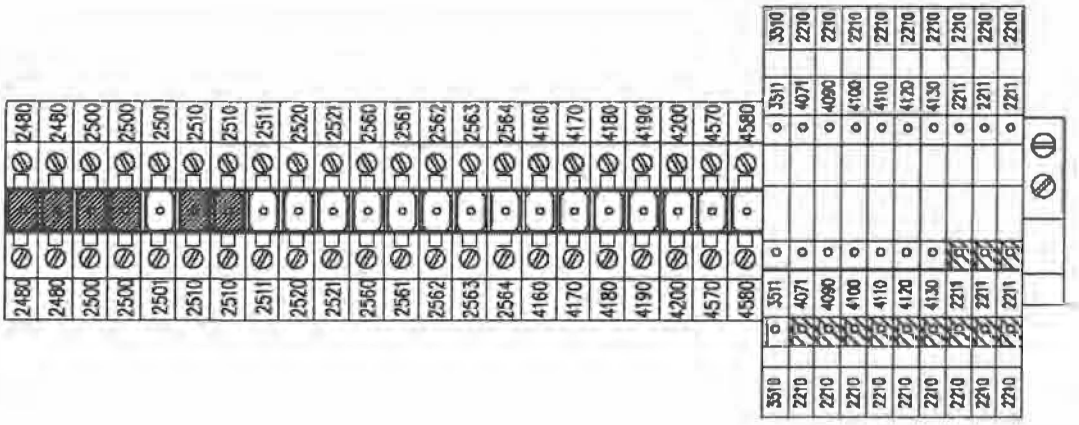
SERVO AMPLIFIER

The controller end of the cable has a DB-9 connector on one cable with the remaining cables pig-tailed. A 34.6mm hole must be cut in the control box and the cable fed through and attached there.

The DB-9 connector plugs onto the top of the drive unit at the X2 connector.

The motor power and brake cables attach to the connector at X9 on the drive. The wires in the cables are marked with numbers or function designations. For the brake cable (2 conductor cable) connect wire 1 and 2 to the X9 terminal 1 and 2 respectively. For the motor power cable (5 wire pig-tail) connect the green/yellow wire to the PE terminal, connect wire 1 to the U terminal, wire 2 to the V terminal, wire 3 to the W terminal, and the shield wire attaches to the ground bolt on the front of the drive.

The REST POSITION switch cable connects to a set of terminals near the bottom of the control panel. Match the wire numbers to the terminal numbers and connect.



Installing the Valve Package

The valve package controls the lube and air supply to the spray manifold.

The valve package can be mounted on the floor or on the die cast machine. Before installing the valve package, determine the best location for it to be mounted. The following table shows the advantages and disadvantages of each choice.

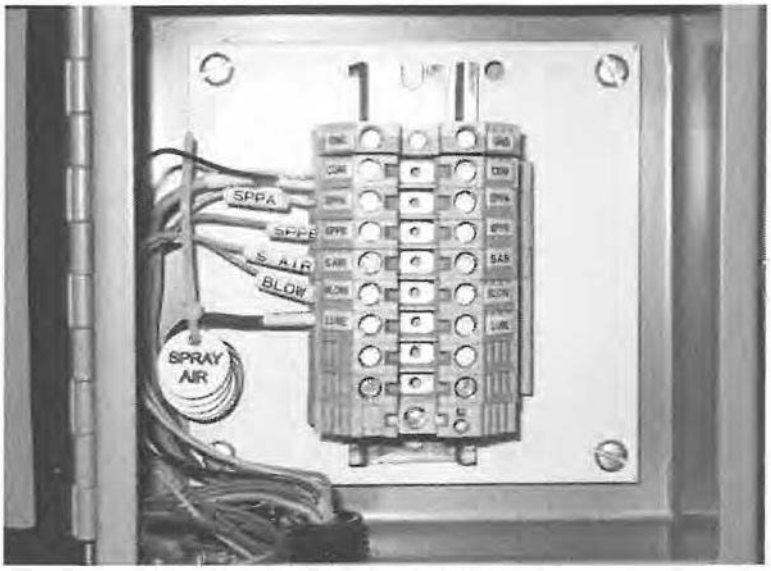
	Advantages	Disadvantages
On the floor	Easy access for maintenance and adjusting	Longer hoses needed Easy for unauthorized adjustments to be made
On the die cast machine	Shorter hoses needed Discourages unnecessary adjustments	Harder access for maintenance and adjustments

Wiring the Valve Package

If you purchased a 414 Reciprocator valve package it is prewired and only needs a cable or conduit connection to the controller.
The terminations on the valve package are made in the junction box.
The terminations in the controller are made on the relays in the control box. All of the relays for the valve package are prewired with a fused 24VDC source and just require a single termination per signal. A terminal for 0 VDC COMMON is provided in the control box.

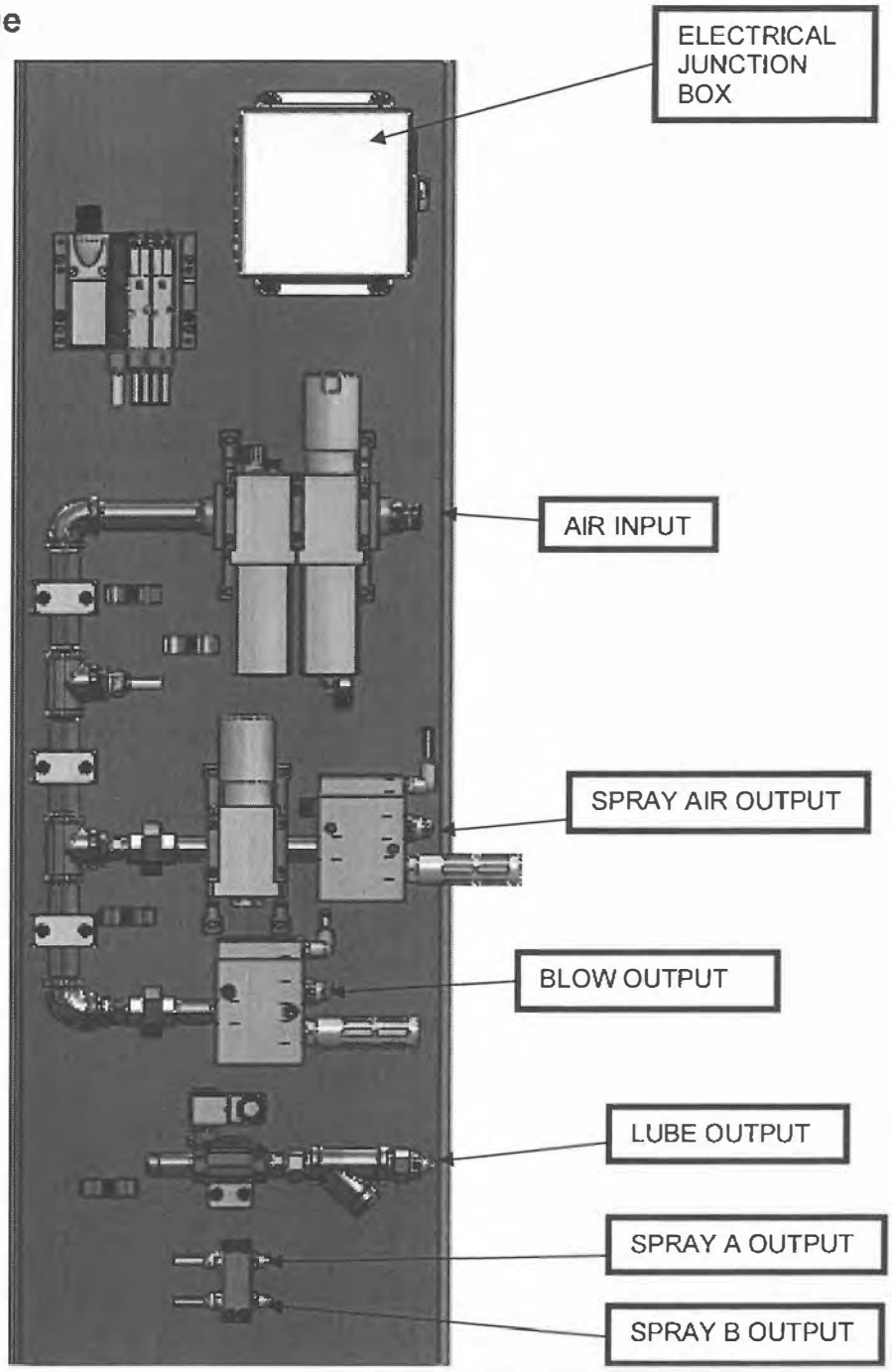
The wires from the valve pack terminate as follows:

VALVE PACK	**CONTROL BOX**
GND	Earth
COM	DC common
SAIR	SPRAY relay terminal 14
SPPA	Lube Zone A Pilot relay terminal 14
SPPB	Lube Zone B Pilot relay terminal 14
BLOW	Air Blow relay terminal 14
LUBE	Lube relay terminal 14



VALVE PACKAGE JBOX TERMINALS

Valve Package



Mounting the Controller

The control enclosure has 4 mounting holes that can be used to secure it to a stand or wall.

The enclosure should be placed within sight of the spraying area.

The panel should be accessible such that users can easily operate the pushbuttons and HMI screen.

Be conscious of heat sources, tooling access paths, and other possible sources of damage when selecting the installation site.

Do not weld on this enclosure or framework that it is mounted to.



CONTROL PANEL

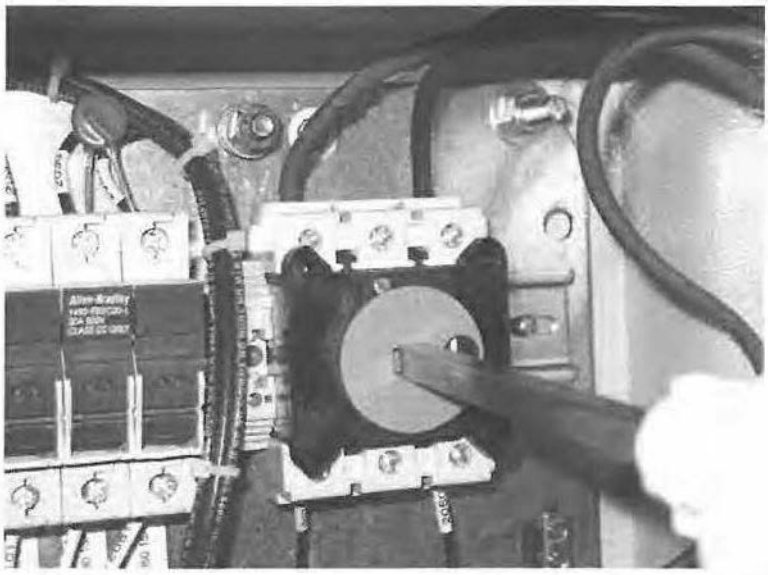
Connecting Electrical Power

The 414 must be connected to a power supply of 220VAC, 1 phase, 15 Amps. An isolation transformer may be required.

The supply must have an approved disconnect switch and branch circuit protection . All applicable wiring codes must be observed.

The incoming power connects to the control panels local disconnect switch in the upper right corner of the enclosure.

The incoming ground should be connected to the ground bar on the panel. A minimum of 12AWG wire must be used.



PICTURE OF DISCONNECT SWITCH

Interlock Wiring

The interlock wiring is the wiring between the 414 controller and the other controllers in the work cell. This consists of three types of signals: Safeties, Inputs, and Outputs.

Safety:

Safety signals are connected to the 414 on the terminal strip in the left side of the control box. The safety signals are described below.

CUSTOMER DEFINED SAFETIES: This is a dry (potential free) mechanical contact from another controller or a cell safety relay. When the circuit is broken the 414 will E-stop. The signal is 24VDC @ 1A. The contact is to be wired to terminals 2563 and 2564.

EMERGENCY STOP CONTACTS: These are dry (potential free) contacts directly off of the E-Stop switch on the 414 control panel. These contacts are available to E-stop other equipment in the cell or as inputs to a cell safety relay. The contact is to be wired to terminals 2520 and 2521.

Inputs:

Inputs to the 414 are used to coordinate sequences with the cell automation. The signals must come from dry (potential free) mechanical contacts. The source for all of these signals is 24VDC on terminal 2210. Wire one side of each contact to this terminal. All signals will draw less than 250ma of current. Shielded cable is the preferred wire for these signals.

RESET CYCLE: This signal is used to acknowledge that the forming equipment has accepted the CYCLE COMPLETE signal from the 414. When this input is received the 414 will shut off the CYCLE COMPLETE output. The 414 will not accept another CYCLE START signal until this input is received. This signal must not be on when the 414 is in cycle or a fault will be generated. This signal is usually generated from the Dies Locked status. The signal is to be wired to terminal 4090.

APPROACH: This signal is optional and causes the 414 to 'perch' just outside the die area to await the CYCLE START signal. Usually this signal is taken from the Die Start Open status. The Approach (perch) position is programmed on the HMI. Make sure that no mechanical interferences can occur before using this option. The signal is to be wired to terminal 4100.

CYCLE START: This signal starts the automatic cycle. The 414 will execute the spray setup taught during the cycle. Usually this signal is taken from Die Full Open. The signal is to be wired to terminal 4110.

EXTEND OK: This signal is used in manual and automatic modes as a permissive for the 414 to travel into the die area. This signal is usually generated from the clear signals of the automation and the Die Full Open from the forming machinery. Loss of this signal while executing an automatic cycle will generate a fault. The signal is to be wired to terminal 4120.

DCM in AUTO: This signal is used in automatic mode as a permissive for the 414 to run an automatic cycle. This signal can be ignored by setting the option Check DCM in AUTO is turned off. The signal is to be wired to terminal 4130.

Outputs:

The outputs from the 414 are used to indicate its status to other cell equipment. The 414 provides dry (potential free) mechanical relay contacts for these signals. These contacts are rated up to 250V @ 2A and are located in the control box along the left side.

FAULT: This signal is used to indicate that the 414 has faulted. The signal will stay on until reset by the FAULT button. The output contact is on CR451 pins 11 and 14.

CYCLE COMPLETE: This signal is used to indicate that the 414 has completed its automatic cycle. The signal will stay on until reset by the RESET CYLE input. The output contact is on CR455 pins 11 and 14.

CLEAR OF DIE: This signal is used to indicate that the 414 is out of the die area. This signal is generated in all modes of operation. This contact is on CR456 pins 11 and 14.

RECIP HOME: This signal is used to indicate that the 414 is out of the die area. This signal is generated in all modes of operation. This contact is on terminals 3500 and 3510

Machine Operation

The following notes are general and are given to determine the proper use of the machine and to avoid incorrect use which could damage the machine or shorten its operating life.



Note:

Rimrock Corporation shall not be held responsible for possible damage or injury to people, machinery or property resulting from failure to comply with safety standards.

Modes of Operation

The 414 sprayer can operate in either Manual Mode or Auto Mode.

The Manual Mode allows the machine to move, spray, and Step cycle through the programmed Auto sequence.

The Auto Mode can only be run in conjunction with the DCM. In the Auto Mode the sprayer automatically sequences through the programmed steps in the controller memory.

The DCM controls the operation regardless of which mode the sprayer is in due to interlocking and safety devices.

Refer to the 414 User Manual for instructions for setting parameters.

The following operations require a Machine Operator and/or a Programmer.

Machine Startup

1) Turn on the Primary power to the control panel
2) Reset all the EMERGENCY STOP buttons.
3) Press the green "START" illuminated pushbutton.
4) The 414 must be homed each time control power is applied. The need for homing is indicated by the MANUAL pushbutton light flashing rapidly. Pressing the MANUAL pushbutton while it is flashing causes the reciprocator to home. During homing the 414 retracts until it finds the home switch and then sets the home position. Once it is homed the machine is ready for operation.

Manual Operation

Press the MANUAL pushbutton until it lights. The 414 may now be operated manually using the pushbuttons on the front panel of the control box.



Automatic Operation

To begin automatic operation the 414 must be homed and retracted. Press the AUTO pushbutton until it lights. The 414 will now respond to the inputs from the forming machinery.

In automatic the 414 executes spray steps as programmed through the TEACH screen. The steps execute in order once a START input is received or the CYCLE START pushbutton is pressed.
If the DCM sends an "OK to EXTEND" signal to the sprayer it will start an Auto Cycle.
When the sprayer completes its Auto Cycle it will send a "Cycle Complete" and also a "Clear of DCM" signal to the DCM.

Stopping the Machine

Normal Stopping

Normal machine stopping can be done by putting the sprayer in Manual Mode after it has returned to the rest or home position.
The operator can then press the "STOP" button to turn control power off.

Emergency Stop

If any of the Red mushroom head pushbuttons is pressed, all motion immediately stops.
To reset the Auto cycle:

1) Eliminate the cause of the emergency.
2) Reset the emergency stop pushbutton.
3) Press the "START" illuminated pushbutton.
4) Press and hold the "MANUAL" illuminated pushbutton until the machine is at the home position and the light stops flashing.

Note:

Rimrock Corporation shall not be held responsible for possible damage or injury to people, machinery or property resulting from failure to comply with safety standards or negligence of the operator.

Maintenance

Preventive Maintenance

Note:

Rimrock Corporation shall not be held responsible for possible damage or injury to people, machinery or property resulting from failure to comply with safety standards.

A preventive maintenance program should be established to ensure proper operation and long life for the 414 sprayer system.

Maintenance functions for the system require normal tools only.

All maintenance functions must be carried out by qualified personnel such as a **Normal Maintenance person or Master Maintenance person** and with the machinery turned off and disconnected from the electrical source. Also all pneumatic circuits must be depressurized.

⚠ DANGER! ⚠

The following tasks involve working in extremely dangerous areas of machinery. The user must put the machine and other equipment in the work cell into a zero energy state and follow lockout/tagout procedures.

Cleaning

The machine should be cleaned as needed. The accumulation of grease and metallic particles can cause increased wear parts of the machine.

The control panel exterior should be cleaned as well. The inside areas of the control panel should not require cleaning.

Lubrication

The 414 sprayer does not normally require lubrication.

Wear Points

The areas where the slide moves up and down on the body of the machine and the contact points where the arm moves through the guide blocks should be checked for abnormal wear.
Misaligned arm mounting could cause excessive wear at these points.
Contact Rimrock Corporation for information on mounting specifications.

Fastener Check

All fasteners should be checked after the first 100 hours of operation and every 2400 hours thereafter.

Electrical System



The electrical connections in the control panel and on the machine should be checked every 2000 hours and all screw terminations should be tightened.

Safety Device Check

Controller testing should be done every time maintenance is performed.

The control panel disconnect switch should be tested to verify that the door interlock mechanism functions correctly.
If the switch is turned to the "ON" position it should not be possible to open the door of the control panel.

Demolition

Temporary shutdown

The following operations should be done by qualified personnel described in the introduction as a **Master Maintenance person.**



If the machine is not going to be used for a long period of time, the following operations must be done:

1) If possible return the machine to its "home" position.
2) Disconnect the electrical power feed by turning the main switch to "OFF".
3) Relieve pressure from the machine and hoses.
4) Dismantle any equipment fastened to the machine.
5) Clean and dry the machine thoroughly and lubricate all necessary parts and bearings.
6) Cover the machine and the control panel with protective cover such as plastic sheeting.

Permanent shutdown and removal

The following operations should be done by qualified personnel described in the introduction as a **Master Maintenance person.**



If the machine is not going to be used again, the following operations must be done:

1) If possible return the machine to its "home" position.
2) Disconnect the electrical power feed by turning the main switch to "OFF".
3) Turn off power feed to the control panel.

⚠ DANGER! ⚠

Make sure all power is off and locked out before disconnecting any wires.

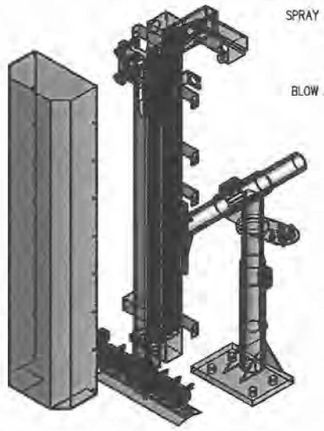
4) Relieve pressure from the machine and hoses.
5) Drain the machine and hoses.

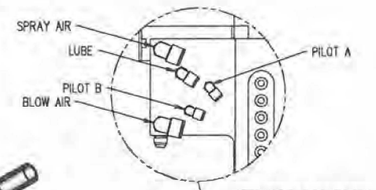
Note:

Used oils and fluids must be disposed of properly according to disposal regulations in the country where the machine is located.

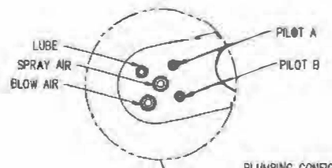
6) Dismantle any equipment hoses and cables attached to the machine.
7) Clean and dry the machine and all parts thoroughly and lubricate all necessary parts and bearings.
8) Remove the body of the machine from the mounting post and remove the mounting post . Package the parts with adequate packing material appropriate to each part. A plate indicating the weight, description of contents, and any other necessary information should be affixed to the outside of the packing.

Refer to the Installation and Transport section of the manual for more information.

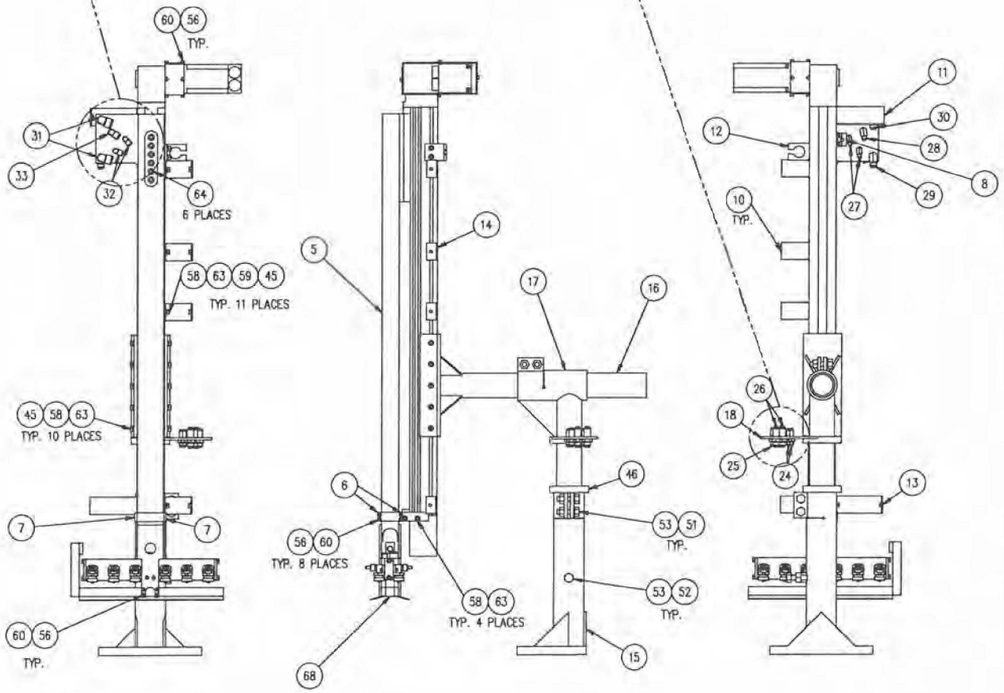




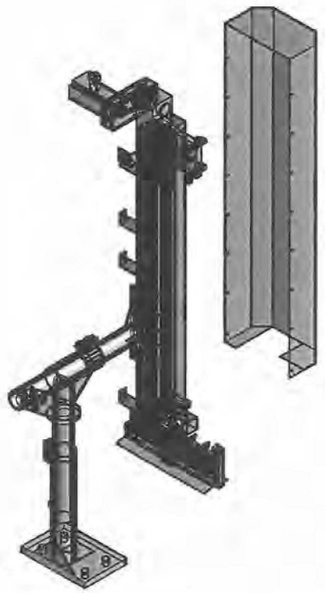
PLUMBING CONFIGURATION
SCALE 1/4



PLUMBING CONFIGURATION
VIEWED FROM THE TOP
SCALE 1/4



COVER (ITEM 9) REMOVED FOR CLARIFICATION
MOUNT TO BRACKETS USING ITEM 58 AND ITEM 63



TABULATED CHART 414 BODY ASSEMBLY Ⓐ				
414 BODY ASSY	ITEM	DESCRIPTION	QTY	PART NO
ASSY 36554 24 INCH	5	414 BOOM WELDMENT 24 INCH	1	36542
	9	414 BOOM COVER 24 INCH	1	36547
	14	24 INCH SERVO SLIDE UNIT 4:1	1	17212-S24
ASSY 36555 30 INCH	5	414 BOOM WELDMENT 30 INCH	1	36546
	9	414 BOOM COVER 30 INCH	1	36548
	14	30 INCH SERVO SLIDE UNIT 4:1	1	17212-S30
ASSY 17212-201 36 INCH (SHOWN)	5	414 BOOM WELDMENT 36 INCH	1	17212-202
	9	414 BOOM COVER 36 INCH	1	17212-208
	14	36 INCH SERVO SLIDE UNIT 4:1	1	17212-S36
ASSY 36556 48 INCH	5	414 BOOM WELDMENT 48 INCH	1	36543
	9	414 BOOM COVER 48 INCH	1	36549
	14	48 INCH SERVO SLIDE UNIT 4:1	1	17212-S48

	ITEM	DESCRIPTION	QTY	P/N
Ⓑ	70	DESCRIPTION	1	P/N
Ⓑ	69	–	–	–
	68	414 MANIFOLD ASSY	1	17212-150
	67	1/4 NPT LEVL SEAL PIPE PLUG SS	1	02351-D
	66	1/8 NPT LEVL SEAL PIPE PLUG SS	2	01038-D
	65	METRIC DOWEL PIN 4MM X 16MM	8	09751-10
	64	FHCS M8 -1.25 X 20MM	6	09105-20
	63	SHCS M8 -1.25 X 16MM	32	09015-16
	62	SHCS M6 -1.00 X 16MM	8	09013-16
	61	SHCS M5 -0.8 X 35MM	4	09012-35
	60	SHCS M5 -0.8 X 12MM	34	09012-12
	59	FLATWASHER M8	28	09002-13
	58	LOCKWASHER M8	32	09001-13
	57	LOCKWASHER M6	8	09001-11
	56	LOCKWASHER M5	26	09001-10
	55	HEX NUT M8 -1.25	REF	09000-13
	54	HEX NUT M5 -0.8	4	09000-10
	53	BOLT HH 5/8-11 X 2	6	08701-36
	52	HEX JAM NUT 5/8-11	2	02912-110
	51	LOCKWASHER LIGHT 5/8	4	02695-10
	50	M8 ALL THREAD X 7.5 IN	REF	17212-105
	49	COPPER BLOW TIP ASSY	REF	01767-100
	48	#103 MED CONE SPRAY TIP	REF	15810-103
	47	STANDARD 032 NOZZLE ASSY	REF	06951-14
	46	2 7/8 IN CLAMP COLLAR 2 PIECE	1	09610-287
	45	SWIVEL IN T-NUT	20	09466-04
	44	PROX SWITCH 8MM SHORTY	1	02863-20
	43	16MM NYLON TUBING	10	11516-46
	42	POLYURETHANE 10MM TUBING	5	11516-46
	41	8MM TUBING	10	11516-37
	40	O-RING VITON 2-013	REF	02077-E
	39	O-RING VITON 2-015	REF	01219-E
	38	O-RING VITON 2-010	REF	01004-E
	37	ONE TOUCH INT. HEX 10MM	REF	01068-83
	36	ONE TOUCH INT. HEX 8MM	REF	01068-82
	35	ONE TOUCH INT. HEX 16MM	REF	01068-80
	34	ONE TOUCH FITTING 1/2 NPT STR	REF	01068-58
	33	ONE TOUCH FITTING 3/8 NPT EL	1	11518-190
	32	ONE TOUCH FITTING 1/4 NPT EL	2	01068-85
	31	ONE TOUCH FITTING 1/2 NPT EL	2	01068-60
	30	ELBOW ADAPTER 1/2NPT LONG	1	03037-10
	29	ELBOW ADAPTER 1/2NPT	1	02522
	28	ELBOW ADAPTER 3/8NPT	1	02520
	27	ELBOW ADAPTER 1/4NPT	2	02517
	26	BULKHEAD UNION #8	2	08962-8
	25	BULKHEAD UNION #6	1	08962-6
	24	BULKHEAD UNION #4	2	08962-4
	23	BLOW TUBE WELDMENT 414	REF	17212-209
	22	414 MANIFOLD ADAPTER	REF	17212-114
	21	414 O-RING END CAP	REF	17212-112
	20	414 FLAT END CAP	REF	17212-111
	19	414 MANIFOLD 6.5 IN	REF	17212-106
	18	BULKHEAD CLAMP	1	17212-514
	17	414 T POST	1	17212-512
	16	414 HORIZONTAL BASE POST	1	17212-511
	15	414 BASE MOUNT	1	17212-510
Ⓐ**	14	SEE TABULATION TABLE	–	–
	13	RH LOWER BRACKET FOR COVER	1	17212-211
	12	CONDUIT BRACKET	1	17212-210
	11	RH UPPER BRACKET FOR COVER	1	17212-208
Ⓒ	10	LH BRACKET FOR COVER	4	17212-207
Ⓐ**	9	SEE TABULATION TABLE	–	–
	8	PROX SWITCH BRACKET	1	17212-205
	7	RUB BLOCK MOUNT BRACKET	2	17212-204
	6	RUB BLOCK	2	17212-203
Ⓐ**	5	SEE TABULATION TABLE	–	–
	4	BELT DRIVE SPACER	REF	17212-004
	3	BELT DRIVE COVER SHIELD	REF	17212-003
	2	BELT DRIVE PLATE MOTOR MOUNT	REF	17212-002
	1	BELT DRIVE PLATE SLIDE MOUNT	REF	17212-001
	ITEM	DESCRIPTION	QTY	PART NUMBER

** SEE TABULATION TABLE

4. DEBURR
3. SURFACE FINISH 125
2. ALL THREADS CLASS 2A OR 2B
1. PARTS TO CONFORM TO RIMROCK CORP. ENGR. & MFG. STANDARDS

NOTES (UNLESS OTHERWISE SPECIFIED)

REVISIONS									
LTR	DR	CK	ER	DATE	REMARKS	LTR	DR	CK
				6.15 08	REDUCED QTY FOR ITEM 10 FROM 5 TO 4	C	JAB	
			0036	4.30 08	REMOVED ITEM #9 P/N 02683-21	B	MAD	
			–	4.01 08	ADDED TABULATION TABLE FOR ASSY P/N 17212-201, 36554, 36555 & 36556	A	MAD	

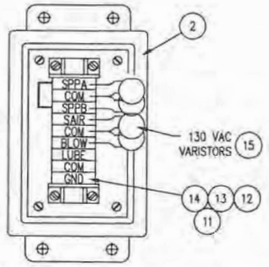
MATL: SEE B.O.M. ABOVE

TOLERANCES UNLESS OTHERWISE SPECIFIED
2-DIGIT DECIMALS= ±.010 FRACTIONS= ±1/64
3-DIGIT DECIMALS= ±.005 ANGLES= ±1/2
4-DIGIT DECIMALS= ±.0005

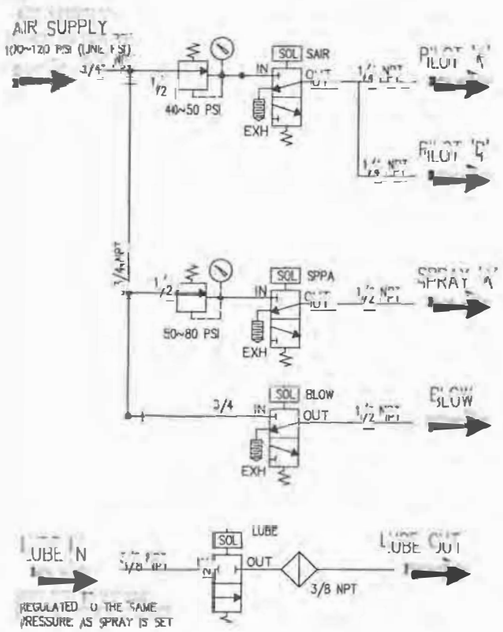
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DR JAH	DATE 9-14-05
CK	DATE
SCALE 1:8	PIC
DR 0136	SHEET OF
DRAWING NO.	REV
414D17212-201	C
DRAWING NAME	414 BODY ASSEMBLY VERTICAL SERVO
24, 30, 36 & 48 INCH STROKE	
FOR 414 TABULATED DWG	

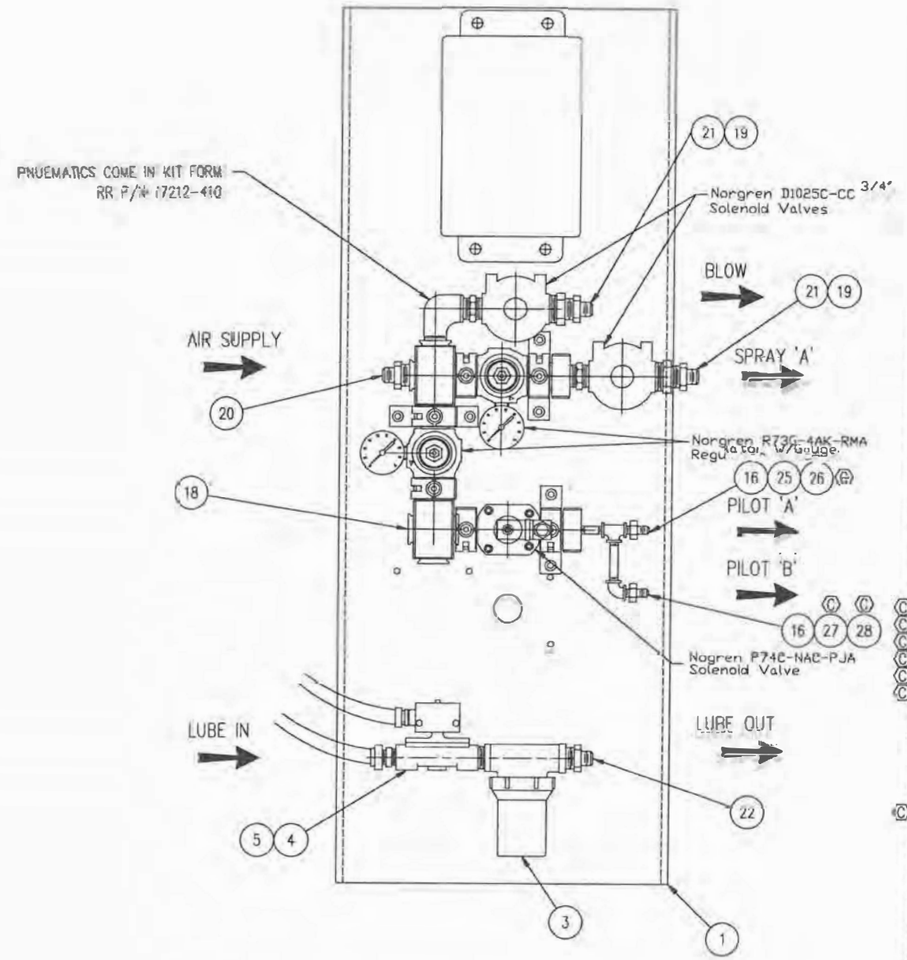
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VIEW OF INSIDE OF JUNCTION BOX



PNEUMATIC SCHEMATIC



ITEM	DESCRIPTION	QUAN	PART NO
45			
44			
43			
42			
41			
40			
39			
38			
37			
36			
35			
34			
33			
32			
31			
30			
29			02201
28	ELBOW PIPE 1/4 NPT	1	02019-C
27	PIPE NIPPLE 1/4 NPT X 3 LONG	1	02109-C
26	TEE 1/4" NPT	1	02016-C
25	PIPE NIPPLE 1/4 NPT X 1-1/2 LONG	1	15614-09
24	NAMEPLATE "LUBE IN"	1	15614-14
23	NAMEPLATE "PILOT B"	1	02502-32
22	ST. ADAPTER BUSHING 1/2-#6	1	02509
21	ADAPTER STRAIGHT 8-8	4	02509
20	ADAPTER STRAIGHT 1/4 - #12	2	02229-C
19	REDUCER BUSHING 3/4 X 1/2	1	17212-410
18	NORGREN PNEUMATICS KIT	1	08520-01
17	LABEL RIMROCK LOGO	1/2	02501
16	ADAPTER STRAIGHT 1/4 - #4	3	08295-5
15	VARISTOR ERZG14D431	1	02364-27
14	JUMPER	1	02364-38
13	GND ANCHOR	1	02364-10
12	TERMINAL BLOCK	5	02364-2
11	MOUNTING RAIL	1	15614-06
10	NAMEPLATE "LUBE"	1	15614-05
9	NAMEPLATE "BLOW"	1	15614-03
8	NAMEPLATE "SPRAY"	1	15614-01
7	NAMEPLATE "AIR SUPPLY"	1	15614-13
6	NAMEPLATE "PILOT A"	1	6056-08
5	ASCO 1/2" SOLENOID VALVE	1	6056-07
4	ASCO GASKET	1	6054-01
3	70 MICRON MESH FILTER	1	08679-01
2	JUNCTION BOX	1	17212-412
1	MOUNTING PLATE	1	PART NO

ASSY P/N 17212-401

NOTES: UNLESS OTHERWISE SPECIFIED
1. PAINT TO CONFORM TO RIMROD CORP. ENGR. & MFG. STANDARDS
2. ALL PAINTING CLASS A OR 2B
3. SURFACE FINISH 125
4. DESIGN

REV	DATE	DR	REMARKS
C	6.15.09	JAB	CHANGED ITEM 16 AND INCR. QTY, ADDED ITEMS 23-26, CHANGED WIRE MARKERS
B	4.28.09	JAB	CHANGED ITEMS 16 AND 18
A	2.0	JAB	UPDATED 3M ANTI CALIBRATE

MATL SEE BOM

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2-PLACE DECIMALS= ± .010 FRACTIONS= ± 1/64
3-PLACE DECIMALS= ± .005 ANGLES= ± 1/2°

DR JAB DATE 9.8.05 SCALE NA SHEET OF

DRAWING NO. 414D17212-401 REV C

DRAWING NAME 414 1 ZONE MODULAR
SPRAY VALVE PACKAGE 1 PILOT

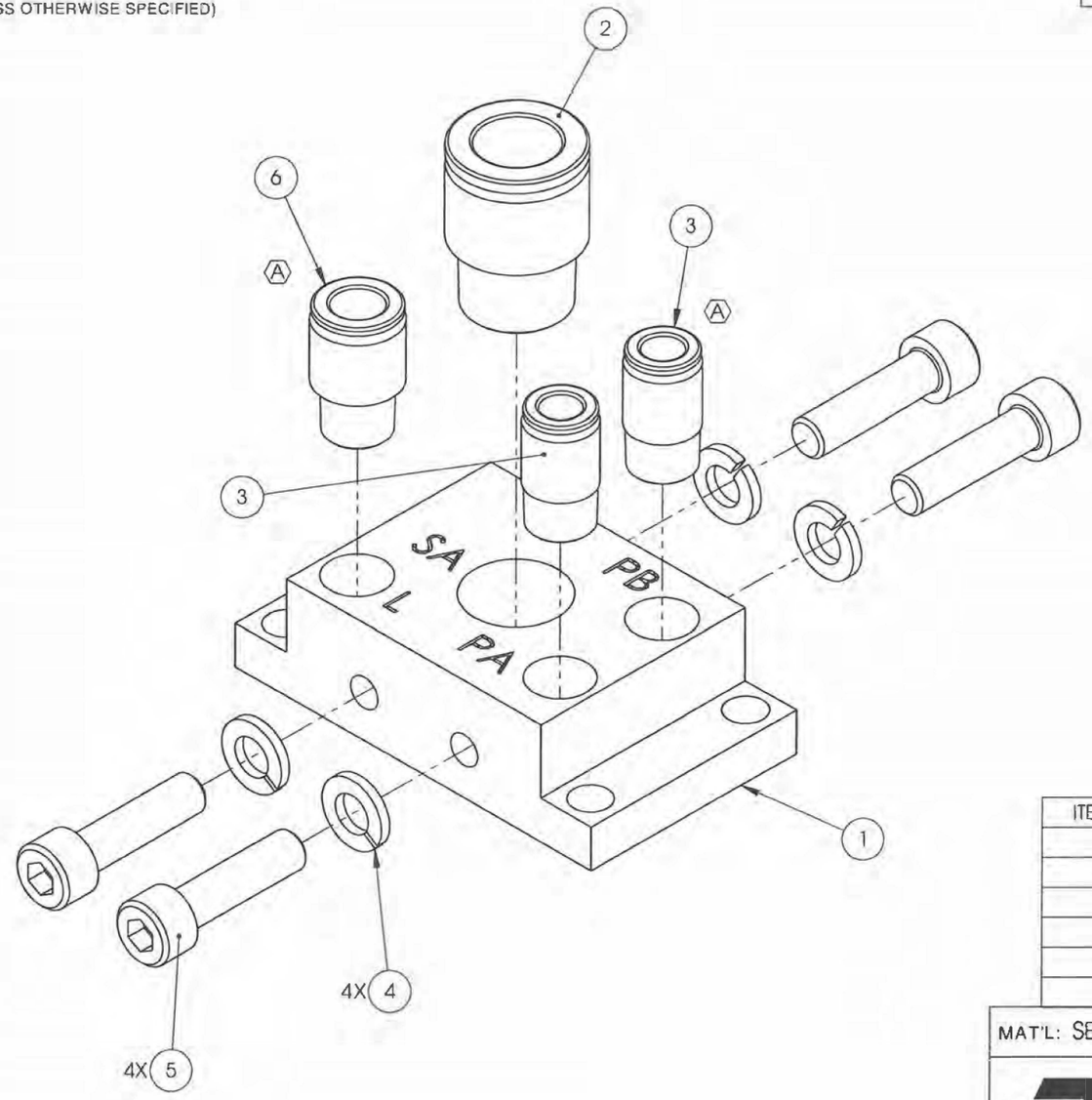
FOR 414 1 ZONE

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4. DEBURR
3. SURFACE FINISH 125
2. ALL THREADS CLASS 2A OR 2B
1. PARTS TO CONFORM TO RIMROCK CORP. ENGR. & MFG. STANDARDS

NOTES (UNLESS OTHERWISE SPECIFIED)

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	CORRECTED FITTING INSTALLATION LOCATIONS	1/12/2012	JAH



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	37984	414 EU MANIFOLD MOUNT	1
2	01068-80	ONE TOUCH INT HEX 16mm TO 1/2 NPT	1
3	01068-82	ONE TOUCH INTERNAL HEX 8MM TO R1/4	2
4	09001-13S	LOCKWASHER M8 SS	4
5	09015-30	SHCS M8-1.25 X 30MM	4
6	11518-165	SMC INT. HEX 10MM TUBE TO R1/4	1

MAT'L: SEE BOM

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2-DIGIT DECIMALS=±.010 FRACTIONS± 1/64
3-DIGIT DECIMALS=±.005 ANGLES=± 1/2
4-DIGIT DECIMALS=±.0005

DR JAB	DATE 04.22.09	SCALE 1:1	PIC
CK	DATE	ER	SHEET 1 OF 1

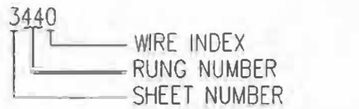
DRAWING NO. 414B38336 REV A

DRAWING NAME SPRAY MANIFOLD MOUNT
BLOCK ASSEMBLY
FOR MARTIN ELECTRONICS

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RIMROCK
414 CE RECIPROCATOR
DRAWING PACKAGE

LEGEND



⬡ DESIGNATES TERMINAL

SHEET 1	THIS PAGE
SHEET 2	MAIN POWER
SHEET 3	SERVO, INTERLOCKS, VALVE WIRING
SHEET 4	SYSTEM I/O
SHEET 5	SPARE
SHEET 6	PANEL LAYOUT
SHEET 7	FRONT PANEL

4. DEBURR.
3. SURFACE FINISH 125
2. ALL THREADS CLASS 2A OR 2B
1. PARTS TO CONFORM TO RIMROCK CORP. ENGR. & MFG. STANDARDS

NOTES (UNLESS OTHERWISE SPECIFIED)

	DATE	REVISION	LET	DR
D	11 17 10	ADDED OPTIONAL I/O FOR PENDANT	B	DS
C	05 28 09	ADDED ALTERNATE PROX SWITCH CONNECTION REMOVED 312CR N.C. CONTACT	A	DS

MATL: SEE B.O.M.

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3-DIGIT DECIMALS= ±.010 FRACTIONS= ± 1/64
3-DIGIT DECIMALS= ± .005 ANGLES= ± 1/2
4-DIGIT DECIMALS= ±.0005

DR DS | DATE 10.17.08 | SCALE NIS | MC
DR | DATE | DR | SHEET 1 OF 7

DRAWING NO. 415D37759 | REV B

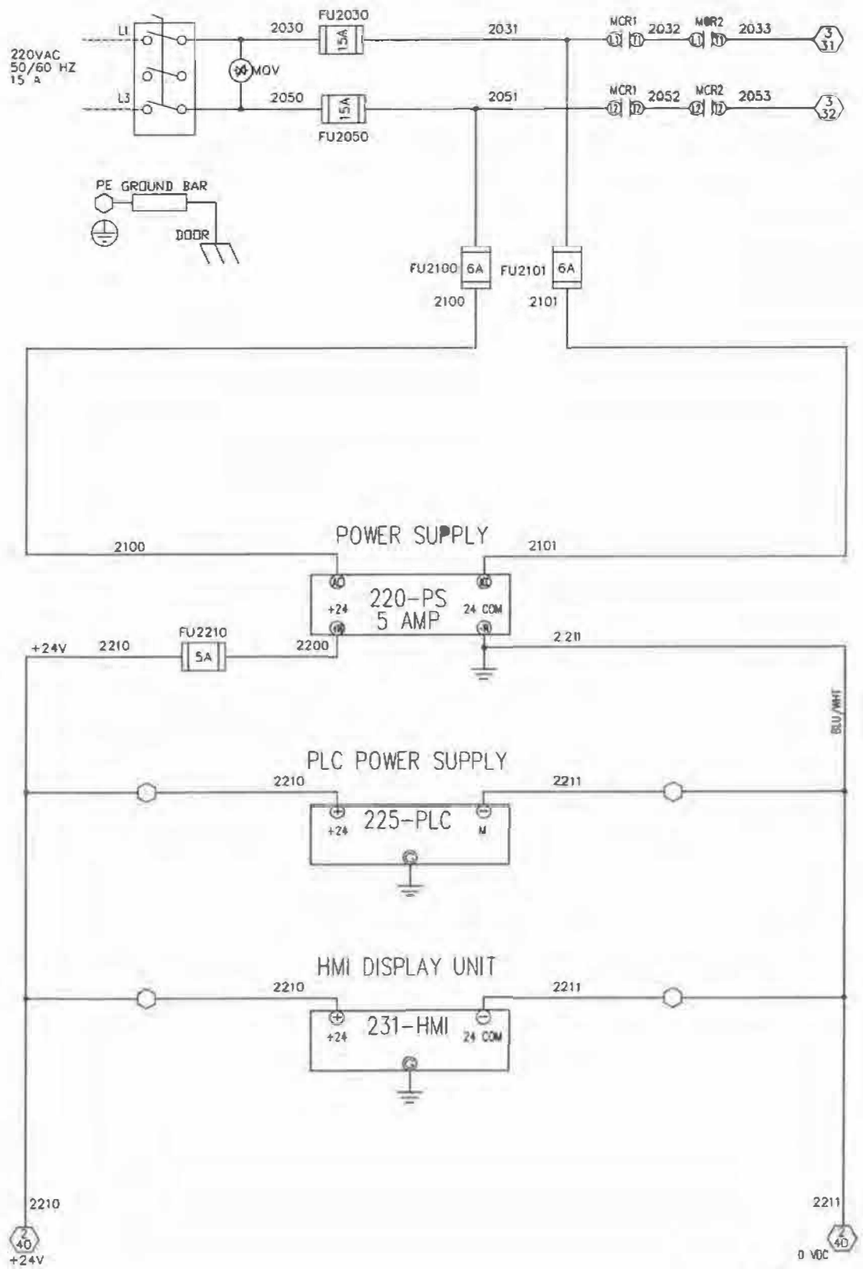
DRAWING NAME MAIN CONTROLS

TITLE PAGE

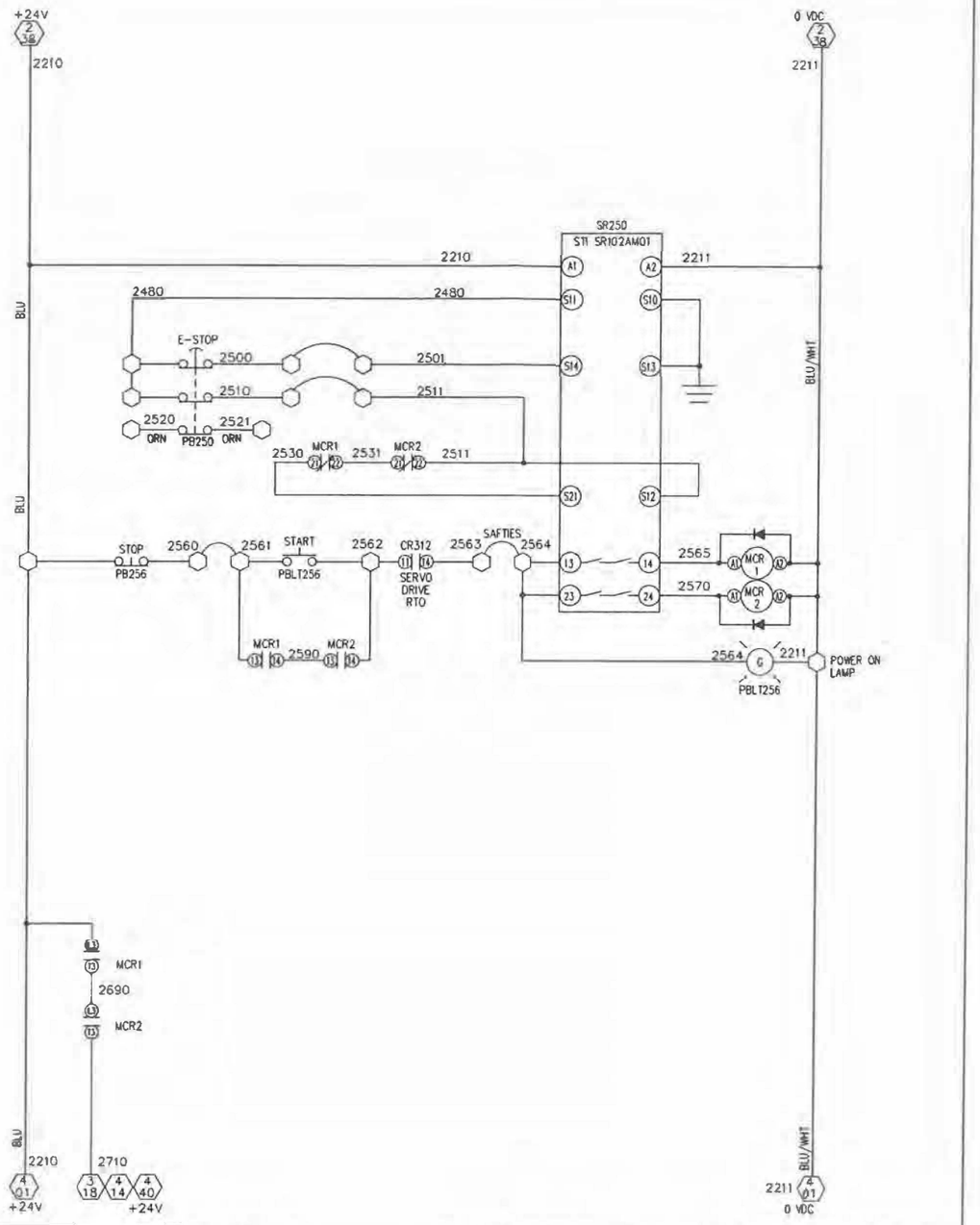
FOR 414 CE RECIPROCATOR

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POWER FOR VALVES AND DCM INTERLOCKS TO BE SUPPLIED SEPARATELY
FROM EXTERNAL SOURCE-SEE SHEET 3 FOR VALVE PACKAGE AND INTERLOCK WIRING



NOTES (UNLESS OTHERWISE SPECIFIED)
1. PARTS TO CONFORM TO RIMROCK CORP. ENGR. & MFG. STANDARDS
2. ALL THREADS CLASS 2A OR 2B
3. SURFACE FINISH 125
4. DEBURR



				D	11.17.10	ADDED OPTIONAL I/O FOR PENDANT	B	DS	
				053	09.78.09	ADDED ALTERNATE PROX SWITCH CONNECTION REMOVED 3120R N.C. CONTACT	A	DS	
ER	DATE	REMARKS	LET	DR	CK	ER	DATE	REMARKS	LET	DR	CK
REVISIONS						REVISIONS					

MATL: SEE B.O.M.

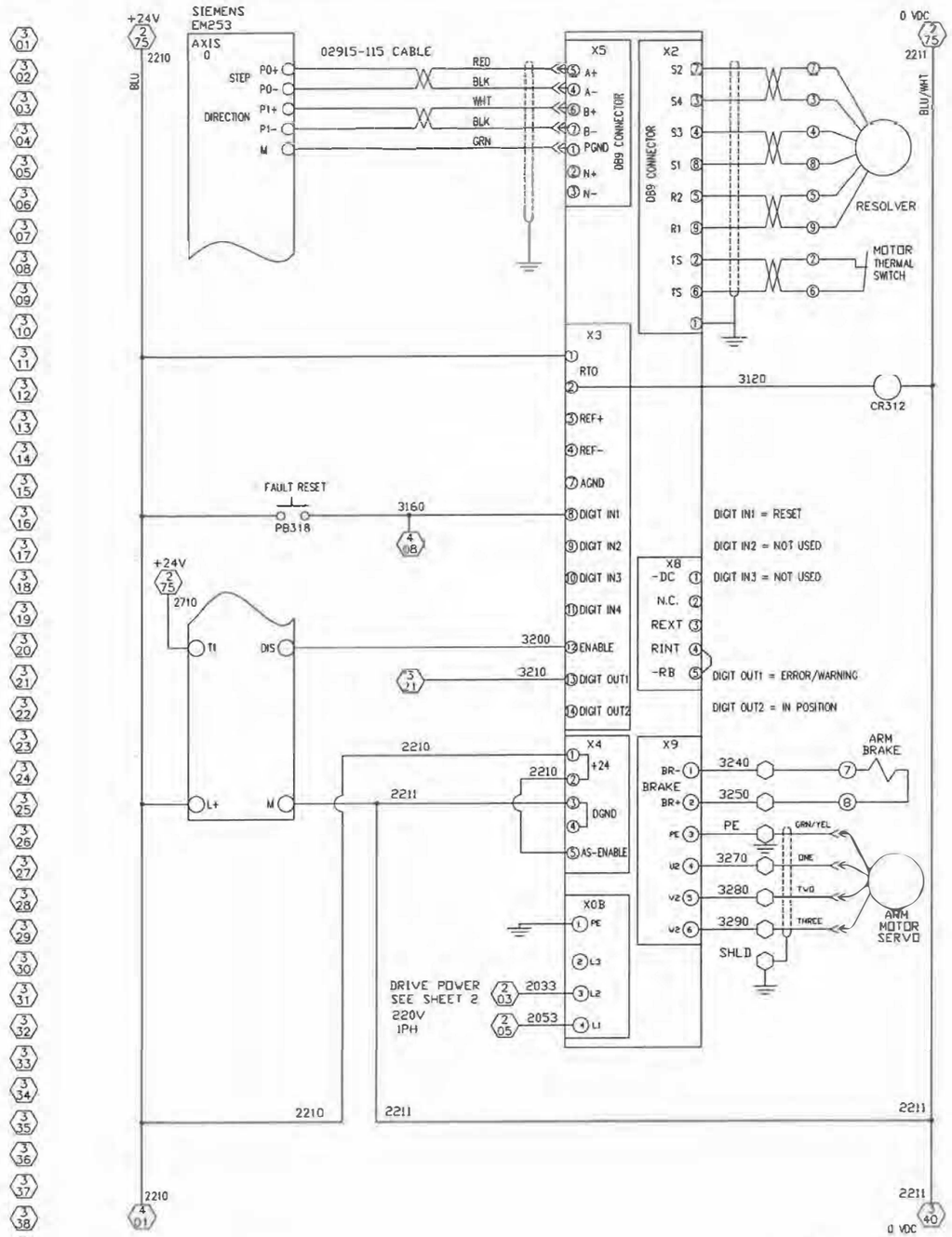
RIMROCK

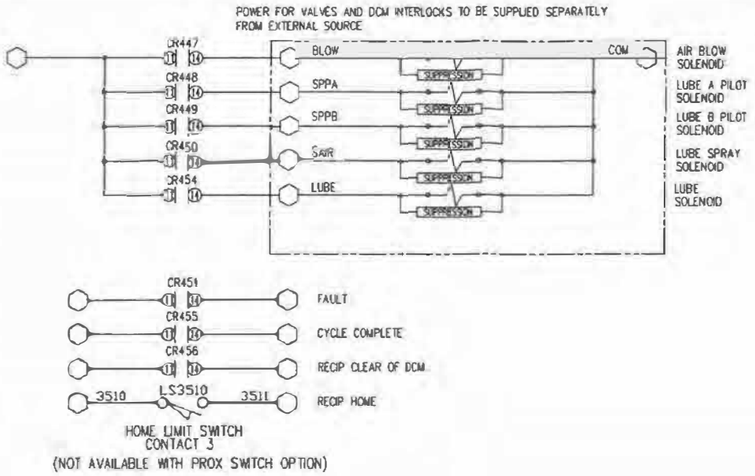
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2-DIGIT DECIMALS= ±.010 FRACTIONS= ±1/64
3-DIGIT DECIMALS= ±.005 ANGLES= ±1/2
4-DIGIT DECIMALS= ±.0005

DR OS	DATE 10.17.08	SCALE NTS	WT:
CK	DATE	DF	SHEET 2 OF 7
DR+ HRD NO. 415D37759			REV B
DRAWING NAME	MAIN CONTROLS		
MAIN POWER/MAIN CONTROLS			
FOR 414 CE RECIPROCATOR			

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4. DEBURR
3. SURFACE FINISH 125
2. ALL THREADS CLASS 2A OR 2B
1. PARTS TO CONFORM TO RIMROCK CORP. ENGR. & MFG STANDARDS

NOTES (UNLESS OTHERWISE SPECIFIED)

REVISIONS							
ER	DATE	REMARKS	LET	CR	CK		
			D	11.17 10	ADDED OPTIONAL I/O FOR PENDANT	B	DS
			053	05.28 09	ADDED ALTERNATE PROX SWITCH CONNECTION REMOVED 3120R N.C. CONTACT	A	DS

MAT'L: SEE B.O.M.

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2-DIGIT DECIMALS= ±.010 FRACTIONS= ±1/64
3-DIGIT DECIMALS= ±.005 ANGLES= ±1/2
4-DIGIT DECIMALS= ±.0025

ER DS | DATE 10.17.08 | SCALE NTS | WC
CK | DATE | ER | SHEET 3 OF 7

DRAWING NO. 415D37759 | REV B

DRAWING NAME: SERVO DRIVE-AXIS 1 - ARM
SINGLE CONTROL MODULE
FOR 414 CE RECIPROCATOR - EURO

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+24V

2210

BLU

ALTERNATE-HOME PROX SWITCH

2210 2211 4071 LS4070

HOME LIMIT SWITCH CONTACTS 1 & 2

2210 4070 LS4070 LS4071 4071

3160

2210 4090

2210 4100

2210 4110

2210 4120

2210 4130

DCM

2710

2210 PB416 4160

PBLT417 4170

PBLT418 4180

K99 4190

2210 99% 55413 4200

3210

PENDANT BUTTONS

PB423

PB424

PB425 4250

PB426 4260

PB427 4270

2210

+24V

0 VDC

2211

BLU/WHT

SIEMENS INPUTS

1M-0V	2211	24 COM	
IN 0.0		HOME LIMITS	
IN 0.1		FAULT RESET	
IN 0.2		RESET CYCLE	
IN 0.3		APPROACH	
IN 0.4		CYCLE START	
IN 0.5		EXTEND OK	
IN 0.6		MACHINE IN AUTO	
IN 0.7		CONTROL POWER ON	
2M-0V	2211	24 COM	
IN 1.0		AUTO START PUSH BUTTON	
IN 1.1		MANUAL PUSH BUTTON	
IN 1.2		AUTO PUSH BUTTON	
IN 1.3		FORWARD INPUT	
IN 1.4		REVERSE INPUT	
IN 1.5		SERVO FAULT INPUT	

SIEMENS INPUTS

1M-0V	2211	24 COM	
IN 3.0		SPRAY A	
IN 3.1		SPRAY B	
IN 3.2		STEP SPRAY	
IN 3.3		SPARE	
IN 3.4		SPARE	
IN 3.5		SPARE	
IN 3.6		SPARE	
IN 3.7		SPARE	
2M-0V	2211	24 COM	

2211

0 VDC

NOTES (UNLESS OTHERWISE SPECIFIED)
1. PARTS TO CONFORM TO RIMROCK CORP. ENGR. & MFG. STANDARDS
2. ALL THREADS CLASS 2A OR 2B
3. SURFACE FINISH 125
4. DEBURR

+24V

2710

0 VDC

2211

SIEMENS OUTPUTS

	0VDC	1M 0V		2211
2710	+24VDC	1L +V		
	BLOW OFF	OUT 0.0	CR447	2211
	PILOT A	OUT 0.1	4480 CR448	
	PILOT B	OUT 0.2	4490 CR449	
	SPRAY A	OUT 0.3	4500 CR450	
	FAULT	OUT 0.4	4510 CR451	
	0VDC	2M 0V		2211
2710	+24VDC	2L +V		
	LUBE VALVE	OUT 0.5	4540 CR454	2211
	COMPLETE	OUT 0.6	4550 CR455	
	CLEAR	OUT 0.7	4560 CR456	
	MANUAL LIGHT	OUT 1.0	4570 PBLT417	2211
	AUTO LIGHT	OUT 1.1	4580 PBLT418	

2710 IN 0 +24V

2211 5 0 VDC

REV			DESCRIPTION		
B	5	4.17	ADDED OPTIONAL I/O FOR PENDANT	B	DS
A	3	03.28.09	ADDED ALTERNATE PROX SWITCH CONNECT NON REMOVED 3120R N.C. CONTACT	A	DS

WATL SEE B.O.M.

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3-DIGIT DECIMALS= ± .005 ANGLES= ± 1/2
4-DIGIT DECIMALS= ± .0005

DR DS DATE 10.17.08 SCALE NTS

CK DR SHEET 4 OF 7

DRAWING NO. 415D37759 REV B

DRAWING NAME MAIN CONTROLS INPUTS OUTPUTS FOR 414 CE RECIPROCATOR

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NOTES (UNLESS OTHERWISE SPECIFIED)
1. PARTS TO CONFORM TO RIMROCK CORP. ENGR. & MFG. STANDARDS.
2. ALL THREADS CLASS 2A OR 2B.
3. SURFACE FINISH 125.
4. DEBURR.

REVISIONS								
ZONE	LTR	REMARKS	EST	DR	CK	ZONE	DATE	REMARKS	EST	DR	CK
						0	11.17 10	ADDED OPTIONAL I/O FOR PENDANT	B	DS	
						053	05.28 09	ADDED ALTERNATE PROX SWITCH CONNECTION REMOVED .312CR W.C. CONTACT	A	DS	

MATL: SEE B.O.M.

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3-DIGIT DECIMALS= ± .005 ANGLES= ± 1/2
4-DIGIT DECIMALS= ± .0005

DR DS | DATE 10.17.08 | SCALE NTS | WT.
CK | DATE | SHEET 5 OF 7

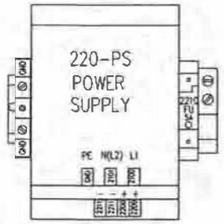
DRAWING NO. 415D37759 | REV B

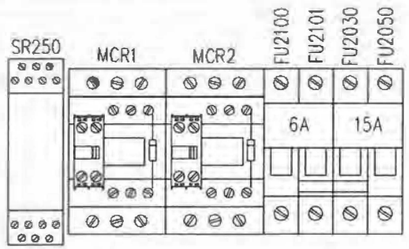
DRAWING NAME: MAIN CONTROLS

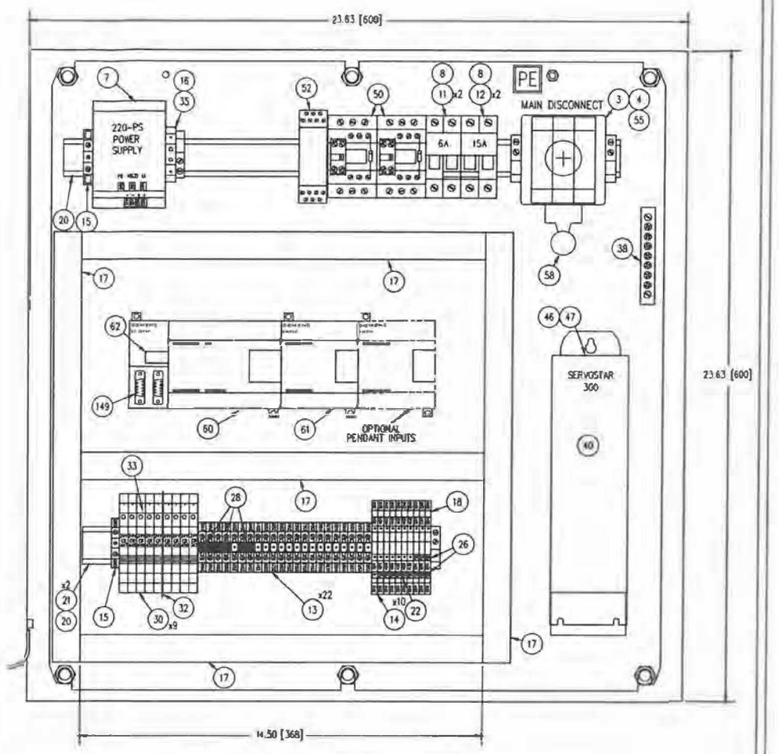
SPARE

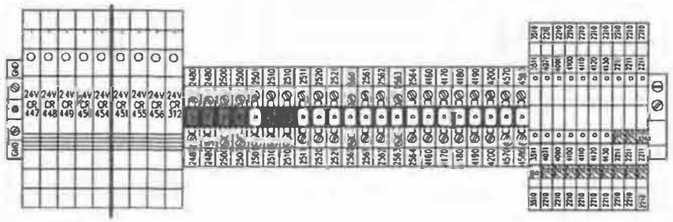
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4. DEBURR
3. SURFACE FINISH 125
2. ALL THREADS CLASS 2A OR 2B
1. PARTS TO CONFORM TO RIMROCK CORP. ENGR. & MFG. STANDARDS

NOTES (UNLESS OTHERWISE SPECIFIED)

	11.17.10	ADDED OPTIONAL I/O FOR PENDANT	B	DS
053	05.28.09	ADDED ALTERNATE PROX SWITCH CONNECTOR REMOVED DOOR N.C. CONTACT	A	DS

MATL: SEE B.O.M

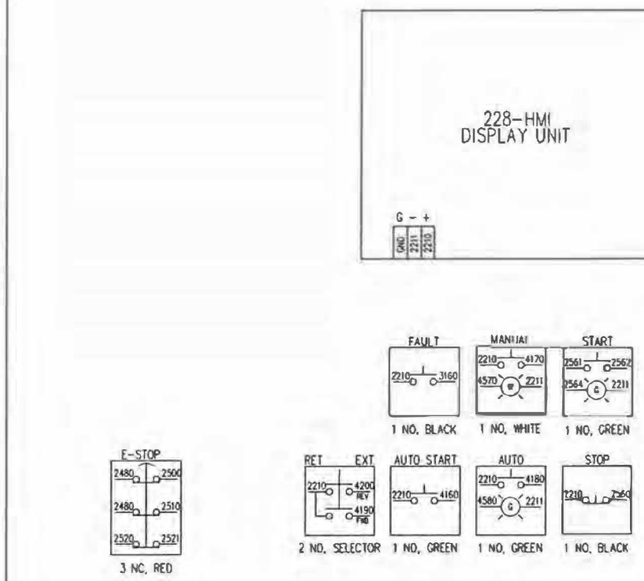
RIMROCK

RIMROCK CORPORATION
1766 ATTUCK BLVD.
COLUMBUS, OHIO 43228
PHONE: 614-491-3688
Fax: 614-491-1873
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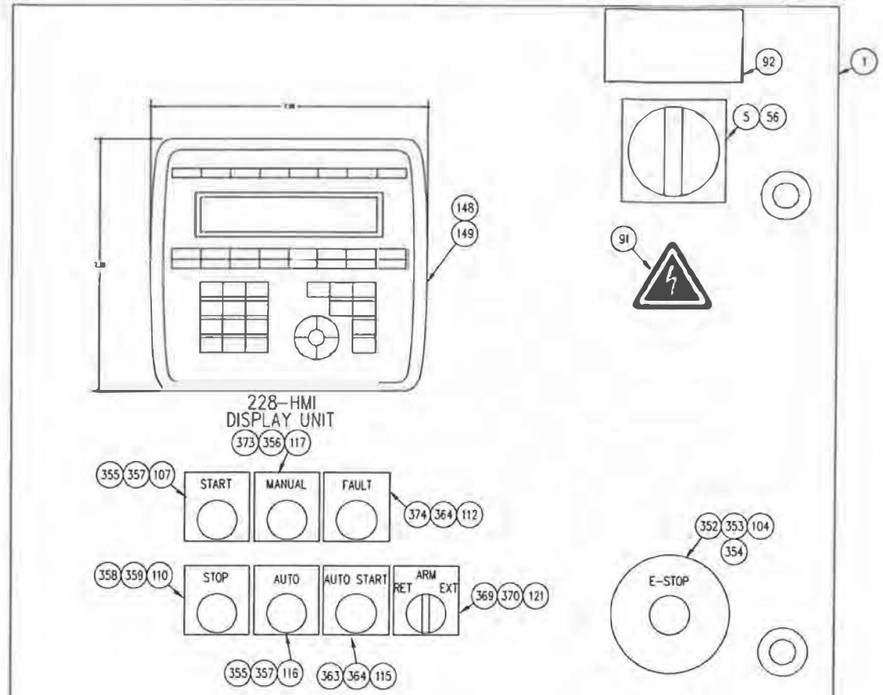
TOLERANCES UNLESS OTHERWISE SPECIFIED
2-DIGIT DECIMAL= ± 010
3-DIGIT DECIMAL= ± 005
4-DIGIT DECIMAL= ± 0005
FRACTIONS= ± 1/64
ANGLES= ± 1/2

BY	DS	DATE	10.17.08
CK		DATE	
ENG		DATE	
SCALE	HALF	WT	
SHEET	6 of 7		
DRAWING NO.	415D37759	REV	B
DRAWING NAME	LAYOUT AND BOM		
	414 CONTROLS		
FOR	CE 414 RECIPROCATOR		

THIS DRAWING IS THE PROPERTY OF RIMROCK CORP. AND IS FOR THE CONFIDENTIAL USE OF THE BUYER OR SUPPLIER OF THIS EQUIPMENT



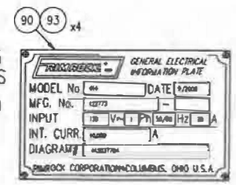
REAR VIEW



FRONT VIEW

SEE DRAWING 140B09520-35
FOR ENGRAVING INSTRUCTIONS

ELECTRICAL TAG MOUNTED
ON SIDE OF ENCLOSURE
CENTERED



NOTE: STANDARD FRONT PANEL SHOWN
OPTIONS MAY CHANGE APPEARANCE

4. DEBURR
3. SURFACE FINISH 125
2. ALL THREADS CLASS 2A OR 2B
1. PARTS TO CONFORM TO RIMROCK CORP. ENGR & MFG. STANDARDS

NOTES (UNLESS OTHERWISE SPECIFIED)

			0	11.17 10	ADDED OPTIONAL I/O FOR PENDANT	B	DS
			053	05.28 09	ADDED ALTERNATE PROX SWITCH CONNECTION REMOVED J12CR N.C. CONTACT	A	DS

MATL: SEE B.O.M.

RIMROCK CORPORATION
1700 JETWAY BLVD.
COLUMBUS, OHIO 43219
PHONE 614-471-5926 FAX 614-471-1073
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TOLERANCES UNLESS OTHERWISE SPECIFIED
2-DIGIT DECIMALS= ± .010 FRACTIONS= ± 1/64
3-DIGIT DECIMALS= ± .005 ANGLES= ± 1/2
4-DIGIT DECIMALS= ± .0005

DR DS DATE 10.17.08 SCALE FULL
SHEET 7 OF 7
DRAWING NO. 415D37759 REV B
DRAWING NAME STANDARD ENCLOSURE LAYOUT
FOR 414 CE RECIPROCATOR

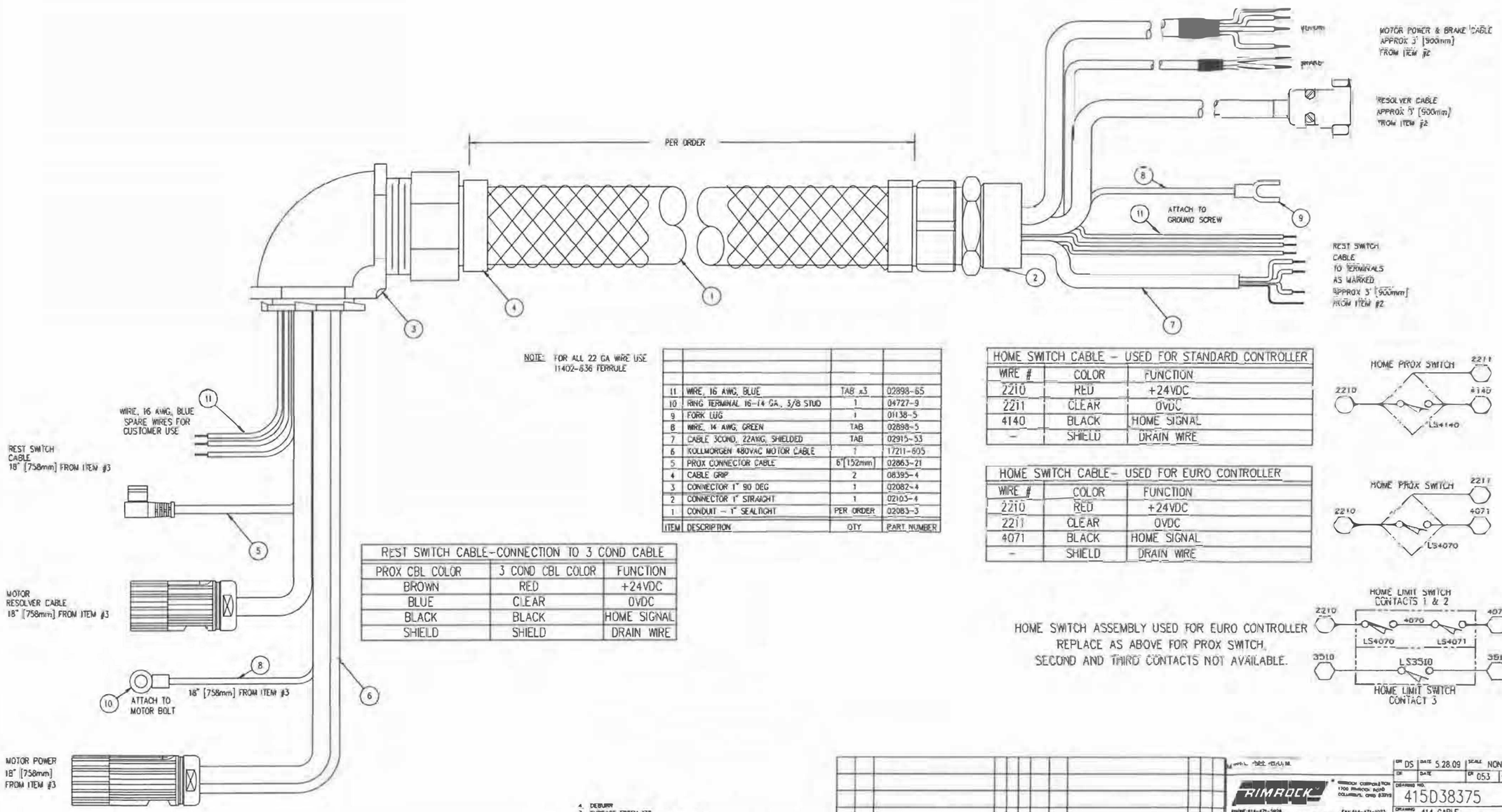
THIS DRAWING IS THE PROPERTY OF RIMROCK CORP. AND IS FOR THE CONFIDENTIAL USE OF THE BUYER OR SUPPLIER OF THIS EQUIPMENT.

37759 - 414 CE CONTROL PANEL - SIEMENS PLC

Item Number	Detail	Description	Qty	UM
02898-20		WIRE 12AWG BLACK	12.00	FEET
02898-49		WIRE 20AWG BLUE	80.00	FEET
02898-5		WIRE 14AWG GREEN	4.00	FEET
02898-80		WIRE 20AWG BLUE WHITE	20.00	FEET
02915-115		CABLE 22AWG 3PR SHLD	3.00	FEET
09810-4		HEAT SHRINK 1/8 BLACK	6.00	INCH
39931	1	BOX PUNCHING FOR 414 PLC CONTROLLER	1.00	EACH
08281-26	3	DISCONNECT SWITCH BODY 45 AMP	1.00	EACH
08281-27	4	DISCONNECT SWITCH SHAFT EXTENSION K	1.00	EACH
08281-29	5	DISCONNECT SWITCH HANDLE. 60MM	1.00	EACH
02274-405	7	POWER SUPPLY, 24VDC, 5A OUT,	1.00	EACH
02364-56	8	FUSE HOLDER - 2 POLE 30A	2.00	EACH
06873-25	11	FUSE 6A FNQ-R-6 CLASS CC 600V	2.00	EACH
07631-17	12	15AMP TIME DELAY FUSE	2.00	EACH
08729-105	13	DIN RAIL MOUNTED TERMINAL 50AMP	22.00	EACH
08729-104	14	DOUBLE STACKED DIN RAIL TERMINAL	10.00	EACH
08729-106	15	DIN RAIL MOUNTED GROUND TERMINAL	2.00	EACH
08729-125	16	FUSEHOLDER 5X20MM DC	1.00	EACH
05489-29	17	WIRE DUCT 1" X 3"	6.00	FEET
08729-107	18	DOUBLESTACK TERM END PLATE	1.00	EACH
02951-6	20	DIN MOUNT RAIL	72.00	INCH
02364-26	21	TERMINAL STAND OFF	2.00	EACH
08729-109	22	3 POSITION JUMPER FOR WDK 2.5	1.00	EACH
08729-06	26	JUMPER ASSY MULTIPLE FOR WIED	1.00	EACH
08729-112	28	TERMINAL JUMPER FOR WDU-6	3.00	EACH
09979-60	30	MINI RELAY 24VDC SPDT WITH BASE,	9.00	EACH
09979-63	32	MINI RELAY END BARRIER AND	1.00	EACH
09979-64	33	MINI RELAY JUMPER STICK FOR MINI	1.00	EACH
07631-5	35	FUSE SLO BLOW 5 AMP 5X20MM	2.00	EACH
11207-500	38	GROUNDING BUS BAR	1.00	EACH
37772	40	KOLLMORGEN S30661 SERVO DRIVE WITH	1.00	EACH
10935-022	46	CONNECTOR-MULTI PIN	1.00	EACH
38079	47	DB9 HOOD METALLIZED PLASTIC	1.00	EACH
02846-39	50	RELAY FORCE GUIDED, 24VDC COIL	2.00	EACH
02846-72	52	STI SAFETY MONITORING RELAY	1.00	EACH
08281-28	55	TERMINAL GUARD FOR DISCONNECT -	1.00	EACH
08281-30	56	DOOR INTERLOCK ADAPTER IEC FOR	1.00	EACH
37801	58	MOV - METAL OXIDE VARISTOR	1.00	EACH
37775	60	414 SIEMENS PLC WITH SOFTWARE	1.00	EACH
37778	61	SIEMENS POSITION MODULE EM253	1.00	EACH
38060	62	MEMORY MODULE FOR SIEMENS S7-22X	1.00	EACH
02879-17	70	FLATWASHER #8	10.00	EACH
04727	78	WIRE RING LUG #16-14, 1/4	2.00	EACH
09520-35	90	TAG GENERAL ELECTRICAL	1.00	EACH
09520-89	91	WARNING ELECTRIC SHOCK	1.00	EACH
09520-91	92	WARNING READ MANUAL	1.00	EACH
02809-2	93	POP RIVET 1/8 X 1/4	4.00	EACH
02641-3	95	RHMS 8-32 X 1/2	20.00	EACH
09520-90	96	WARNING LOCKOUT	1.00	EACH
16824-08	104	22MM PUSHBUTTON TAG ESTOP	1.00	EACH
05492-00	107	PLC NAMEPLATE START	1.00	EACH
05492-01	110	PLC NAMEPLATE STOP	1.00	EACH
05492-02	112	PLC NAMEPLATE FAULT	1.00	EACH
05492-03	115	PLC NAMEPLATE AUTO START	1.00	EACH
05492-04	116	PLC NAMEPLATE AUTO	1.00	EACH
05492-05	117	PLC NAMEPLATE MANUAL	1.00	EACH
05492-07	121	PLC NAMEPLATE ARM RET EXT	1.00	EACH
37777	148	414 HMI EXTER K30m WITH SOFTWARE	1.00	EACH
37867	149	CABLE-BEIJER ELECTRONICS TO SIEMENS	1.00	EACH

16824-06	352	22MM E-STOP OPERATOR, PULL AND	1.00	EACH
16824-07	353	22MM PUSHBUTTON SWITCH BODY WITH 2	1.00	EACH
16824-26	354	NC CONTACT BLOCK	1.00	EACH
16824-72	355	TELEMECANIQUE 22MM GREEN FLUSH	2.00	EACH
37779	356	TELEMECHANIQUE ILL PB BASE, 24VDC,	1.00	EACH
37780	357	TELEMECHANIQUE ILL PB BASE,24VDC,	2.00	EACH
16824-75	358	TELEMECANIQUE 22MM RED FLUSH MOUNT	1.00	EACH
16824-76	359	TELEMECANIQUE 22MM PUSHBUTTON	1.00	EACH
16824-73	363	TELEMECANIQUE 22MM GREEN FLUSH	1.00	EACH
16824-77	364	TELEMECANIQUE 22MM PUSHBUTTON	2.00	EACH
37782	369	TELEMECHANIQUE 3 POS SEL SWITCH	1.00	EACH
37783	370	TELEMECHANIQUE PB BASE 22MM, 2-NO	1.00	EACH
16824-70	373	TELEMECANIQUE 22MM WHITE FLUSH	1.00	EACH
16824-74	374	TELEMECANIQUE 22MM BLACK FLUSH	1.00	EACH

ARM MOTOR CABLE CONNECTIONS			
WIRE #	DRIVE	CONN X9 PIN #	FUNCTION
1	BX	1	BRAKE -
2	BX	2	BRAKE +
GRN	PE	3	PE
1	U2	4	MOTOR U
2	V2	5	MOTOR V
3	W2	6	MOTOR W



NOTE: FOR ALL 22 GA WIRE USE 11402-636 FERRULE

ITEM	DESCRIPTION	QTY	PART NUMBER
11	WIRE, 16 AWG, BLUE	TAB x3	02898-65
10	RING TERMINAL 16-14 GA., 3/8 STUD	1	04727-9
9	FORK LUG	1	01138-5
8	WIRE, 16 AWG, GREEN	TAB	02898-5
7	CABLE 3COND, 22AWG, SHIELDED	TAB	02915-53
6	KOLLMORGEN 480VAC MOTOR CABLE	1	17211-605
5	PROX CONNECTOR CABLE	6" [152mm]	02863-21
4	CABLE GRIP	2	08395-4
3	CONNECTOR 1" 90 DEG	1	02082-4
2	CONNECTOR 1" STRAIGHT	1	02103-4
1	CONDUIT - 1" SEALTIGHT	PER ORDER	02083-3

REST SWITCH CABLE-CONNECTION TO 3 COND CABLE		
PROX CBL COLOR	3 COND CBL COLOR	FUNCTION
BROWN	RED	+24VDC
BLUE	CLEAR	0VDC
BLACK	BLACK	HOME SIGNAL
SHIELD	SHIELD	DRAIN WIRE

HOME SWITCH CABLE - USED FOR STANDARD CONTROLLER		
WIRE #	COLOR	FUNCTION
2210	RED	+24VDC
2211	CLEAR	0VDC
4140	BLACK	HOME SIGNAL
-	SHIELD	DRAIN WIRE

HOME SWITCH CABLE- USED FOR EURO CONTROLLER		
WIRE #	COLOR	FUNCTION
2210	RED	+24VDC
2211	CLEAR	0VDC
4071	BLACK	HOME SIGNAL
-	SHIELD	DRAIN WIRE

HOME SWITCH ASSEMBLY USED FOR EURO CONTROLLER
REPLACE AS ABOVE FOR PROX SWITCH.
SECOND AND THIRD CONTACTS NOT AVAILABLE.

4. DEBURR
3. SURFACE FINISH 125
2. ALL THREADS CLASS 2A OR 2B
1. PARTS TO CONFORM TO RIMROCK CORP. (PRIOR # MFG STANDARDS
NOTES (UNLESS OTHERWISE SPECIFIED)

BY	DATE	REMARKS	LET	BY	CK

REVISIONS

RIMROCK
RIMROCK CORPORATION
1700 RIMROCK ROAD
COLUMBUS, OHIO 43219
PHONE: 614-471-5928 FAX: 614-471-1073
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TOLERANCES UNLESS OTHERWISE SPECIFIED
2-PLACE DECIMALS = ±.010 FRACTIONS = ±1/64
3-PLACE DECIMALS = ±.005 ANGLES = ±1/2
4-PLACE DECIMALS = ±.0005

BY	DS	DATE	5.28.09	SCALE	NONE	INC
CK		DATE		DR	053	SHEET 1 OF 1

DRAWING NO. 415D38375 A
DRAWING NAME 414 CABLE
CONTROL CABLE - STD STYLE
FOR 414 RECIPROCATOR

38375 - 414 MACHINE CABLE- 30 FT CONDUIT

Item Number	Detail	Description	Qty	UM
02083-3	1	CONDUIT EXTRA FLEX 1"	30.00	FEET
02103-4	2	CONNECTOR 1" STRAIGHT	1.00	EACH
02082-4	3	CONNECTOR CONDUIT 1" 90	1.00	EACH
08395-4	4	CONDUIT KELLEMS 1" WIREMESH GRIP	2.00	EACH
02863-21	5	PROX CONNECTOR CABLE	1.00	EACH
17211-605	6	KOLLMORGEN 480VAC MOTOR CABLE SET	1.00	EACH
02915-53	7	CABLE 22AWG 3 COND SHIELDED	35.00	FEET
02898-5	8	WIRE 14AWG GREEN	35.00	FEET
01138-5	9	WIRE FORK LUG #14-18 #8	1.00	EACH
04727-9	10	RING TERMINAL LUG T&B BC14-38 HEAVY	1.00	EACH