



USER MANUAL





Revision Control Sheet

Release	Date	Description	Author
Second Edition	October 2004	Low profile user manual	Andre Hebert
R1	January 2005	Addition in solving problems and addition of Power box wiring diagram	Andre Hebert
R1.1	March 2005	Remove sentence about shield.	Andre Hebert
R1.1	April 2005	Add joystick ctrl cable and pin out	Andre Hebert
R1.1	May 2005	Change Masking back Light for single fixture.122-4600-115, 122-4600-220	Andre Hebert
R1.1	May 2005	Add bowling pin part list	Andre Hebert
R1.3	May 2006	Addition of the LCD support	Andre Hebert
R1.3	May 2006	Addition of the Stop/Go ball kit with L.E.D.'s	Andre Hebert
R1.3	November 2006	Add part list for Overload	Andre Hebert

Document Information Sheet

Document name	Release Date	Author
Highway 66 User manual second Edition R1_1.doc	May 2005	Andre Hebert
Highway 66 User manual second Edition R1_3.doc	May 2006	Andre Hebert



Before using this information and the product it supports, be sure to read the general information under “Product Warranties and Notices”

The following paragraph does not apply to any country, state, or province where such provisions are inconsistent with local law.

QubicaAmf Worldwide provides this publication “AS IS” without warranty of any kind, either express or implied, including, but not limited to, the implied warranties of merchantability or fitness for a particular purpose.

Every effort has been made to ensure that the information in this publication is complete, accurate, and up to date. This publication could, although, include technical inaccuracies or typographical errors. QubicaAmf assumes no responsibility for the results of errors beyond its control. Information in this publication is subject to change without notice and does not represent a commitment on the part of QubicaAmf. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. QubicaAmf may make improvements and / or changes in the product(s) and / or the program(s) described in this publication at any time.

No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, for any purpose, without the express written permission of QubicaAmf Worldwide.

This publication assumes that the QubicaAmf equipment and / or software has been installed by an accredited QubicaAmf technician and is functional in every aspect. Should you encounter problems in operating the equipment, follow the instructions in this publication before contacting QubicaAmf for service under warranty.

© Copyright QubicaAmf Worldwide 2003. All rights reserved.



Table of Contents

Table of Contents	6
List of Figures	9
List of Procedures.....	10
IMPORTANT SAFETY INSTRUCTIONS.....	11
Introduction to Highway 66	12
What Makes up the Highway 66 System.....	13
Identifying Your Highway 66 System Components.....	14
Understanding how the Game is played.....	15
About This Book	15
About This Book	16
Safety Information.....	17
1. Highway 66 Fundamentals	19
Major Components and Assemblies.....	20
Ball Detector	20
Pit.....	20
Ball Elevator	20
Pinsetter	21
TMS Power Box	21
Pin Stabilizer.....	22
Main Motor	22
Drawbar	22
Solenoid/Opto Control Box.....	23
Pin Brakes.....	23
Optical Reading Devices	24
Ball Detector	24
Pin Detectors.....	24
Limit Optical Sensor (LOS).....	24
Brake Optical Sensor (BOS).....	24
Pin Pause Optical Sensor (PPOS)	24
Motor Encoder	24
Q-AMS Game Controller	25
Overhead Monitors.....	25
Understanding how the System Works	26
Pinsetter Cycles.....	27
Part Set.....	27
Full Set.....	27
2. Setting Up/Operating Your Highway 66	29
Getting Ready to Play!	30
TMS power box DIP switches.....	31
SW1-1 Jumping Ball (V1.16).....	31
SW1-2 Control Mode (V1.00)	31
(SW1-3,4,5) Pin Detection Sensitivity	32
SW1-6 Stabilizing Pause Time (V1.00).....	32
SW1-7, 8 Pin Reading Pause Time (V1.00).....	32



SW2-1, 2 Untangle Routine Type (V1.00).....	33
SW2-3 Pinsetters Reaction after Power Failure (V1.16).....	33
SW2-4 Pin Position when Pinsetters are OFF (V1.00).....	34
SW2-5 Pinsetter Reaction on Gutter Ball (V1.00).....	34
SW2-6 Type of Game (V1.00).....	34
SW2-7 Number Pins Installed (V1.11).....	34
Procedures and Adjustments	35
3. Taking Care of Your Highway 66	43
Preventive Maintenance Basics	44
Manufacturer’s Recommendations.....	44
Setting up a Preventive Maintenance Program.....	44
Getting Organized	45
Daily Maintenance Schedule.....	48
Weekly Maintenance Schedule	49
Monthly Maintenance Schedule.....	50
Quarterly and Annual Maintenance Schedule	51
Annual Inspection	52
4. Solving Problems	53
Read This First.....	54
Hint on Cabling Problems.....	54
Procedure 4-1 - Untangling Pin String.....	55
The Pinsetter Doesn't React to a Ball Rolled Down the Lane.	55
The Pinsetter Cycles when it Shouldn't.....	55
The Drawbar Continuously Moves Back and Forth.....	55
The Drawbar does not Attain the Rear of the Pinsetter.....	55
The Chains Emit a Loud Noise.....	55
One or more Fallen pins are Re-Spotted when they are not Supposed to.....	56
There are no Pictures on the Monitors	56
There is no Reaction from the Joystick	56
There is no Reaction from the Machines.....	56
5. Wiring Diagrams	57
General Wiring.....	58
Power Box Wiring.....	59
Electronics Wiring.....	60
Joystick Diagram.....	61
Coin Mechanism (Coin Comparator)	62
Coin Mechanism (Multi Coin)	63
Pin Out DB 25 Ctrl I/O.....	64
Joystick control cable	65
Power Box Connectors.....	65
Power Box Connectors.....	66
Q-AMS Connectors.....	67
I/O Controller Connectors.....	68
6. Parts Listing	69
Safety Covers	70



TABLE OF CONTENTS

Bowling Pin Highway	72
Main Components	74
Frame Assembly.....	76
Drawbar Assembly.....	78
311-1100-00 DC Motor Assembly.....	80
9122015 Drawbar Shaft assembly.....	82
9122027 Reel Arm assembly	84
9122057 Pulley Detection Assembly	86
9122070 Pin Brake Assembly	88
9122220 Ten Pins Brakes Assembly	90
SB-043-01 Pulley Assembly	92
9166005 Table and Stabilization Assembly (ME-B03).....	94
M-0701-25 Rear Ball Lift.....	96
SB-0701-30 Rear Ball Lift Assembly	100
SB-0540-75 Pit Cushion Assembly.....	102
122-3000-00 Ball Rack Assembly.....	104
133-3000-00 Ball Rack Hood Assembly.....	106
122-3100-00 Monitors and Supports Assembly	108
122-3100-02 LCD Supports Assembly	110
Q100-4500 Masking Unit.....	112
Q100-4150 ONE/TWO Ball Light	114
Q100-4156 Stop/Go LED.....	116
122-4600-115 Fluorescent Support 115 Vac.....	118
122-4600-220 Fluorescent Support 220 Vac.....	120
Q200-1010-00 Lateral Safety Guard	122
Electronic Components	124
SB-9802200-230 Power Box.....	126
Power Box Front Panel	128
Parts Number Index	130



List of Figures

Figure 2-1 Dip Switch Location 31

Figure 2-2 Ball detector..... 35

Figure 2-3 Pin Detector Button 36

Figure 2-4 Reel Arm Position..... 36

Figure 2-5 - Optical Sensor Position 37

Figure 2-6 - String Repair 38

Figure 2-7 - Pin Brake Adjustment 39

Figure 2-8 - Drawbar Chain Adjustment..... 40

Figure 2-9 Adjusting Rear Ball Lift V-Belt 41



List of Procedures

Procedure 2-1 - Ball detector:..... 35

Procedure 2-2 - Strings Adjustment 36

Procedure 2-3 - LOS Limit Optical Sensor 37

Procedure 2-4 - BOS Brake Optical Sensor 37

Procedure 2-5 - PPOS Pin Pause Optical Sensor 37

Procedure 2-6 - Repairing String and Bushing..... 38

Procedure 2-7 - Adjusting the Pin Brakes 39

Procedure 2-8 - Pin Brake Adjustment..... 39

Procedure 2-9 - Adjusting Chain Tension of the Drawbar 40

Procedure 2-10 - Adjusting Rear Ball Lift V-Belt 41

Procedure 4-1 - Untangling Pin String 55



IMPORTANT SAFETY INSTRUCTIONS

Warning

TO REDUCE THE RISK OF FIRE OR ELECTRICAL SHOCK, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.

HIGH VOLTAGE IS PRESENT IN THE PINSETTER POWER BOX. THE MAIN CIRCUIT BREAKERS MUST ALWAYS BE SHUT OFF OR THE TWIST LOCK PLUG DISCONNECTED PRIOR TO REMOVING THE POWER BOX COVER.

THIS APPLIANCE IS EQUIPPED WITH MORE THAN ONE POWER SOURCE. DISCONNECT ALL POWER SOURCES BEFORE SERVICING.

TO REDUCE THE RISK OF FIRE OR ELECTRICAL SHOCK, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.

HIGH VOLTAGE IS PRESENT IN THE PINSETTER POWER BOX. THE MAINS CIRCUIT BREAKER MUST ALWAYS BE SHUT OFF OR THE TWIST LOCK PLUG DISCONNECTED PRIOR TO REMOVING THE POWER BOX COVER.

THIS APPLIANCE MUST BE POSITIONED SUCH THAT THE MAINS SUPPLY CORD CONNECTOR IS ACCESSIBLE AFTER INSTALLATION.

BEFORE DISCARDING THIS APPLIANCE, THE BATTERY MUST BE REMOVED AND DISPOSED OF SAFELY. DISCONNECT THE POWER SUPPLY CORD BEFORE REMOVING THE BATTERY.

MAINS SUPPLY WIRING TO THIS APPLIANCE IS TO BE DRESSED AWAY FROM THIS APPLIANCE.

THE AC SUPPLY CORD TO THE BALL RETURN MOTOR IS TO BE DRESSED AWAY FROM THE APPLIANCE, THE BALL RETURN MOTOR AND ANY MOVING PARTS OF THE BALL RETURN ASSEMBLY.

IF THE SUPPLY CORD IS DAMAGED, IT MUST BE REPLACED BY A QUALIFIED PERSON IN ORDER TO AVOID HAZARDS.

THIS APPLIANCE IS NOT SUITABLE FOR OUTDOOR USE.

THIS APPLIANCE IS NOT SUITABLE FOR INSTALLATION IN AN AREA WHERE A WATER JET COULD BE USED.

THIS APPLIANCE MUST NOT BE CLEANED USING A WATER JET.

IN ORDER TO AVOID A SHOCK OR FIRE HAZARD, IF REPLACEMENT OF ANY EXISTING POLYMERIC SCREWS IS REQUIRED, THEY MUST ONLY BE REPLACED BY THE SAME TYPE POLYMERIC SCREW AND MUST NOT BE REPLACED BY METAL SCREWS.

Introduction to Highway 66



QubicaAmf Worldwide is proud to introduce you to your Highway 66 machine. This equipment was designed and manufactured by QubicaAmf Worldwide and was sold to you through an authorized QubicaAmf Worldwide representative. QubicaAmf Worldwide is a leading manufacturer in bowling and entertainment products. We are proud to provide you with the finest products and equipment in the industry.

The Quality Control Department at QubicaAmf Worldwide has taken very good care to ship you a product that was completely adjusted, tested and checked before shipment. Your Highway 66 machines are to be custom installed by a trained QubicaAmf Worldwide authorized technician. He/she will provide you with recommended products for use with your Highway 66 and instruct you in the proper operating and maintenance techniques.



What Makes up the Highway 66 System

The structure of the Highway 66 system is based on a wooden truss foundation with prefabricated lanes. The lane surface is of a hard-wearing synthetic material, designed to withstand the most extreme operating conditions and providing the operator with the minimum amount of maintenance.

Suspended above the Highway 66 lanes are the scoring display modules which control the display on each lane.

Located at the furthest end of the playing surface is the masking unit used to hide the machines. The graphic panels inserted into these units may vary from installation to installation and even lane to lane. With a multitude of graphic panels available, every decor has its match.

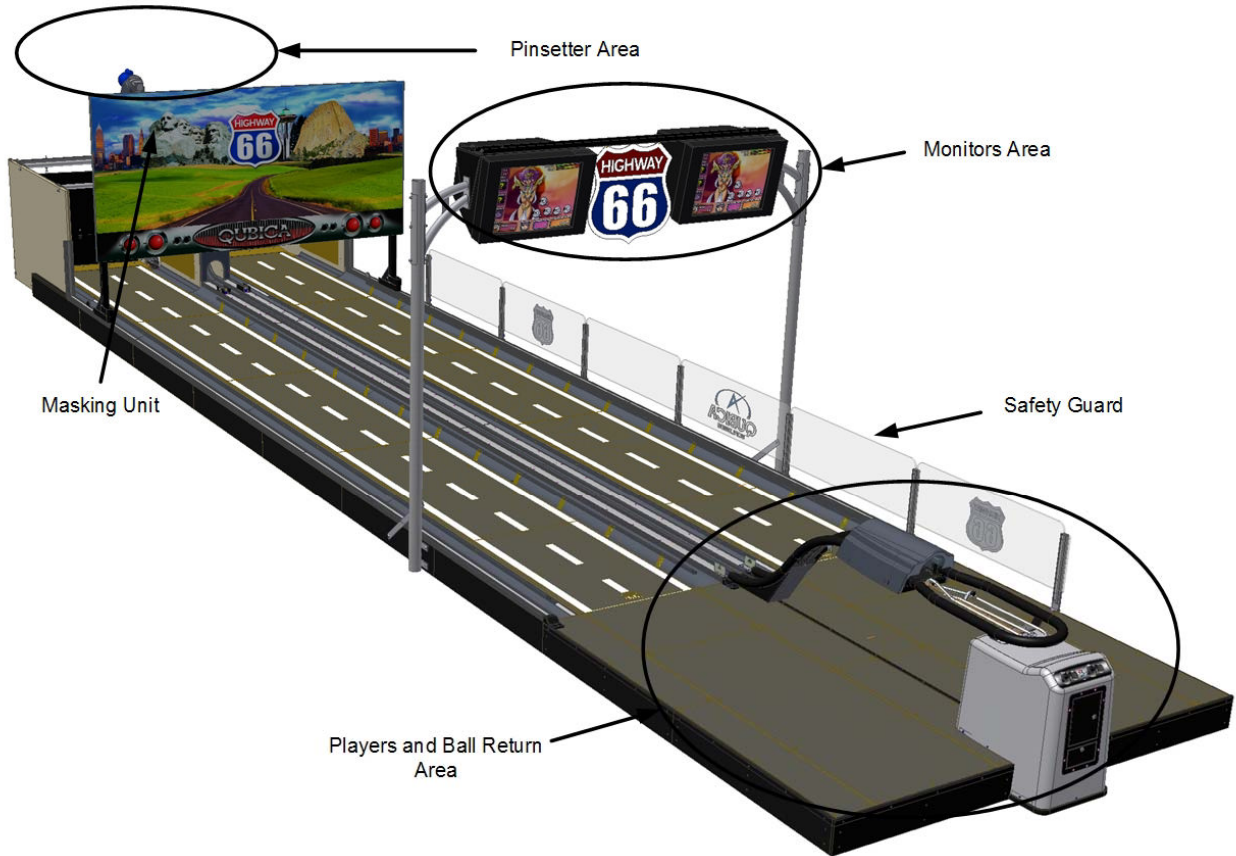
Located at the rear of the unit, behind the masking units, are the pinsetters which operate in conjunction with the coin mechanism; activated by the introduction of the correct amount of money.

Note

The pinsetters are supplied to operate on 240 volts, 50/60 cycles, single phase. The electrical supply lines must conform to all electrical codes and it is the responsibility of the proprietor to supply power to all the electrical components necessary for the normal function of the pinsetters.



Identifying Your Highway 66 System Components



Understanding how the Game is played

Highway 66 is delivered with a CD rom containing different games; more games will be available with time. Check with your QubicaAmf representative to see which games are available now.

In order to understand the way the game is played, please read the game manual supplied with the CD ROM delivered with the Highway 66.



About This Book

Thank you for selecting Highway 66 for your fun and entertainment. Your Highway 66 incorporates many of the latest advances in technology and is very easy to maintain for many years of enjoyment and profit.

This publication helps you become familiar with your Highway 66 equipment and its many features. It describes how to install, configure, operate, and maintain your machine. In the unlikely event you experience problems; you can also find helpful troubleshooting information as well as instructions for obtaining service and parts.

This book is organized as follows:

- **Chapter 1, “Highway 66 Fundamentals,”** provides an overview of your Highway 66 machine. After reading this chapter you should be able to identify the major components of your Highway 66 and understand the basic principles of the machine’s operation.
- **Chapter 2, “Setting Up/Operating Your Highway 66,”** provides step-by-step instructions for setting up and configuring your equipment in order to meet your needs and requirements along with instructions for the day-to-day use and management of your equipment.
- **Chapter 3, “Taking Care of Your Highway 66,”** contains information about the proper handling and care of your equipment.
- **Chapter 4, “Solving Problems,”** contains information that will help you identify and correct problems that might arise as you use your equipment. A description of the wide variety of resources available from QubicaAmf to assist you in the use of your equipment is also included along with instructions on how to obtain additional information about QubicaAmf products.
- **Chapter 5, “Wiring Diagrams,”** provides you with all necessary wiring and electronic information in easy to comprehend diagrams for your reordering and servicing convenience.
- **Chapter 6, “Highway 66 Parts Catalog,”** provides you with a complete breakdown of all your equipment’s parts in exploded views for your reordering and servicing convenience.
- **Appendix A, “Installation,”** provides you with a complete drawing and instruction for the installation of the unit.



Safety Information

Use of common sense and industry experience are key factors which one should utilize whenever operating electromechanical equipment. As with all machinery, there is an element of risk if the rules of safety are disregarded. Training in the operation of this equipment is available. Schools in the equipment's use and operation are held on a regular basis. It is the responsibility of the attendant to provide his or her own travel, lodging and school expenses. Anyone interested in attending a factory training school should contact their local QubicaAmf sales or service representative.

- 1. Always open the circuit breaker or disconnect the power plug from the electrical box before looking for, and clearing, any problem.**
- 2. Always reach over and around the equipment assemblies, never through or between the components.**
- 3. Avoid the use of cleaners that are toxic.**
- 4. Immediately wipe up any oil or liquids that have spilled to prevent slipping.**
- 5. Store oily rags and any other combustibles in a fireproof container.**
- 6. The mechanic / maintenance person must teach all personnel who will work on the equipment enough about the equipment to prevent accidents through ignorance.**
- 7. Under no circumstances allow an unqualified person to work on the equipment.**
- 8. Use the right tool for each job to prevent injury to yourself and to the equipment. Remove all tools from the equipment before turning it on.**
- 9. Wear the proper clothing when working on the equipment. Do not wear neckties or loose clothing that may be caught by the equipment. Wear trousers without cuffs to prevent tripping. Wear shoes with safety, non-slip soles.**
- 10. When more than one person is working on the equipment, never turn on the equipment without checking to see if everyone is clear of the equipment.**
- 11. When the safety guards are removed from the equipment, be extra cautious when the equipment is turned on. Replace the guards immediately when the work is completed.**





1. Highway 66 Fundamentals

Chapter Overview

This chapter provides an overview of your Highway 66 machine. After reading this chapter you should be able to identify the major components of your Highway 66 and understand the basic principles of the machine's operation.

Major Components and Assemblies

There are a number of different assemblies which make up your Highway 66 machine, and each performs its own function.

When the unit is turned on, the pins are set on the lane and the pinsetter is placed in a ball one situation. Let's begin by taking a look at operation of your Highway 66 as it goes through a game. With ten pins set on the lane, the bowler rolls the first ball.

Ball Detector

As the ball rolls down the lane, it will cross (cut) the ball detector's infrared light beam. The ball detector's transmitter is placed at the bottom of the kickbacks. On the opposite side of the lane, facing the transmitter is a reflector which returns the infra red light beam to the ball detector's transmitter. Basically, the ball detector has only one function, it triggers or starts the Highway 66's various operations when its signal is cut by a passing ball. It is important, then, that the ball detector be sensitive enough so that, regardless of the speed of the passing ball, it is able to detect it.

Pit

Located at the rear of each lane's pin deck is the pit which is slanted to the inside of the pair of lanes in order to direct the ball to the ball elevator. Above the pit, the cushion absorbs the impact of the bowling ball.

As the ball leaves the playing area of the lane, its forward momentum carries it across the pit until it strikes the pit cushion, which is suspended across the rear of the pit. Both the ball and the knocked down pins come to rest in the pit.

From the pit, the ball needs to be returned to the bowler. So far its forward motion has been stopped by the pit cushion and it has rolled into the trough located behind the pit.

Ball Elevator

To return the ball to the bowler, the ball moves through the ball elevator. The ball elevator is fastened to the floor between each pair of pinsetters. Using a simple conveyor system, the ball is raised to a level above the pinsetters and then propelled by gravity to the front ball return rack located at the bowler's end of the lane.

The ball lift conveyor is powered by a ½ hp capacitor start electric motor mounted on the motor support bracket at the top of the ball lift's frame. The power generated by the motor is relayed to the conveyor's chains through the pulley on the motor shaft, the drive belt, the drive pulley, and the drive wheel. The motor support bracket is adjustable to obtain constant pressure on the drive belt.



Pinsetter

Contrary to the ball being removed from the pit area and returned to the bowler, the pins remain at the rear and are re-spotted for the next delivery. The equipment used to control the flow of pins is called a pinsetter.

Each time a bowler rolls a ball, the pinsetter goes through a specific sequence of operations. This sequence of operations is called the pinsetter cycle.

The various operations of the pinsetter are guided by the pinsetter electronics. The pinsetter electronics distribute the electrical power to the various motors and components as needed. Specifically, the pinsetter electronics activate the DC motor which transmits power to the drawbar in order to raise or lower the pins to the playing surface. The pinsetter electronics can be considered the brains of the pinsetter. From the time a bowler has rolled the first ball, the electronics must be able to direct the pinsetter through its different combinations of operations.

Each pair of pinsetters has an electric power box which is used in conjunction with the coin mechanism activated by the introduction of the correct amount of money.

Note

The TMS pinsetter is supplied to operate on 240 volts, 50/60 cycles, single phase. The electrical supply lines must conform to all electrical codes and it is the responsibility of the proprietor to supply power to all the electrical components necessary for the normal function of the pinsetters.

TMS Power Box

A power supply line is run from the main service circuit breaker distribution panel to a junction box mounted above each pair of pinsetters. From each junction box, a three-conductor drop cord (2-wires plus an insulated ground), terminating in a twist lock connector, is plugged into the power box of each pair of pinsetters to supply the necessary electrical power.

Attached to a panel which is mounted between each pair of pinsetters is the electric power box used to supply the necessary electrical power to all components on a pair of pinsetters. Unlike conventional electrical circuits, which are controlled through a multitude of micro switches, all opening and closing of electrical circuits on the TMS pinsetter and its accessories is done through the pinsetter control box using software and optical reading devices (sensors and transmitters/receivers).

An on-off switch is located on the power box and is used to manually open and close the thermal overload circuit breaker.

Warning

High voltage is present in the pinsetter power box. The main circuit breakers must always be shut off or the twist lock plug disconnected prior to removing the power box cover.



Pin Stabilizer

Mounted below the pinsetter is the stabilizer assembly which absorbs most of the vibration and then stabilizes each pin before its descent to the lane. The stabilizer assembly is a very important part of the pinsetter. Without it, the pins would have to be picked up much gentler than they are and the untangling mode would lose its powerful effect. Another important factor is the speed and accuracy which is obtained through the stabilizer. Each pin is spotted according to its position in the stabilizer, thus allowing for consistent pin spotting cycle after cycle.

Main Motor

Located at the rear of each pinsetter is the main motor. This motor is coupled with a reducer and controlled by a DC Drive.

The power box takes care of the raising, lowering and stabilizing times. It also takes care of the braking action, untangling routine and all other pinsetter actions, all of this is done through the DC drive of each pinsetter. All of the different delays are controlled by the user through DIP switches located inside the pinsetter control box.

Drawbar

Attached to both chains on the sides of the pinsetter is the drawbar. The drawbar is made up of sheaf assemblies (one for each pin) mounted on a shaft. Each sheaf pulls its corresponding pin's string when the drawbar is pulled to the rear of the machine by the chains.

The strings themselves are the concept of the machine. Each pin has a fourteen-foot length of string attached to its head. A four-foot length of this same string is wound on each reel and storage assembly to be used as spare string. In other words, the pinsetter needs ten feet of string to operate normally.

With a well adjusted pinsetter, the only point of wear on the string is immediately above the top of the pin. When it wears, it may be merely pulled through the pin, the worn out part cut (six inches), and the string refastened. Keeping in mind the four-foot length of spare string and the fact that six inches of string is cut, each string may be repaired eight times before having to replace the complete length of string (fourteen feet).

Note

The TMS Pinsetter's good operation is directly related to the proper length of the strings. Any variation in the length of the strings caused by humidity or stretching is sufficient to disturb the system.



Solenoid/Opto Control Box

Mounted at the front of each pinsetter is the solenoid/opto control box (SB-9802300-10) and the pin detection wheels (one for each pin). These wheels are activated (rotated) by their corresponding strings when a pin is knocked down. Each wheel has holes in it and the wheel itself rotates through an optical sensor (SB-ECIL-325-PD). As the wheel turns, its optical sensor counts the number of holes which pass through it. This information is transmitted to the pinsetter control box. The pinsetter control box then determines which pins, if any, have been knocked down.

The solenoid/opto control box is connected to the pinsetter control box along with the individual pin detectors and brake solenoids. The sensitivity of the pin detection optical sensors is determined through a dip switch setting inside the pinsetter control box itself.

Pin Brakes

Mounted behind the pin detectors and below the reel and storage assemblies are the pin brakes. There is one brake assembly for each pin. The brake assembly has three main parts: a cam, a solenoid and a brake-shoe. When a pin is determined as fallen by the pinsetter control box, its solenoid activates the cam which in turn secures the string holding the pin up while the drawbar descends the remaining pins to the lane.



Optical Reading Devices

Ball Detector

With the pinsetter in a ready to bowl position, the ball detector allows for the detection of the ball on its way down the lane. Once a ball is detected, the reading pause commences.

The ball detector must be operational in order for the pinsetter to function. All commands to and from the pinsetter start with the detection of a ball.

Pin Detectors

There is one PD optical sensor (SB-ECIL-325-PD) for each bowling pin. When a pin is knocked down, its string rotates the wheel (9103058) through the PD, indicating to the pinsetter control box that the pin has been knocked down. Once the reading pause expires, the PD optical sensors are placed in an idle mode until the next ball detection.

Limit Optical Sensor (LOS)

This limit optical sensor is used to tell the TMS power box when the drawbar reaches its upper position during the calibration process. That calibration occurs every time the pinsetter is turned on, or it can be done manually using the pushbutton situated on the Solenoid/Opto Control Box.

Brake Optical Sensor (BOS)

This limit optical sensor is used to tell the TMS power box where it will have to activate the pin brakes. The TMS power box records that position during the calibration process. That calibration occurs every time the pinsetter is turned on, or it can be done manually using the pushbutton situated on the Solenoid/Opto Control Box.

Pin Pause Optical Sensor (PPOS)

This limit optical sensor is used to tell the TMS power box where it will have to slow down its movement in order to gently deposit pins on the pin deck. The TMS power box records that position during the calibration process. That calibration occurs every time the pinsetter is turned on, or it can be done manually using the pushbutton situated on the Solenoid/Opto Control Box.

Motor Encoder

This Optical Sensor is located at the rear end of the DC motor, it is used to tell the TMS power box where exactly is situated the drawbar of the pinsetter.



Q-AMS Game Controller

Located on the wooden board between the two machines the Q-AMS is the game controller. It does include a CD drive that enables the use of different games. The Q-AMS have connections to the TMS Power Box, to the two monitors above the lanes and to the I/O controller located inside the ball rack at the player end.

The power for the Q-AMS is supplied by the TMS Power Box.

The I/O controller has the joysticks, buttons and the coin mechanical connections.

Overhead Monitors

Located above the lanes are two monitors used to display the game process. These monitors have a special keyboard on top of them to perform adjustments. The power for those monitors is supplied by the TMS Power Box.



Understanding how the System Works

When the pinsetter is turned on, it will perform a calibration cycle. Then the pins are set on the lane and the pinsetter is placed in a ball one situation. The bowler rolls the ball which passes through the ball detector's infrared beam of light thus sending a signal to the pinsetter control box. The ball knocks down some pins which fall into the pit. The floor of the pit is angled so that the ball moves toward the rear ball lift.

Each pin has a string attached to its head which activates its pin detection wheel when the pin is knocked down. The pin detection wheel, in turn, advises the pinsetter control box that the pin has been knocked down.

After a pre-determined delay, the TMS power box will activate the DC drive in order to move the drawbar to the rear of the pinsetter. The shield is lowered as the drawbar picks up the pins from the pit and secures them in the stabilizer. The drawbar then reaches the rear of the pinsetter, which indicates to the TMS power box that the drawbar is at the end of its cycle and that no strings are tangled. After a short pause at that position the DC drive will move the drawbar forward the pinsetter and at the same time lowering the pins

Note

If the strings are tangled, the drawbar will not be able to reach the rear of the pinsetter. This will order the TMS power box to activate the pinsetter's untangling routine, which will cause the pinsetter to lower and raise the pins in different manners until the strings are untangled or if the numbers of attempts reach 8.



Pinsetter Cycles

After a slight pause, the drawbar will commence its downward cycle. The TMS Pinsetter will then perform one of two different types of cycles:

Part Set

The pinsetter sets only the pins which weren't knocked down on the lane, the shield raises and the lane is ready for the next ball. If a part set is necessary, the pinsetter control box activates each individual brake for each pin which was detected as knocked down.

Full Set

The pinsetter spots a full set of pins on the lane, the shield raises and the lane is ready for the next frame. If a full set is necessary, none of the brakes are activated.

The pinsetter must be able to determine his different reactions based on the rules of bowling and set up by delivery of the ball. After the bowler delivers the ball, the ball detector sends a signal to the pinsetter control box. The pinsetter control box will determine whether there are pins standing and what type of cycle to perform. This process is called reading and according to all the information which the pinsetter control box analyzes, the pinsetter will cycle in one of the two possible manners.

- If the bowler rolls the first ball down the lane and knocks down all the pins (strike), the pin detection wheels all rotate through their corresponding optical sensors and when the pinsetter control box takes its reading it will find no pins standing. At this point, the pinsetter control box has the pinsetter perform a full set.
- If the bowler rolls the first ball down the lane and knocks down some pins but not all, the pin detection wheels again rotate through their corresponding optical sensors and the pinsetter control box takes its reading to find some pins still standing. At this point, the pinsetter control box has the pinsetter perform a part set.
- Whenever the bowler delivers a second ball, regardless of the number of pins knocked down, the pinsetter control box has the pinsetter perform a full set.





2. Setting Up/Operating Your Highway 66

Chapter Overview

This chapter provides step-by-step instructions for setting up and configuring your equipment in order to meet your needs and requirements along with instructions for the day-to-day use and management of your equipment.

Getting Ready to Play!

Please refer to the game manual for the special set-up function of each individual's games.

Each game has its own set-up menu where you can choose different options such as:

- Numbers of coins for one game.
- Amount of time allowed for one ball.
- Amount of time allowed for one game.
- Etc.

That set-up menu can be accessed by the service button inside the coin-op door, no matter the game.



TMS power box DIP switches

The following tables describe the various DIP switch functions. The version in which the setting was introduced or changed is indicated in brackets following the description. The shaded areas indicate the preset factory settings.

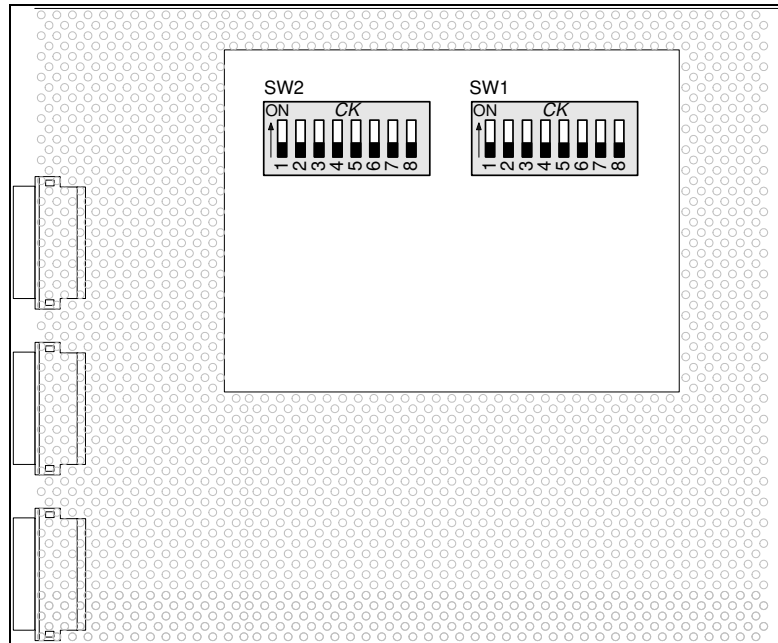


Figure 2-1 Dip Switch Location

The dip switches are located on the main CPU board inside the TMS power box.

SW1-1 Jumping Ball (V1.16)	
Used to determine whether or not the jumping ball routine is activated. When the jumping ball routine is activated, the pinsetter's electronics verify if any pins have been knocked down at regular intervals instead of waiting for a signal from the ball detector. This option is used to counter a ball which bounces over the ball detector.	
OFF	Deactivated
ON	Activated

SW1-2 Control Mode (V1.00)	
Used to determine if there is an external device (like autoscoring) controlling the pinsetters.	
OFF	Pinsetters are controlled by an external device. (Autoscoring Mode)
ON	Pinsetters are not controlled by an external device. (Manual, Stand Alone Mode)



(SW1-3,4,5) Pin Detection Sensitivity

These dip switches are used to set the pin detector wheels' sensitivity. In order for the pinsetter to detect a pin as fallen, a specific quantity of holes located on the pin detector wheels must pass through its corresponding optical sensor. Eight (8) different settings are possible. The more sensitive the setting, the fewer number of holes is necessary to count a pin as fallen. You usually won't have to change these dip switches, but if you do, refer to the settings below. The first setting indicates the most sensitive reading possible while the last setting indicates the least sensitive reading possible.

Sensitivity	SW1-3	SW1-4	SW1-5
More Sensitive 1	OFF	OFF	OFF
2	ON	OFF	OFF
3	OFF	ON	OFF
4	ON	ON	OFF
5	OFF	OFF	ON
6	ON	OFF	ON
7	OFF	ON	ON
Less Sensitive 8	ON	ON	ON

SW1-6 Stabilizing Pause Time (V1.00)

Used to determine the pause time which the pins will be held in the UP position during a normal pinsetter cycle.

OFF	1.5 Seconds
ON	1.75 Seconds

SW1-7, 8 Pin Reading Pause Time (V1.00)

Used to determine the reading pause time between the ball detection and pinsetter action. The shorter the pause, the quicker the pinsetter will be to re-spot pins (less time will be allotted for pins to fall which may cause erroneous pin fall detection).

SW1-7	SW1-8	Setting
OFF	OFF	1.0 Second
ON	OFF	2.0 Seconds
OFF	ON	2.5 Seconds
ON	ON	3.0 Seconds



SW2-1, 2 Untangle Routine Type (V1.00) Used to determine the type of routine use for untangling the pins.		
SW2-1	SW2-2	Tangling
OFF	OFF	Type 1
ON	OFF	Not Used
OFF	ON	Not Used
ON	ON	Not Used

SW2-3 Pinsetters Reaction after Power Failure (V1.16) Used to determine if the pinsetters will come back ON after a power failure if they were ON before. Note: The reaction will be different if they are in Manual mode or in Highway 66 or Standard mode.	
Reaction in autoscoring mode SW1-2 in OFF position and Standard mode SW2-6 OFF	
OFF	Pinsetters will stay OFF and you will have to manually power ON the pinsetter.
ON	Pinsetters will come back to their previous state when one of the following events occur: <i>Ball detection,</i> <i>Any Command from the pin detector push button</i> <i>Pinsetter command from Autoscoring system</i>

Reaction in autoscoring mode SW1-2 in OFF position and Highway 66 mode SW2-6 ON	
OFF	Pinsetters will stay OFF and you will have to manually power ON the pinsetter.
ON	Pinsetters will come back to their previous state after a short random delay.

Reaction in Manual mode SW1-2 in ON position and Standard mode SW2-6 OFF	
OFF	Pinsetters will stay OFF and you will have to manually power ON the pinsetter.
ON	Pinsetters will come back to their previous state after a short random delay.



SW2-4 Pin Position when Pinsetters are OFF (V1.00)

Used to determine if the pinsetters will close with all ten pins on the deck, or it will raise all the pins up and keep them in this position.

OFF	All pins in UP position.
ON	All pins on deck.

SW2-5 Pinsetter Reaction on Gutter Ball (V1.00)

Used to determine if the pinsetters will cycle or not when a gutter ball is thrown.

OFF	No cycle.
ON	Cycle.

SW2-6 Type of Game (V1.00)

Used to determine the type of game played.

OFF	Standard (Tenpin, Duckpin, Hard Duck, Five Pin)
ON	Highway 66 Mode

SW2-7 Number Pins Installed (V1.11)

Used to determine the number of pins which are installed on the pinsetter.

OFF	Five Pins
ON	Ten Pins



Procedures and Adjustments

Procedure 2-1 - Ball detector:

The ball detector is a simple, very reliable stand alone device but may become misaligned once in a while due to the constant vibration caused by the balls rolling down the lane. Located in front of the kickback, it communicates to the pinsetter control box through a cable assembly.

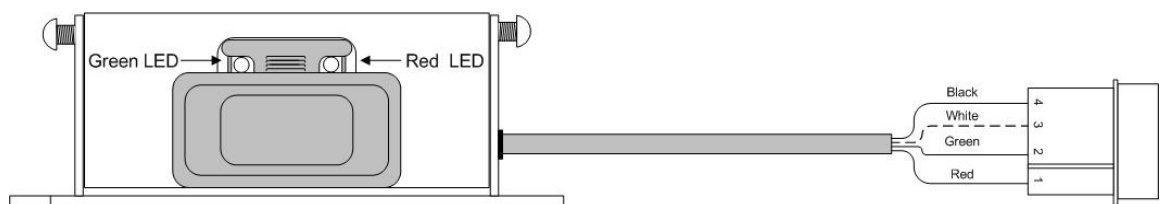
Ball detectors use a very simple principle. An invisible beam of light is constantly emitted from the ball detector. A reflector placed on the opposite of each lane returns the light beam to the unit. When the signal is cut (ball is detected) the ball detector communicates the information to the pinsetter control box. Then the pinsetter control box will start the different movements of the appropriate pinsetter.

Each ball detector has two LEDs that simplify the adjustment of the unit. The green light signifies that the beam is perfectly aligned with the reflector while the red light indicates that the alignment is borderline.

If neither of the lights are visible on a ball detector, one of three things is possible: The ball detector is completely misaligned, it is defective or the cable from the pinsetter control box has been cut or disconnected.

1. Loosen the screw located on the ball detector.
2. Move up, down, right or left until the green light appears on the ball detector.
3. Once you have a green light, slide a sheet of black construction paper across the lane where the ball detector is located. The green light should stay on. If the green light goes off, this means that the signal is bouncing off the lane instead of being just above the lane. Move up the ball detector.
4. Once the ball detector is well aligned, tighten all the screws and check the adjustment again.

Figure 2-2 Ball detector



Procedure 2-2 - Strings Adjustment

A good strings adjustment is the key for the proper operation of the TMS pinsetter. Before attempting any other adjustment please perform the string adjustment.

1. If it is not already ON, power on the pinsetter.
2. Put button #4 in the ON position (Down).
3. Push button #1 (adjust) once. The pinsetter will go to a calibration cycle and the drawbar will stop in the string adjustment position (between the LOS and BOS sensors).
4. Adjust the string in a manner that the pins are stable in their position and that the reel arm is still touching the upper reel arm stopper.

Figure 2-3 Pin Detector Button

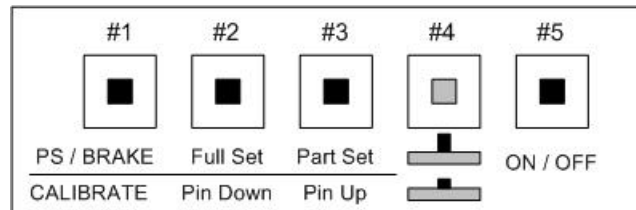
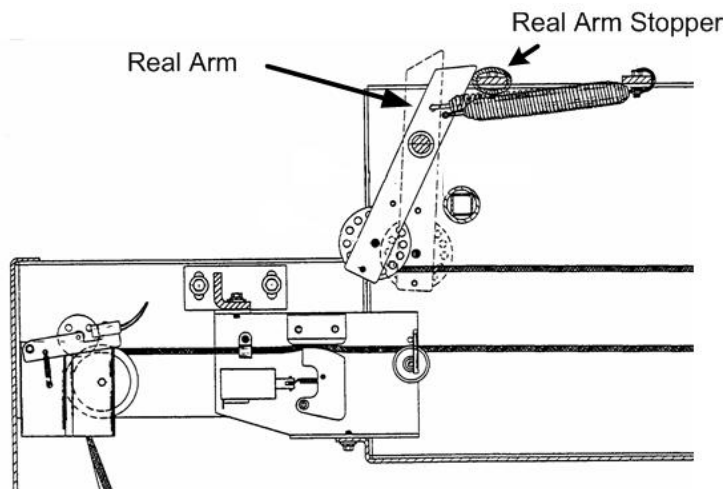


Figure 2-4 Reel Arm Position



5. When the string adjustment is done, put button #4 in off position (up) and press button #3. This will cycle the pinsetter.



Procedure 2-3 - LOS Limit Optical Sensor

This limit optical sensor is used to tell the TMS power box when the drawbar reach is in the upper position during the calibration process. The position of that sensor is fixed, and you should not attempt to move it.

Procedure 2-4 - BOS Brake Optical Sensor

This limit optical sensor is used to tell the TMS power box where it will have to activate the pin brakes. By varying the position of this optical sensor you will determine the height of the pin when they are in their upper position.

Procedure 2-5 - PPOS Pin Pause Optical Sensor

This limit optical sensor is used to tell the TMS power box where it will have to slow down its movement in order to gently deposit pins on the pin deck. The TMS power box records that position during the calibration process. That calibration occurs every time the pinsetter is turned on, or it can be done manually using the pushbutton situated on the Solenoid/Opto Control Box. You should adjust the position of that sensor in such a manner that the pins are slowing down just before they hit the floor.

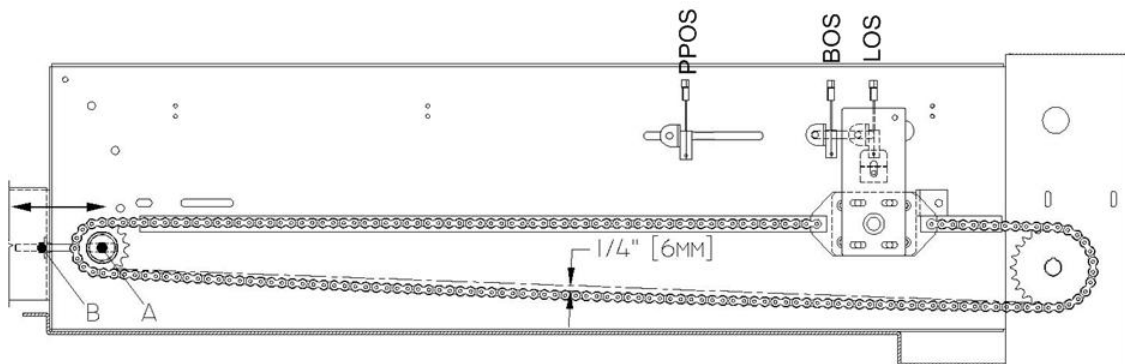


Figure 2-5 - Optical Sensor Position



Procedure 2-6 - Repairing String and Bushing

1. Raise the front cover of the pinsetter and press the Power On button. The pinsetter will start up and set the pins on the lane
2. Open the circuit breaker located on the power box between the two pinsetters.
3. Look for visual signs of wear on strings and pin head bushings.
4. Any string which is frayed or worn should be repaired or replaced as illustrated in Figure 2.6

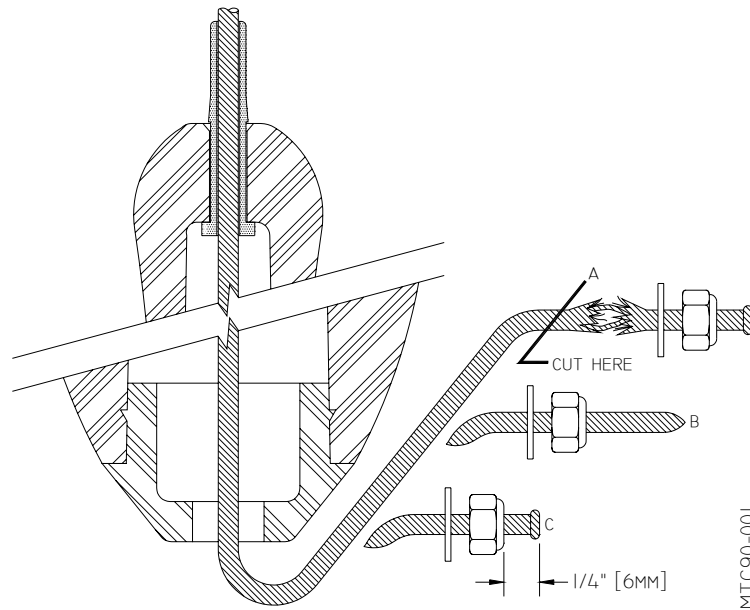


Figure 2-6 - String Repair

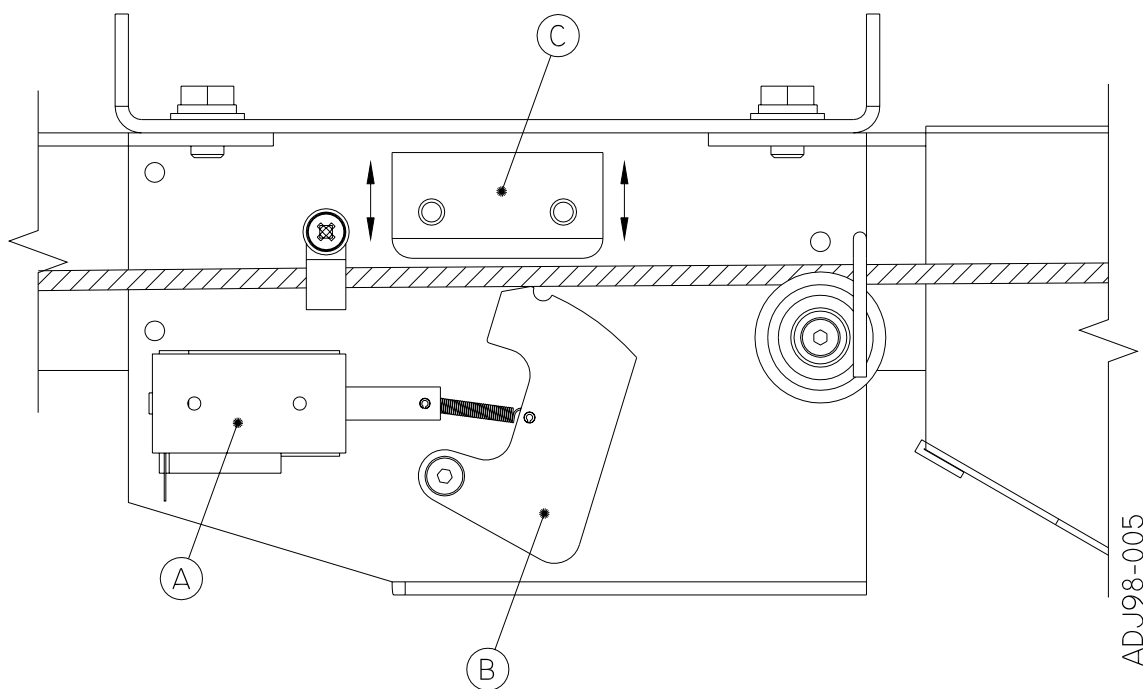
1. Slide the string down through the pin and cut the worn out section.
2. Burn the string tip using a match or cigarette lighter. Use a rotating motion with a rag to create a point on the string. Replace the pin head bushing if necessary. Place a new washer and crimp a new nylock nut on the string. Use the swaging tool (Z-001) supplied with your spare parts kit to crimp the nut on the string.
3. Cut the end of the string 1/4-inch (6mm) from the crimped nut. Burn the string tip to shape a lump under the nut. Slide the pin along the string and check that it turns freely.
4. Once the repairs have been finished, close the circuit breaker on the power box and press the start button.
5. Proceed with the strings adjustment procedure.



Procedure 2-7 - Adjusting the Pin Brakes

1. Raise the front cover of the pinsetter and press the Power On button. The pinsetter will start up and set the pins on the lane.
2. Press button #1 (PS Brake). The drawbar will move to the rear of the pinsetter and each pin brake will be activated.
3. The brake plate may be moved in the direction shown by the arrows in Figure 2.7. Slightly loosen the bolts which hold the brake plate in place and then raise the brake plate to loosen the pin's string or lower the brake plate to tighten the pin's string.
4. Press button #3 (Full Set) to reestablish normal functions.

Figure 2-7 - Pin Brake Adjustment



Procedure 2-8 - Pin Brake Adjustment

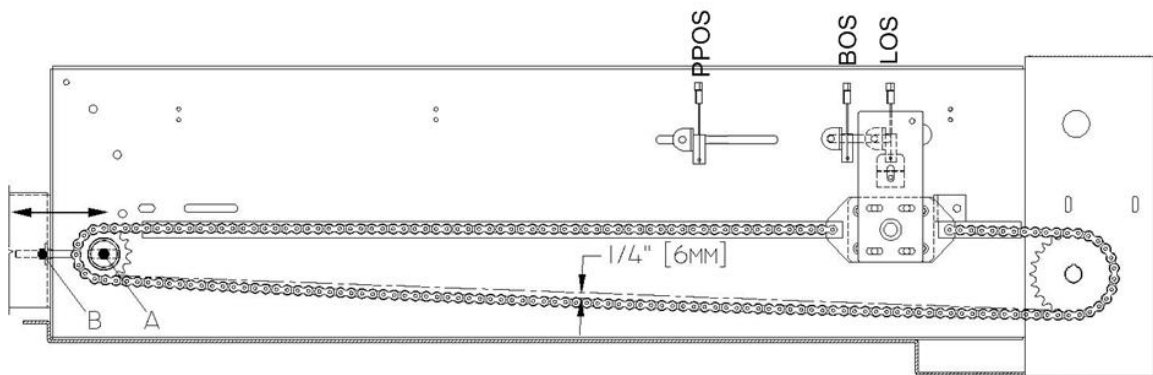
Pin brakes should be inspected weekly and if necessary, adjusted. The solenoid (A) pulls the cam (B) which jams the string on the brake plate (C). If a pin is lowered to the lane when it should stay up or if a pin stays up when it should be lowered to the lane, the pin brakes need adjusting. Follow the procedure above to adjust your pin brakes.



Procedure 2-9 - Adjusting Chain Tension of the Drawbar

1. Make sure that the drawbar is in the D2 (UP) position.
2. Open the main circuit breaker located on the power box situated between the two pinsetters.
3. Visually check for a 1/4-inch (6mm) dip in the middle of the chain.
4. If adjustment is necessary, loosen the sprocket's nut (A) and adjust as necessary using the front end adjustment nut (B).
5. Re-tighten the sprocket's nut (A).

Figure 2-8 - Drawbar Chain Adjustment



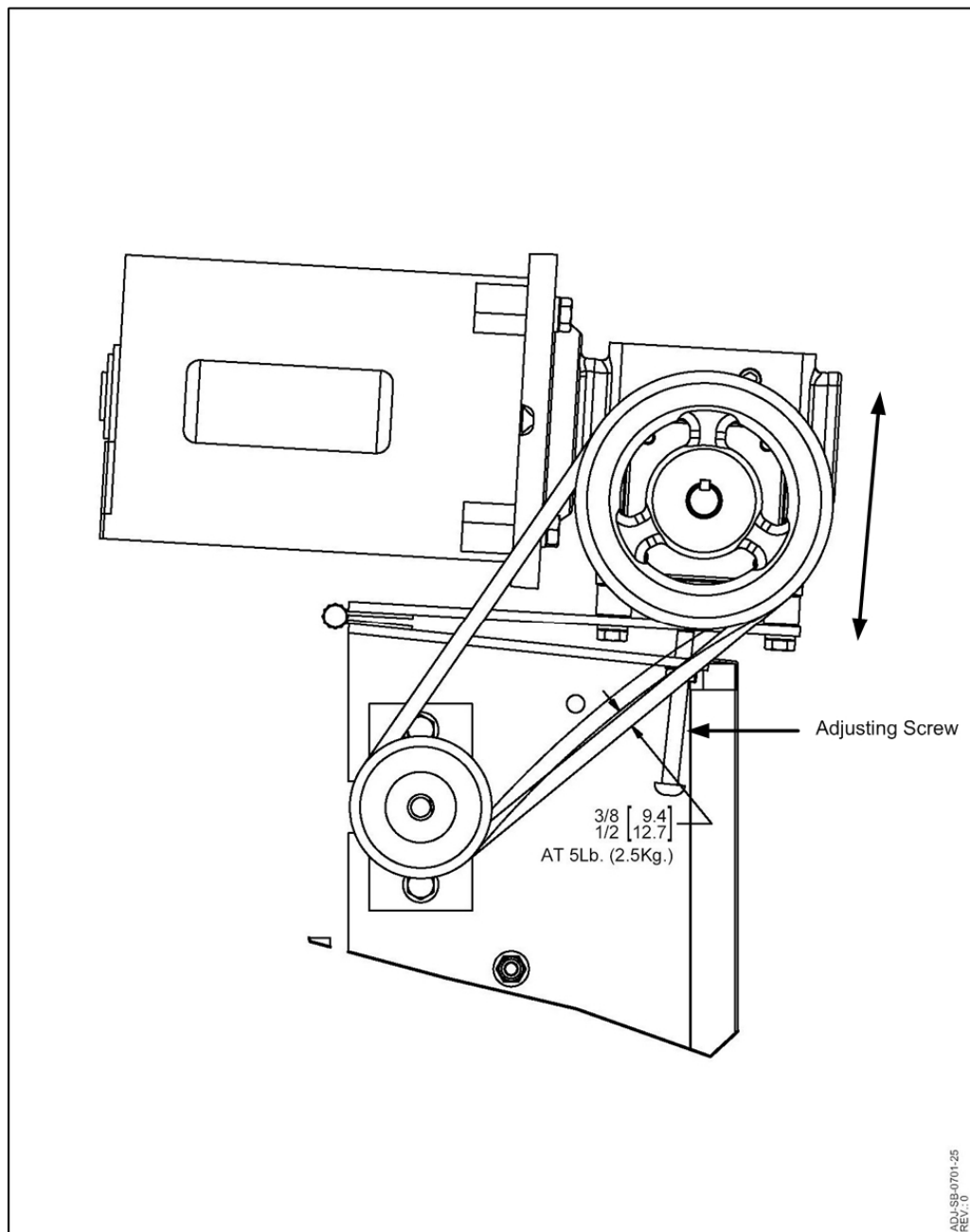
The drawbar chain must not be tightened to extreme. The mechanism must have some slack to it in order to extend the life of the pinsetter. Oil the chain with a very small quantity of SW10 motor oil only when absolutely needed. Remove all excess oil and grease from the chain and surrounding area on a weekly basis. The chain's tension should be verified and adjusted on a monthly basis.



Procedure 2-10 - Adjusting Rear Ball Lift V-Belt

Adjust tension of the V-belt in order to have a span of $\frac{3}{8}$ to $\frac{1}{2}$ " with 5 pounds of pressure on the middle of the belt. Use the Adjusting Screw to raise or lower the motor assembly.

Figure 2-9 Adjusting Rear Ball Lift V-Belt





3. Taking Care of Your Highway 66

Chapter Overview

This chapter contains information about the proper handling and care of your equipment.

Preventive Maintenance Basics

Here are some basic points about keeping your equipment functioning properly.

Machines must be kept free of dirt, dust and excess oil. A well cared for machine is a clean machine. A clean machine performs much better and reduces the chance of electronic problems.

Do not place items on top of electronic components or cover any of their vents. These vents provide airflow to keep your electronics from overheating.

Keep food and drinks away from electronic components. Food particles and spills might make the electronics sticky and unusable.

Do not get the power switches or other components wet. Moisture can damage these parts and cause an electrical hazard.

Always disconnect a power cord by grasping the plug, not the cord.

Machines are subject to constant vibration and must be checked frequently for loose nuts and bolts. All bolts on the machines and accessories must be tightened with a torque wrench. Over tightening bolts will simply cause them to break and depending on the function of the bolt, may cause operating headaches. Also, check and tighten any loose screws on the pinsetters, especially the setscrews, as well as any loose bolts on the pit cushions and ball elevators at regular intervals.

Setup and maintain a preventive maintenance program as outlined in this chapter.

Manufacturer's Recommendations

Always use original QubicaAmf parts with your equipment.

The detailed part listings in this publication make it easy to locate parts for reordering purposes. Always order parts by the part number and description, not by index and/or page numbers because this information is subject to change.

Always supply your equipment's serial number when placing an order.

Setting up a Preventive Maintenance Program

The simplicity of QubicaAmf equipment being its main characteristic, it is very easy to understand its concept. At the same time, it must be understood that equipment of any kind requires a minimum of maintenance and should operate according to standards. Regular, scheduled maintenance is very important in order to keep your equipment in excellent condition.



Getting Organized

The Preventive Maintenance Work Schedule is an organized schedule of routine preventive maintenance that must be performed on all machines over a four-week period.

First, the machines must be divided into four groups as evenly as possible. For example, if your center has sixteen lanes of equipment that are divided into four groups, each group would have four machines. Maintenance is performed on each group during different days of the week.

Let's briefly look at how the Preventive Maintenance Work Schedule is organized.

At the top of the work schedule are the four different colored boxes. This color-coding prevents confusion between the groups of machines. For example, if machines 1-4 are color-coded in green, once the scheduled preventive maintenance has been performed on machines 1-4, it is recorded in green on the work schedule.

Looking down the rest of the work schedule we see that the maintenance is divided into five areas. The headers on the right side of the page indicate these.

They show that the preventive maintenance is divided into five areas, according to time. There are services that must be performed daily, weekly, monthly, and quarterly.

QubicaAmf strongly suggests that you make copies of the Preventive Maintenance Work Schedule and set up your own maintenance program as detailed on the pages in this section.



Preventive Maintenance Work Schedule

Machine # _____	Thru # _____		Machine # _____	Thru # _____	
Machine # _____	Thru # _____		Machine # _____	Thru # _____	

4-week period ending: _____

Daily Service	Assign	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
Check stop sheets																													
Check and repair strings																													
Wipe ball detectors and reflectors																													
Clean all lane surfaces																													
Weekly Service	Assign	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
Clean all optical sensors																													
Verify all pin brakes																													
Wipe all stabilizers																													
Vacuum pit area																													
Wipe bowling balls																													
Monthly Service	Assign	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
Ball detector alignment																													
Clean all pin detector wheels																													
Verify all chains																													
Verify drawbar																													
Verify ball elevator																													
Quartely Service	Assign	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
Tighten bolts and screws																													
Verify pin pause																													
Annual Service	Assign	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
Check oil level in motor reducer																													





Daily Maintenance Schedule

Let's look at the daily maintenance required of all machines each and every day.

- Everyday, all the machines must be checked for stop sheets. These are pieces of paper that are put on the back of the machine to indicate if something went wrong with it the night before. A qualified maintenance technician should immediately correct the malfunction.
- Pin strings should be inspected daily. If they show evidence of wear, they should be shortened and refastened and the string tension readjusted to compensate for the shortened string. If a proper program of string maintenance and inspection is set up, you will never experience a broken string during normal play. Put very simply, there is no excuse for strings breaking in play other than careless string maintenance.
- Wipe the ball detectors and reflectors with a damp cloth.
- Clean all lane surfaces and surrounding areas with a phosphate-free lane cleaner (QubicaAmf part number Q82-0070) or similar. Regardless of the product you choose, it must be used in accordance with the manufacturers instructions. Always use a hand spray applicator.
- Condition all lane surfaces using bowling lane conditioner or standard vegetable cooking oil, but sparingly. Excess conditioner will make lanes appear to be dirty, it will also cause balls to be slippery - making them difficult to handle and also impede their return. Too much conditioner will also cover the bowling balls causing them to spin at the base of the ball elevator and block the ball pit. Do not apply conditioner to the approach sections, any conditioner in this area will cause players to slip.

Once the daily maintenance is finished for all the machines, it is color-coded in the appropriate places on the work schedule.



Weekly Maintenance Schedule

Following the daily maintenance of the machines there is also scheduled maintenance that needs to be performed weekly. Most of the weekly maintenance is simply cleaning which requires wiping off the major assemblies. All assemblies should be wiped clean with a dry cloth. Sometimes oil or grease may accumulate on these surfaces and a dry cloth will not remove them. When this happens, it makes sense to moisten the cloth with machine cleaner.

The weekly work schedule does not require that all the machines be serviced together. Rather, only one quarter of the machines must be serviced every two days. For a sixteen lane center, machine numbers one to four would be serviced on Monday, machine numbers five to eight would be serviced on Wednesday, machine numbers nine to twelve would be serviced on Friday, and machines thirteen to sixteen would be serviced on Sunday. This process repeats itself so that by the end of the month each machine will have been serviced four times.

Weekly Cleaning

The cleaning simply involves wiping the various components indicated with a dry cloth. The pit area is best cleaned by vacuuming the dust that accumulates. Dust also accumulates inside the various optical reading devices located on the machine. This dust is best removed by using compressed air prior to vacuuming.

- Clean all optical sensors and pin detector wheels.
- Remove all excess oil and grease from the chains and surrounding area.
- Remove all dust deposits which have accumulated on the pin tables and pin stabilizer boards.
- Vacuum the pit area.
- Vacuum the ball elevator area.
- Wipe the ball detectors and reflectors with a damp cloth.
- Wipe the ball return track.
- Wipe the front ball rack and the bowling balls.
- Wipe the work area (bench, room, aisle).

Weekly Adjustments

There is one adjustment which must be verified on a weekly basis, the pin brakes.

Once the weekly items are finished for one quarter of all the machines, it is color-coded in the appropriate places on the work schedule.



Monthly Maintenance Schedule

Moving on to items performed monthly, we see that the first area to inspect and correct is the ball detector alignment. Although the ball detector is not a mechanical part of the drive train, it is a critical component to the machine's mechanics since all commands to and from the machine start with the detection of a ball.

The remaining monthly procedures are just as important as the rest of the preventive maintenance program. Although most of the adjustments listed below will not need adjusting, you must verify each one of them correctly in order to ensure yourself of their perfection thus allowing yourself to rest easy for another month.

- Check the drawbar chain and alignment.
- Check the ball elevators.

Once the monthly items are finished for one quarter of all the machines, it is color-coded in the appropriate places on the work schedule.



Quarterly and Annual Maintenance Schedule

Although the quarterly and annual servicing of machines is not done as frequently as the other services, they are just as important. Much of the quarterly service involves tightening the bolts and screws of the various assemblies. Loose bolts and screws may result in premature failure of the machine and may even result in serious damage to the machine or an operator.

Nuts and Bolts

Machines are subject to constant vibration and must be checked for loose nuts and bolts. All bolts on the machines and accessories must be tightened with a torque wrench as indicated in the table below. Over tightening bolts will simply cause them to break and depending on the function of the bolt, may cause operating headaches.

The vibro-insulators and base plate spacer bolts located on the stabilizers are subject to continual violent shock and extreme vibration. They should be checked frequently for tightness.

Bolt Size	American	Newton
1/4"	15 FT. LB.	67 N/M
5/16"	19 FT. LB.	85 N/M
3/8"	25 FT. LB.	112 N/M
1/2"	29 FT. LB.	130 N/M

Tightening loose bolts and screws should not be limited to quarterly service however. Any time you come across a loose bolt or screw, it should be corrected immediately.

The following items must also be performed quarterly:

- Check the pin pause.
- Oil all chains if necessary;
- Oil all pulleys if necessary.

Note

Oil all pulleys and chains with very small quantities of SW10 motor oil only if judged necessary. Don't forget that any excess oil will only drip into undesired places causing headaches for cleaning.



Annual Inspection

An annual inspection of the machine is best done by a qualified mechanic. He has the experience to determine the wear of parts and their need for replacement. The oil in all motor reducers must also be checked and added if required (use 80W-80 oil).





4. Solving Problems

Chapter Overview

This chapter contains information that will help you identify and correct problems that might arise as you use your equipment.

Services available and telephone numbers listed are subject to change without notice.

Warning

HIGH VOLTAGE IS PRESENT IN THE PINSETTER POWER BOX. THE MAIN CIRCUIT BREAKERS MUST ALWAYS BE SHUT OFF OR THE TWIST LOCK PLUG DISCONNECTED PRIOR TO REMOVING THE POWER BOX COVER OR BEFORE PERFORMING ANY ADJUSTMENT.

Read This First

If you have a problem with your TMS Pinsetter System, always verify the following points before replacing system components as indicated in this chapter.

- Check that you have electrical power to the system; a glance at the fuse box could save you a lot of precious time.
- Make sure that the LED on the ball detector is green.
- Simulate a power failure.
- Check that all cabling assemblies are well connected.

Hint on Cabling Problems

There are only two possible solutions to cabling problems. First, any one of the connectors used with the cable assembly may have become loose due to the constant vibration generated from play. Second, a cable may be cut or have been pinched by a foreign object. The solutions are simple, ensure that all connectors are well positioned and push down on each one to ensure its proper contact. If this fails to resolve your problem, use a multi-meter to verify the cable assembly's continuity.

- Verify the relative humidity in your center. When humidity levels get too low, static electricity transported by people can build up to enormous levels. These levels can be so large that even good grounds will not stop the destruction of these static discharges. Be advised that the recommended relative humidity level for a bowling center is between 40 and 50 percent.
- Retrace the ground wire installed with your equipment all the way to the building's main ground. Never depend upon the ground installed with your outlets, since many electricians do not reliably install these grounds. If your equipment is not properly grounded the CPUs can literally blow their electronic chips when they receive a static electricity discharge, be it from the players or a defective part.



Procedure 4-1 - Untangling Pin String

If pin strings tangle, the pinsetter will attempt to untangle them 8 times. If strings are knotted, they will have to be untangled manually. Use the following steps to perform such an operation

1. Raise the masking unit and enter beneath it to the front of the pinsetter.
2. Lift the cover at the front of the pinsetter and press button #4. That will stop the movement of the pinsetter.
3. Untangle the strings by hand.
4. Press button #4 again and then press button #3 (Part set) The pinsetter will cycle.
5. Close the cover on front of the pinsetter. The pins which were still in play will be re-spotted.
6. Leave the pinsetter area and lower the masking unit to its normal position

The Pinsetter Doesn't React to a Ball Rolled Down the Lane.

1. Check the ball detector's adjustment and cabling.
2. Reset the main circuit board, if this does not rectify the problem, replace the lane Ball Detector.

The Pinsetter Cycles when it Shouldn't.

1. Check the ball detector's adjustment
2. Reset the pinsetter's main circuit board. If this does not rectify the problem, replace the CPU board inside the main control box.

The Drawbar Continuously Moves Back and Forth.

1. Strings may be too tight, check their adjustment.
2. If this problem occurs when you start the pinsetter, check the LOS opto.

The Drawbar does not Attain the Rear of the Pinsetter.

1. Check the string adjustment, they are probably too tight.

The Chains Emit a Loud Noise.

1. Chains need to be adjusted.



One or more Fallen pins are Re-Spotted when they are not Supposed to

1. Check the brake adjustment of those pins.
2. Check solenoid connections.
3. Replace the solenoid.

There are no Pictures on the Monitors

1. Check the cabling between the monitors and the Q-AMS.
2. Check the power for the monitors and the Q-AMS. If there is no power verify the overload circuit breaker identified “Accessories” on the TMS Power Box.
3. Reboot the Q-AMS, do so by unplugging the power cord and plugging it back.
4. Change the Q-AMS.

There is no Reaction from the Joystick

1. Verify all joystick connections.
2. Check the cabling between I/O controller and the Q-AMS.
3. Check the power for the Q-AMS. If there is no power, verify the overload circuit breaker identified “Accessories” on the TMS Power Box.
4. Reboot the Q-AMS, do so by unplugging the power cord and plugging it back.
5. Change the Control I/O.
6. Change the Q-AMS.

There is no Reaction from the Machines.

1. Check the cabling between TMS Power Box and the Q-AMS.
2. Check the power for the Q-AMS. If there is no power, verify the overload circuit breaker identified “Accessories” on the TMS Power Box.
3. Reboot the Q-AMS, do so by unplugging the power cord and plugging it back.
4. Change the Q-AMS.



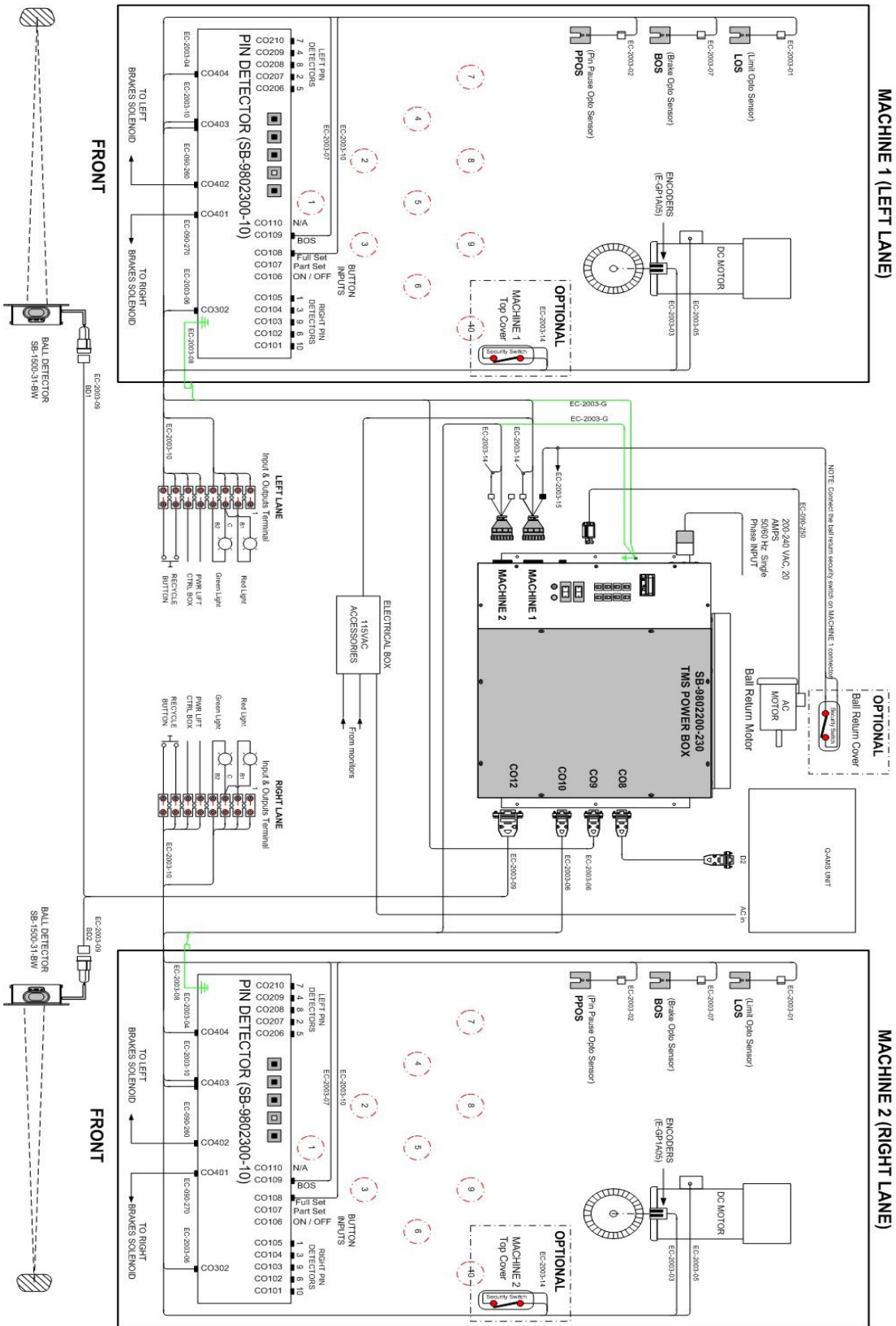


5. Wiring Diagrams

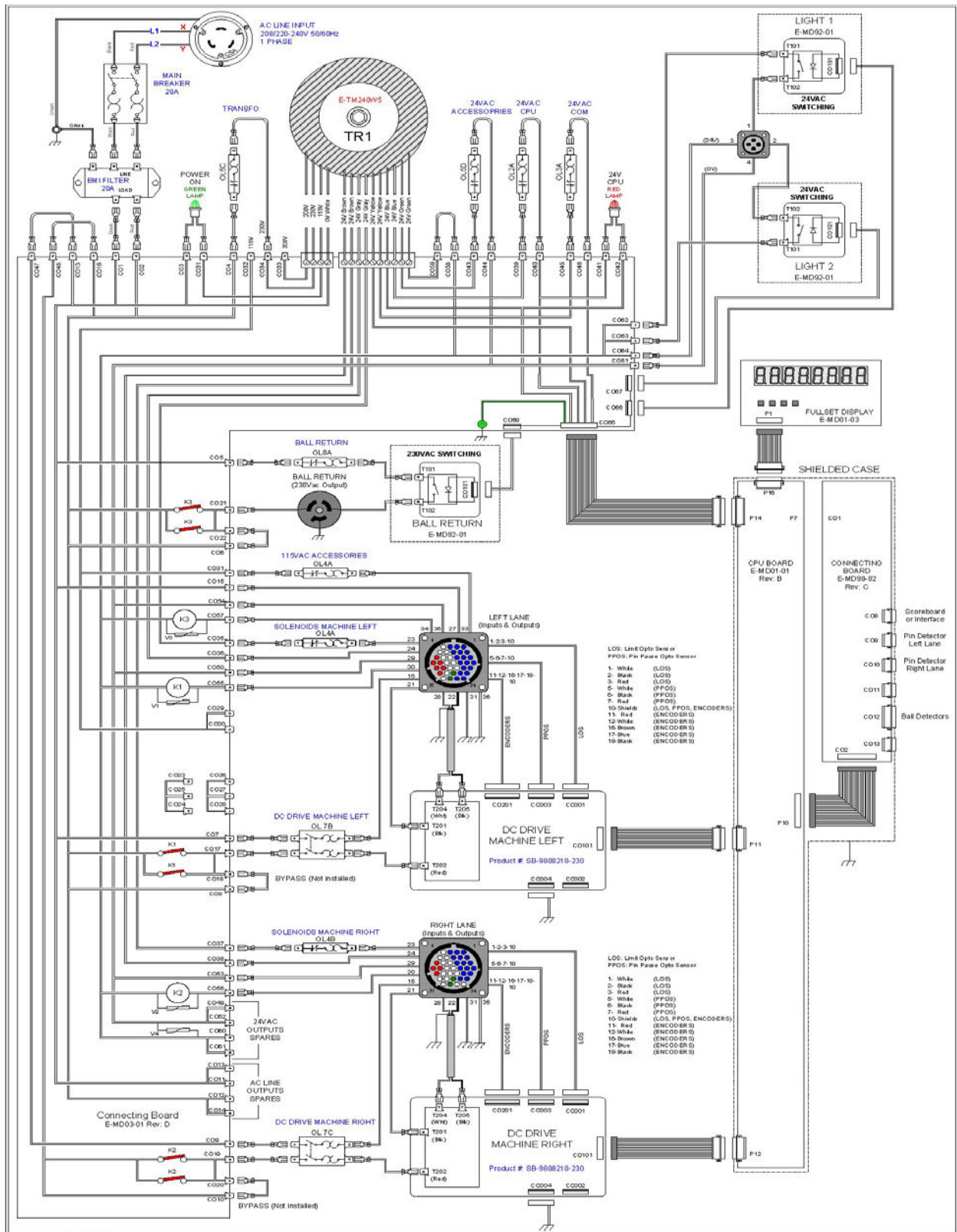
Chapter Overview

This chapter provides you with all necessary wiring and electronic information in easy to comprehend diagrams.

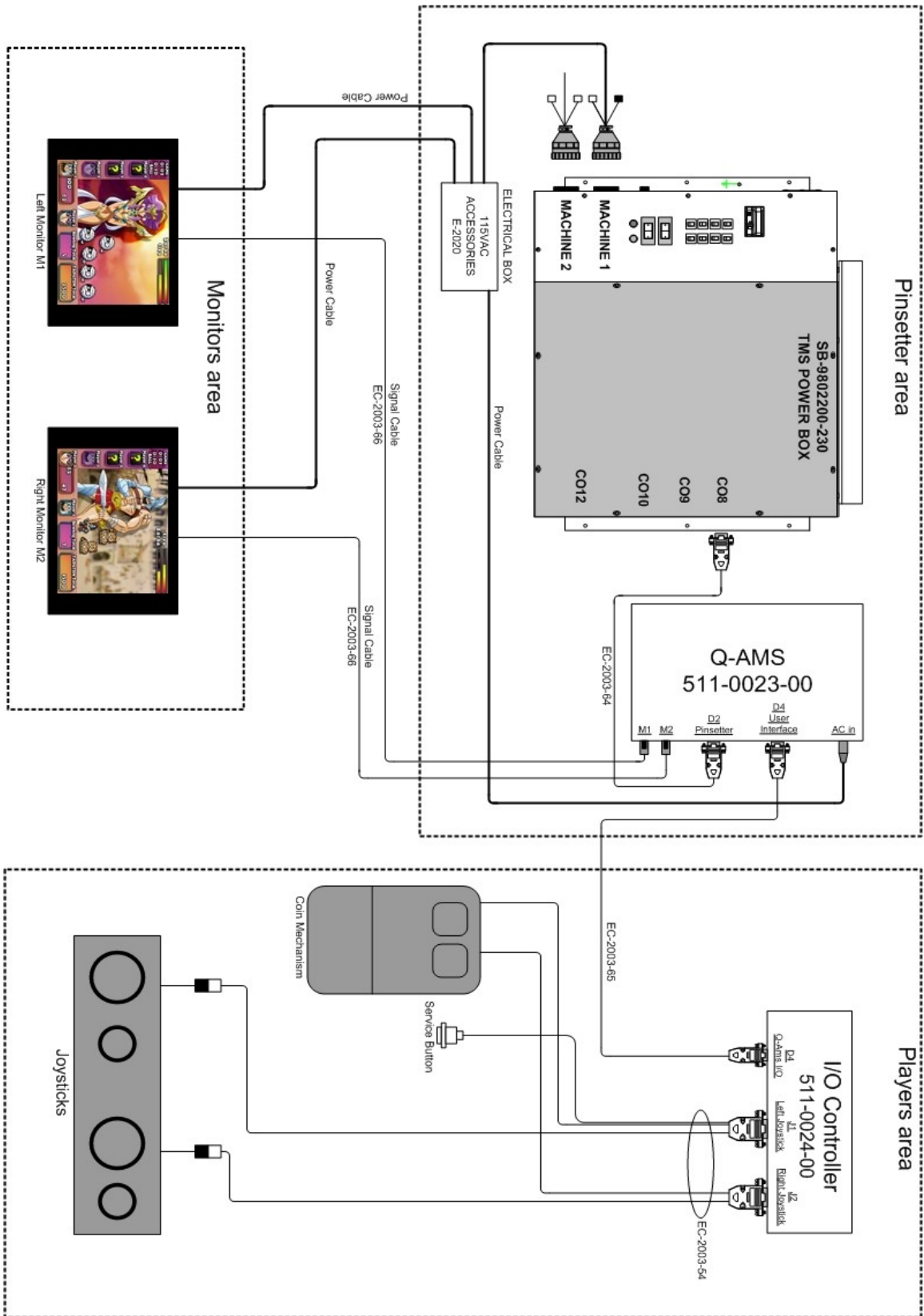
General Wiring



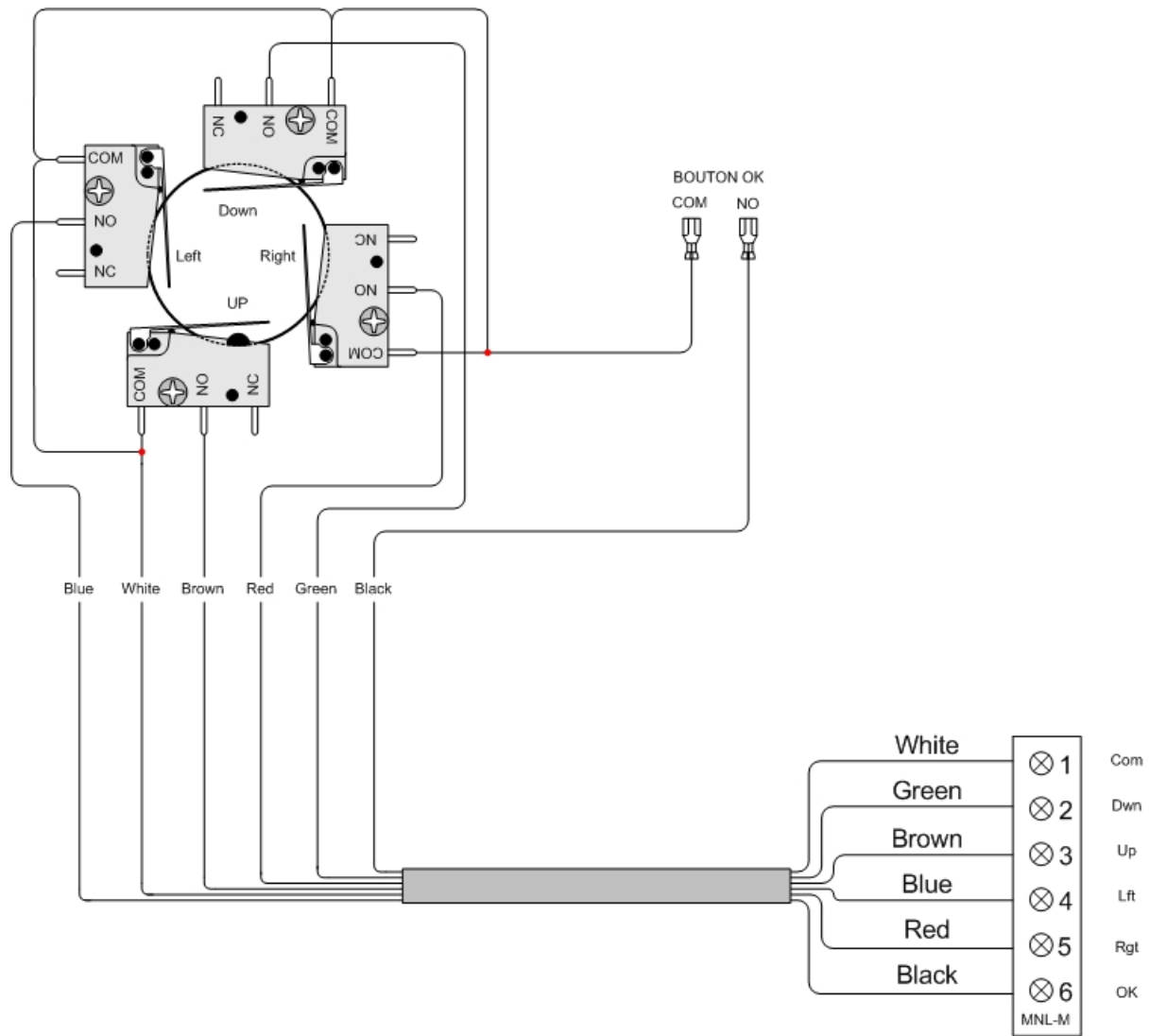
Power Box Wiring



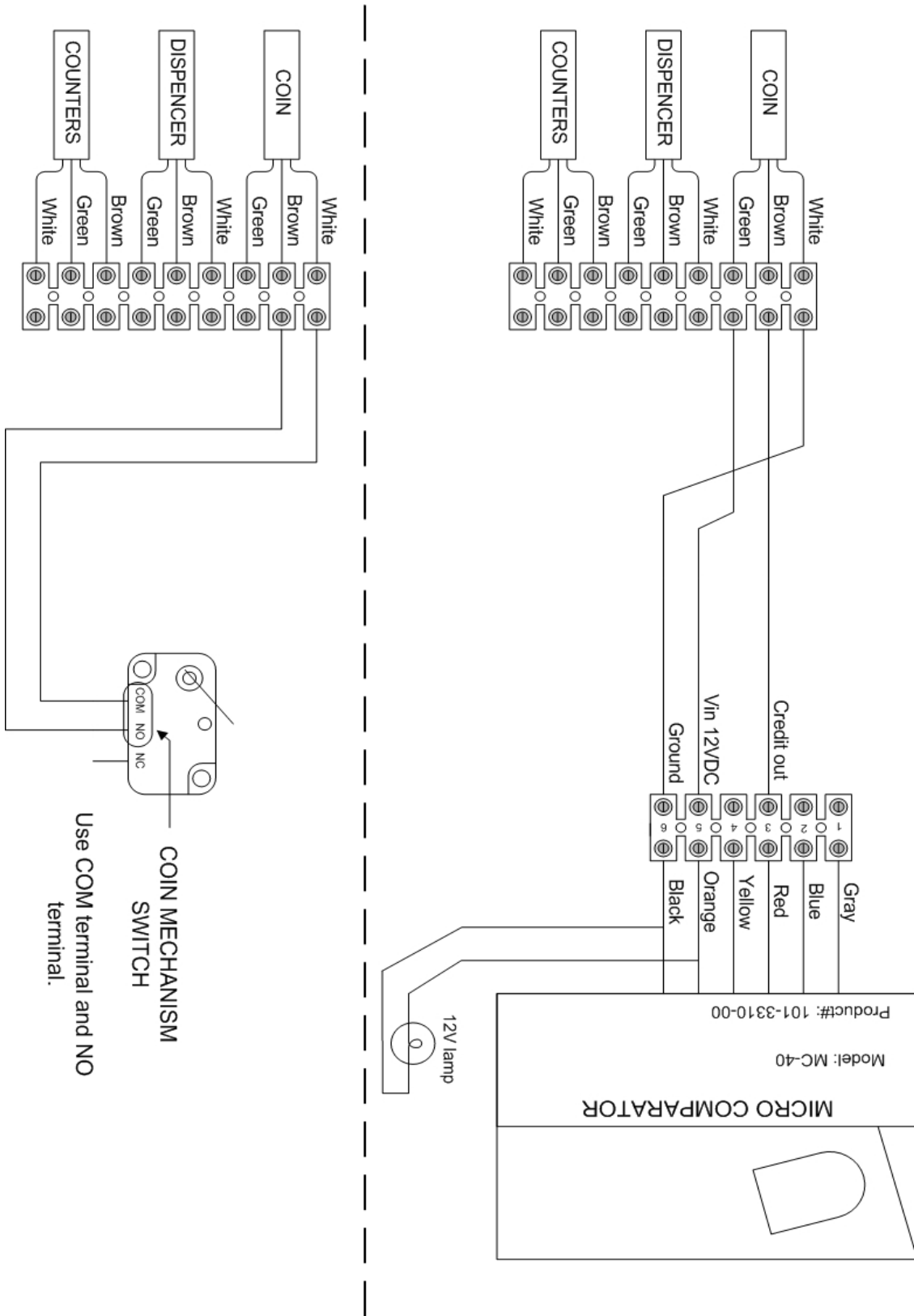
Electronics Wiring



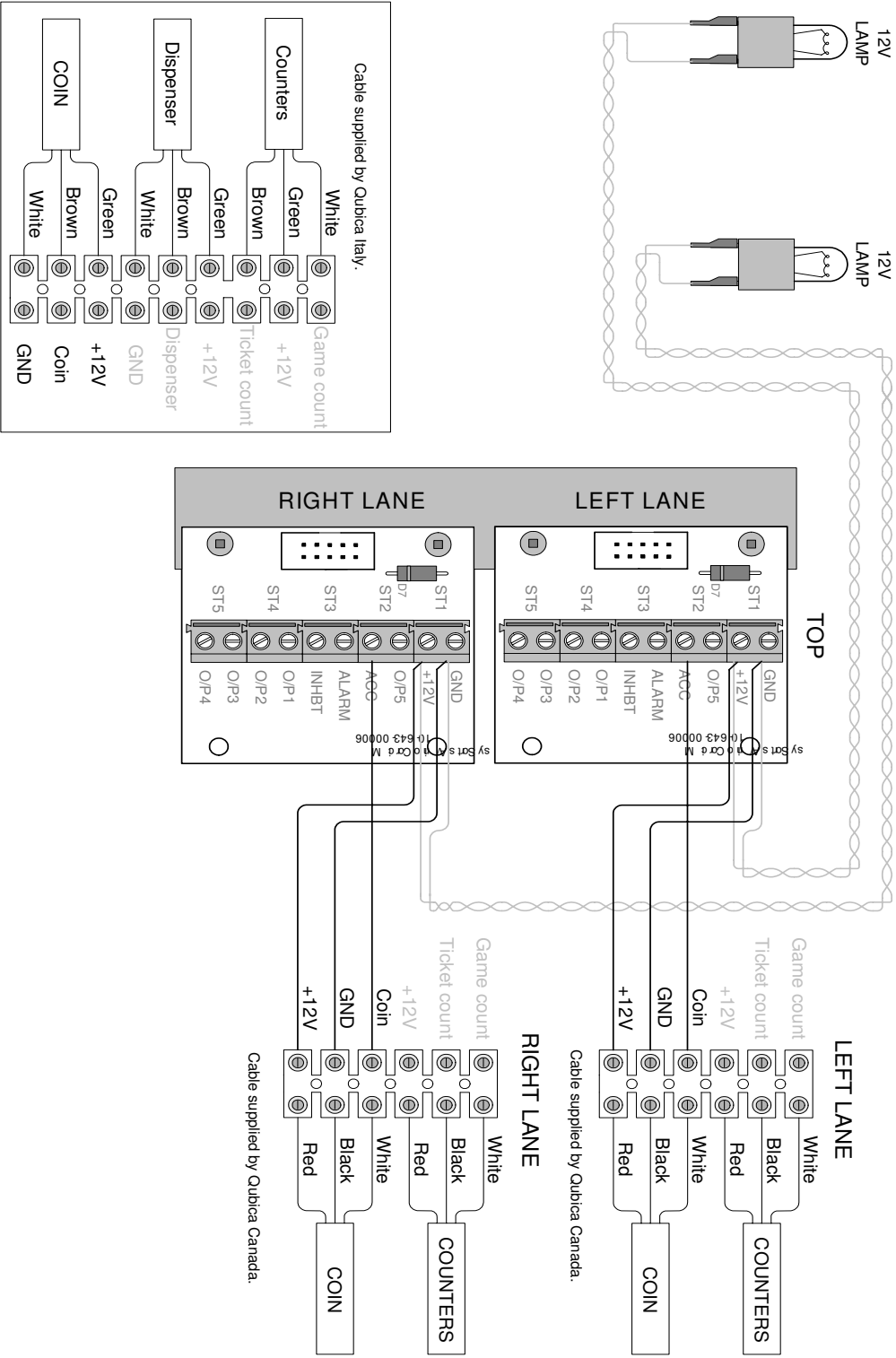
Joystick Diagram



Coin Mechanism (Coin Comparator)



Coin Mechanism (Multi Coin)

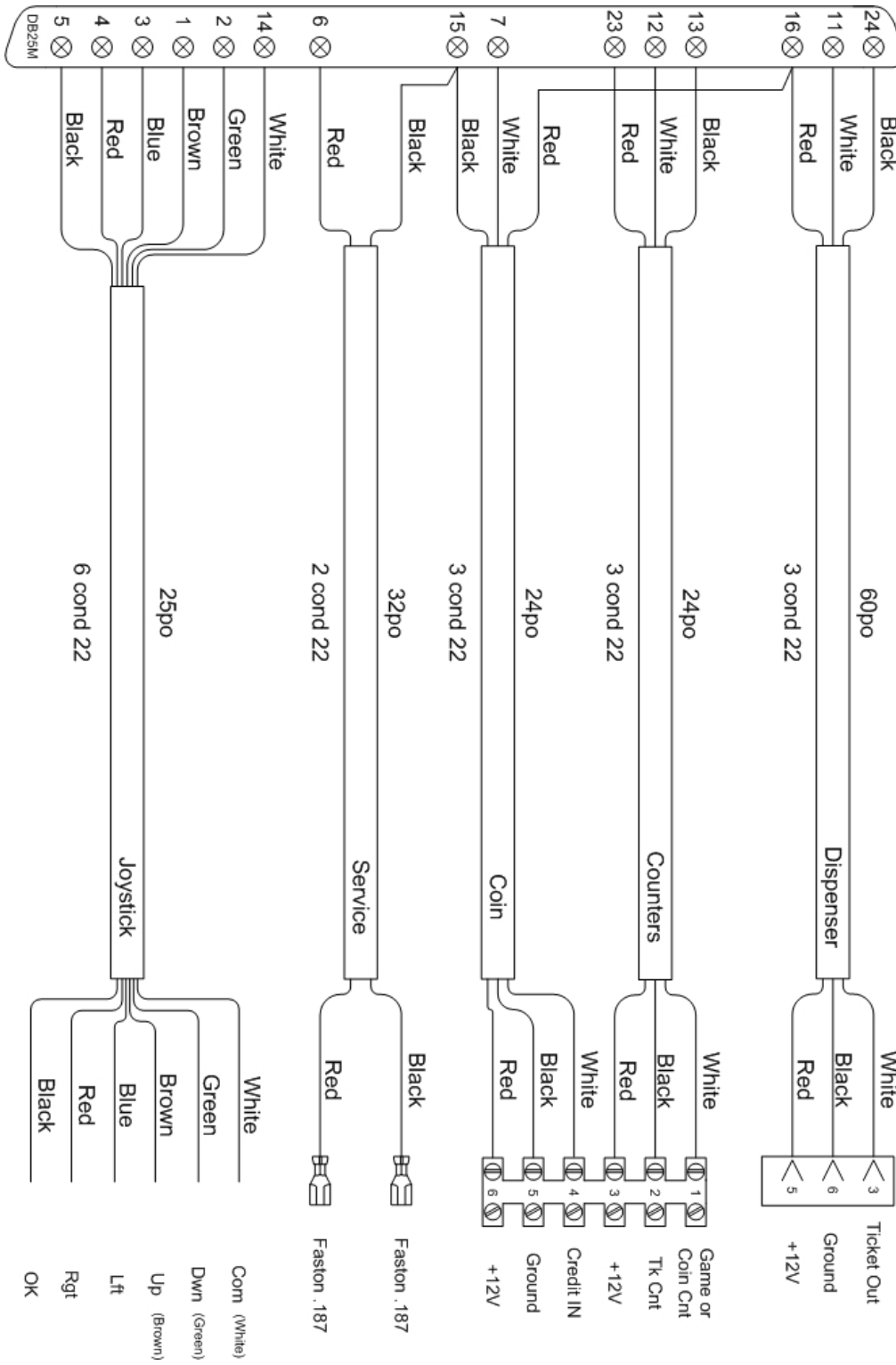


Pin Out DB 25 Ctrl I/O

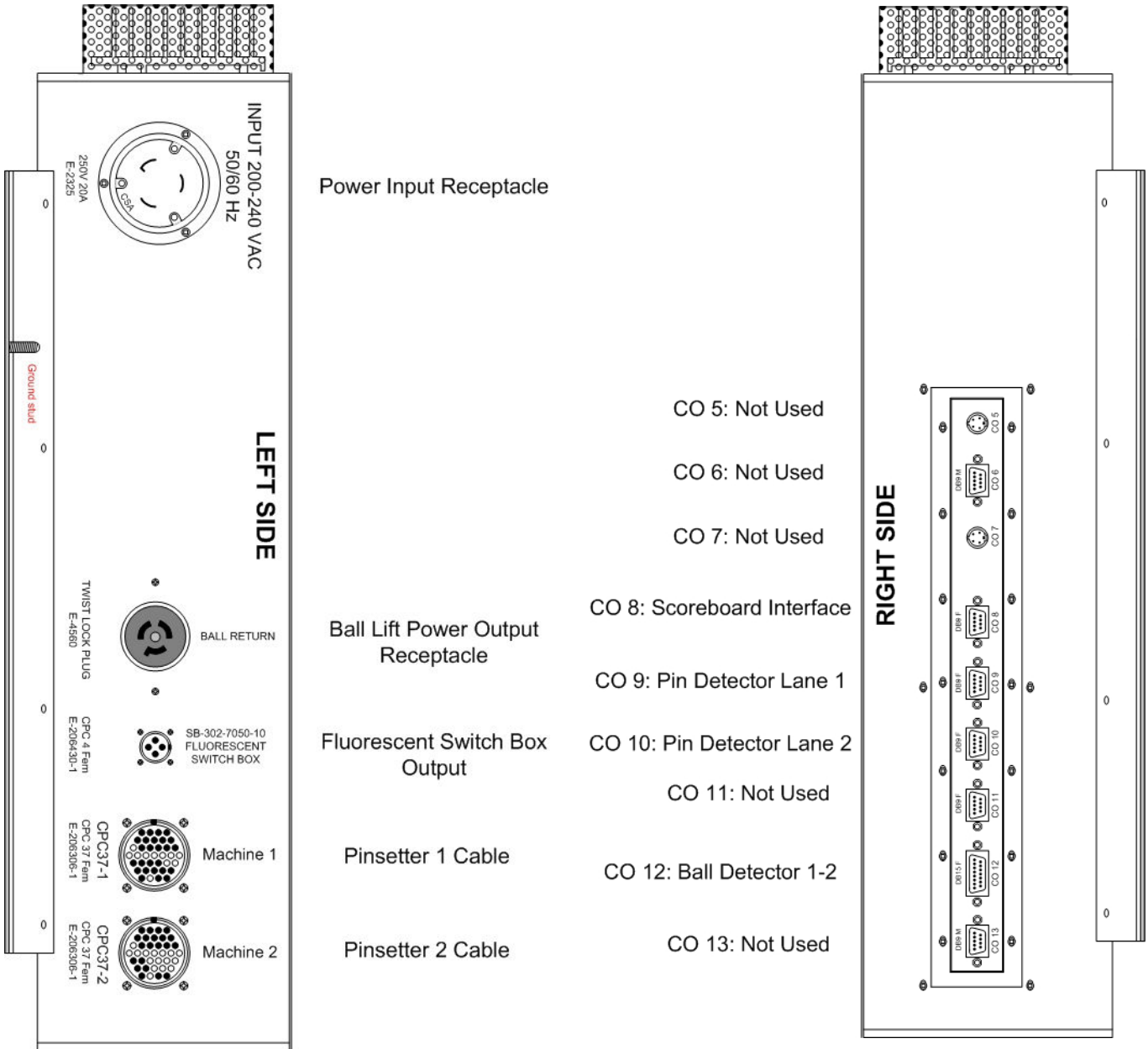
Pin#	Pin line	Description	Input/Output
1	JS_Up	Joystick up position	Input
2	JS_Down	Joystick down position	Input
3	JS_Left	Joystick left position	Input
4	JS_Right	Joystick right position	Input
5	JS_OK	Joystick confirmation button	Input
6	Service	Service button signal	Input
7	Coin	Coin signal	Output
8	Aux_In_1	Not used	Input
9	Aux_In_2	Not used	Input
10	Aux_Out	Ball release system for Buggy Bowl only	Output
11	Dispenser	Ticket dispenser signal	Output
12	Game	Game counter line	Output
13	Ticket	Ticket counter line	Output
14	GND	Digital GND	Output
15	GND	Digital GND	Output
16	12 Vdc	12 Volt DC line for Coin and Ticket	Output
17	36 Vdc	36 Vdc line Not Used	Output
18	Ground	Protection ground	Output
19	Ground	Protection ground	Output
20	Ground	Protection ground	Output
21	Ground	Protection ground	Output
22	36 Vdc	36 Vdc line Not Used	Output
23	12 Vdc	12 Volt DC line for Coin and Ticket	Output
24	GND	Digital GND	Output
25	GND	Digital GND	Output



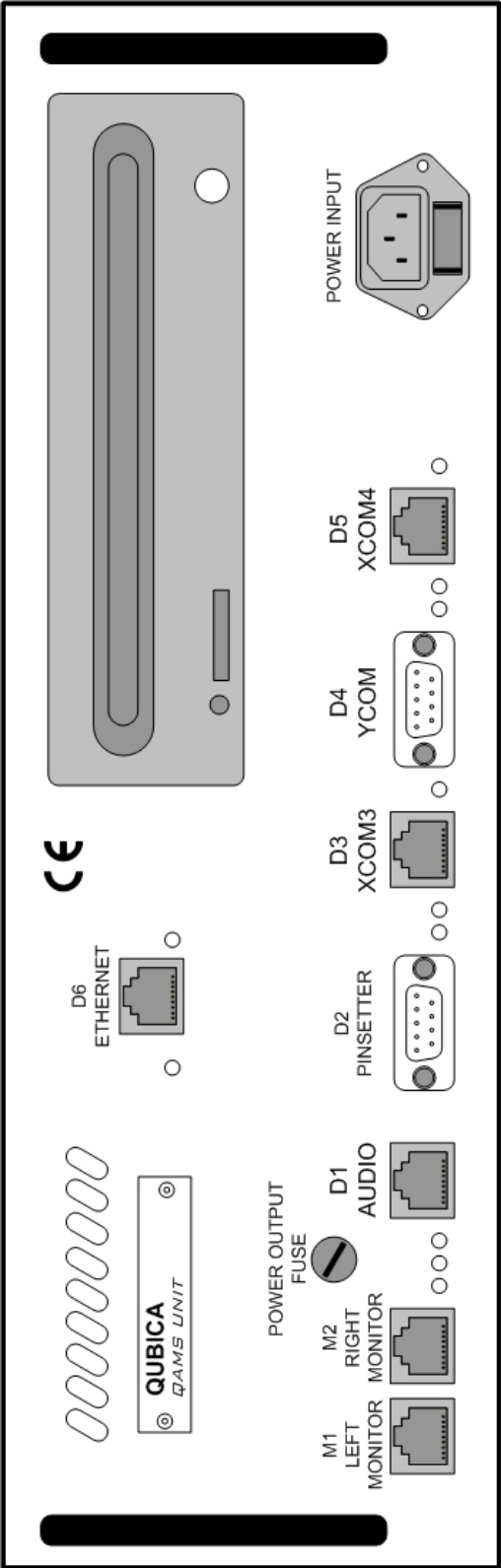
Joystick control cable



Power Box Connectors



Q-AMS Connectors



Power Input Receptacle

Not Used

I/O Controller Input

Not Used

Pinsetter Power Box Com.

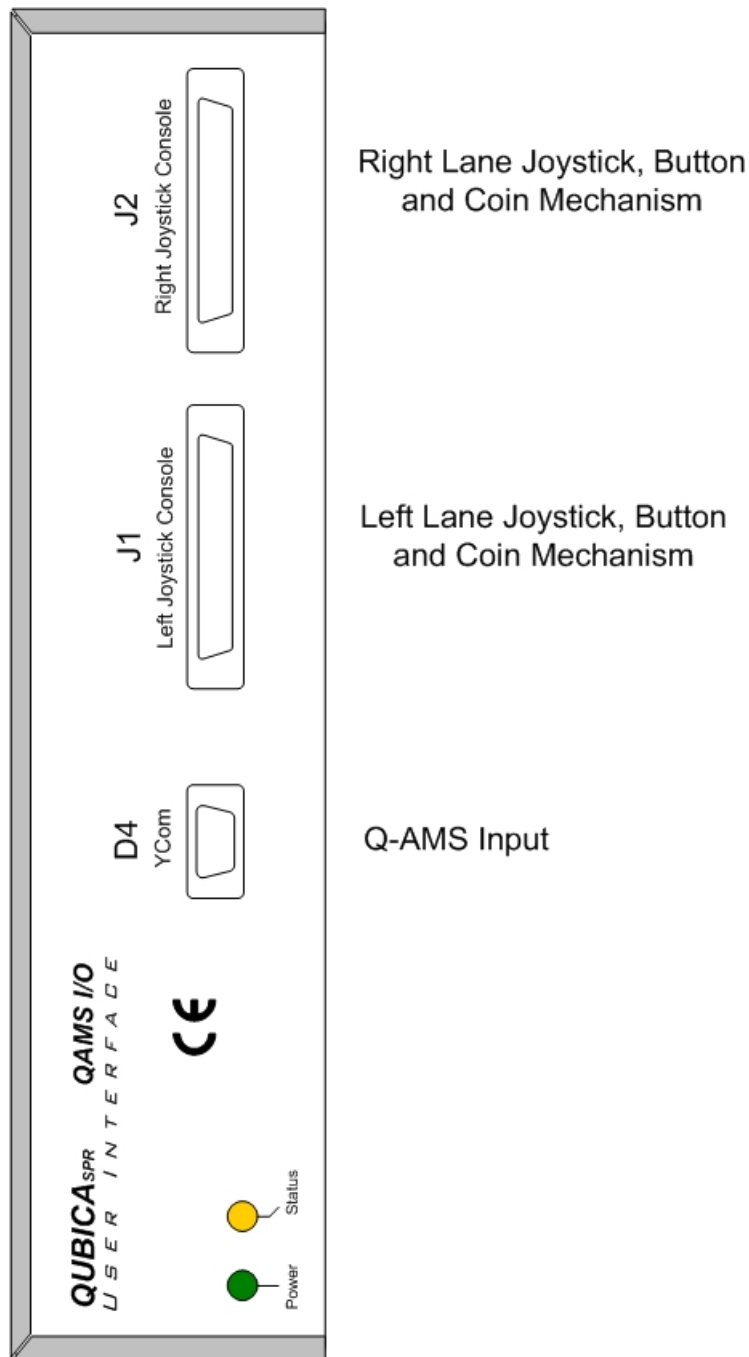
Not Used

Right Monitor Signal

Left Monitor Signal



I/O Controller Connectors





6. Parts Listing

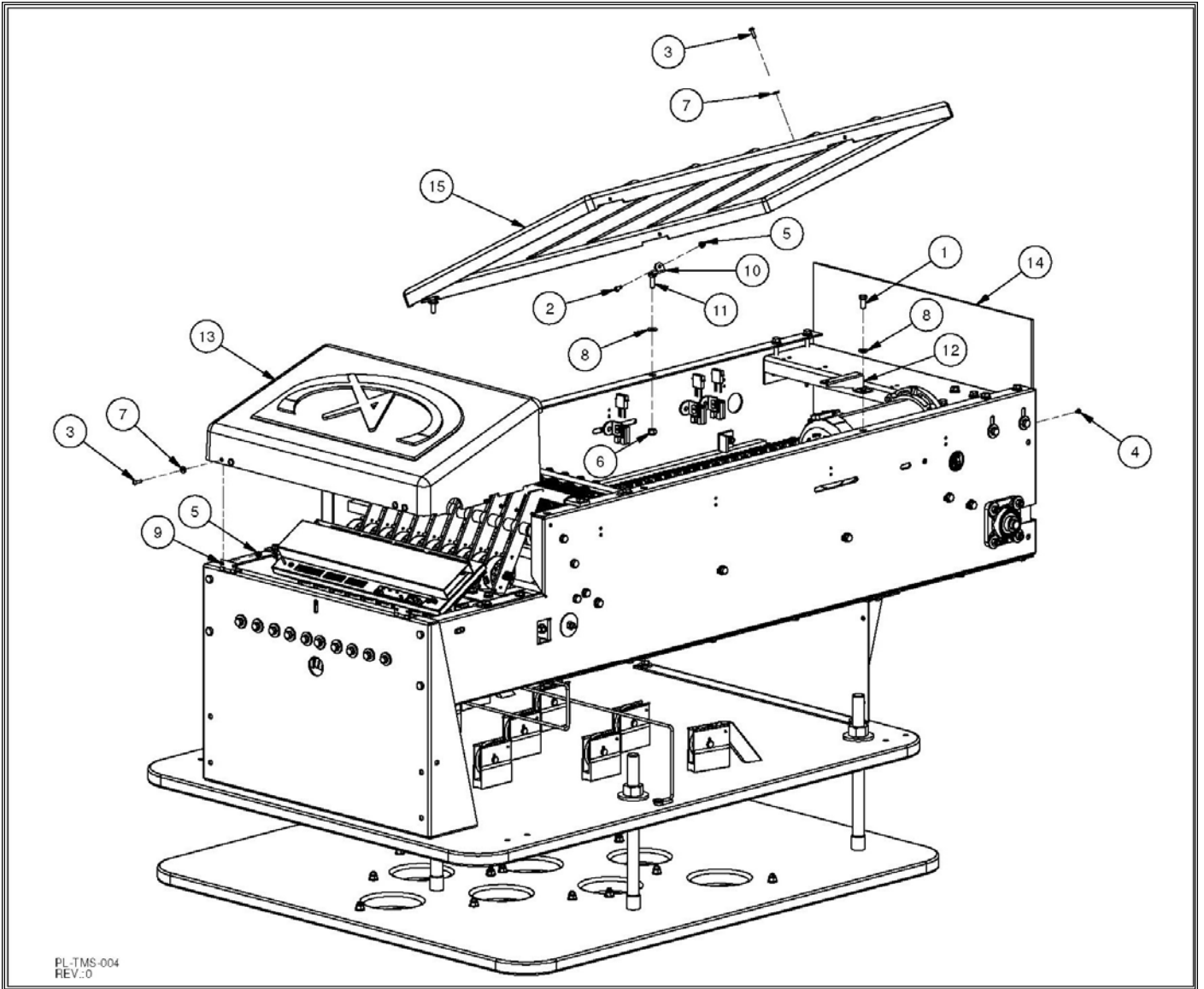
Important:

For all parts number for the lane foundation or installation parts, please refer to the Appendix A at the end of this manuals.

Chapter Overview

This chapter provides you with a complete breakdown of all your equipment's parts in exploded views for your reordering and servicing convenience

Safety Covers

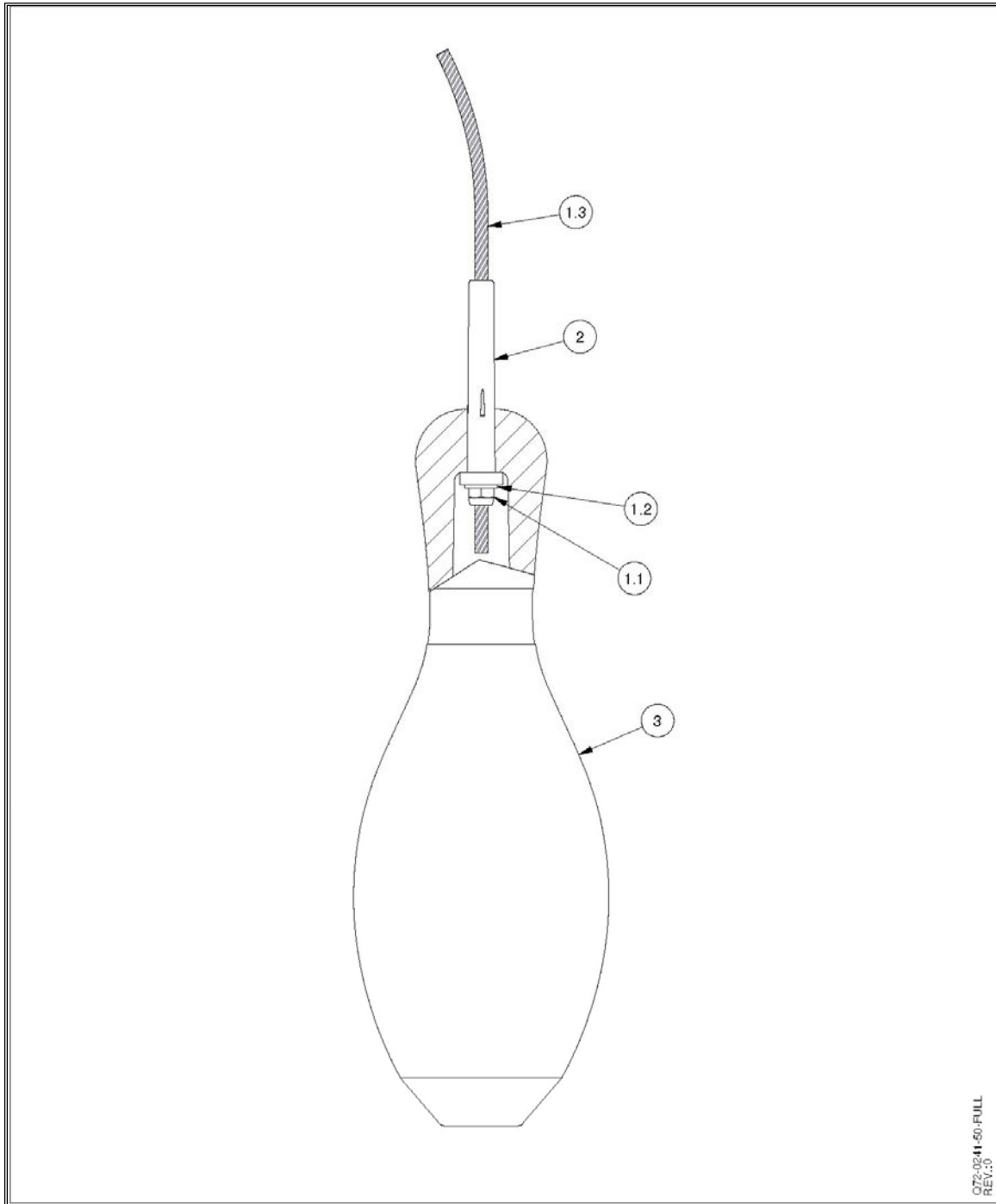


Coverts parts list

Item	Numéro de pièce	Description
1	7010-003118-075	5/16-18 UNCX3/4 HEX CAP SCREW
2	7016-411032-050	10-32 UNFX1/2 MA SC RH SO
3	7016-411032-062	10-32 UNFX5/8 MA SC RH SO
4	7022-411000-037	#10 X 1 TAP SCW PH SOCK
5	7036-001032-000	HEX NYLON NUT 10-32 UNF
6	7036-003118-000	HEX NYLON NUT 5/16-18 UNC
7	7050-021050-006	7/32 X 1/2 X 3/64 FLAT WASHER
8	7050-034068-006	11/32 X 11/16 X 1/16 FLAT WASHER
9	9102044	HINGE
10	9102047	D RING CLIP
11	9102048	TOP COVER PIVOT
12	9102203	TOP COVER BRACKET
13	9103201	PIN DETECTION COVER TMS
14	9103202	REAR COVER
15	9103203	TOP COVER



Bowling Pin Highway

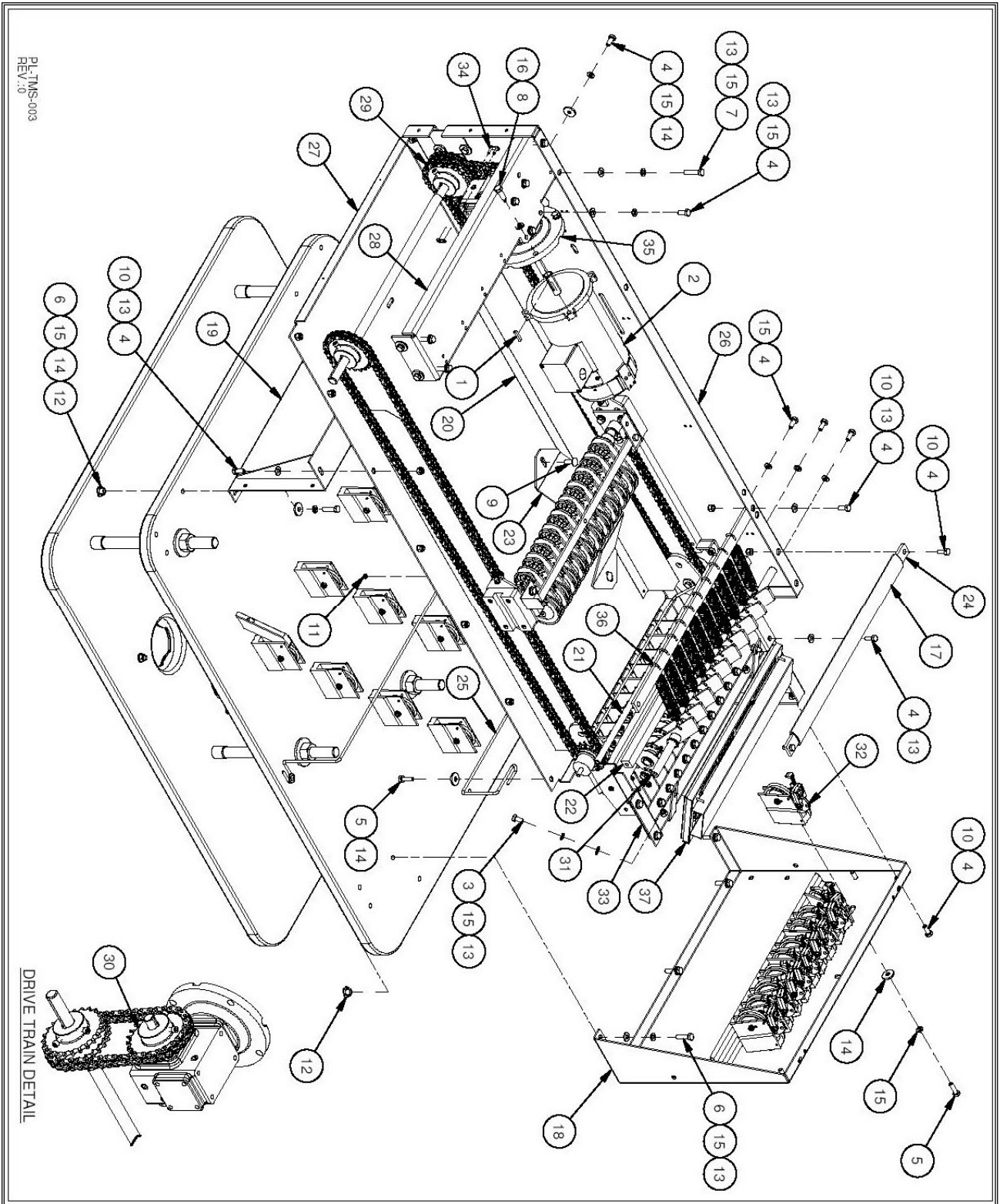


Bowling Pin Parts list

Item	Numéro de pièce	Description
1	I-022A	STRING ASSEMBLY 14 FOOT (4.3 METERS)
1.1	7036-001032-000	HEX NYLON NUT 10-32 UNF
1.2	7050-018048-004	3/16 X 31/64 X 3/64 FLAT WASHER
1.3	Q81-1050	PIN STRING - 50 METERS ROLL
2	P-241-10	MUSHROOM BUSHING
3	Q72-0241-50	HIGHWAY/BUGGY BOWL PIN



Main Components

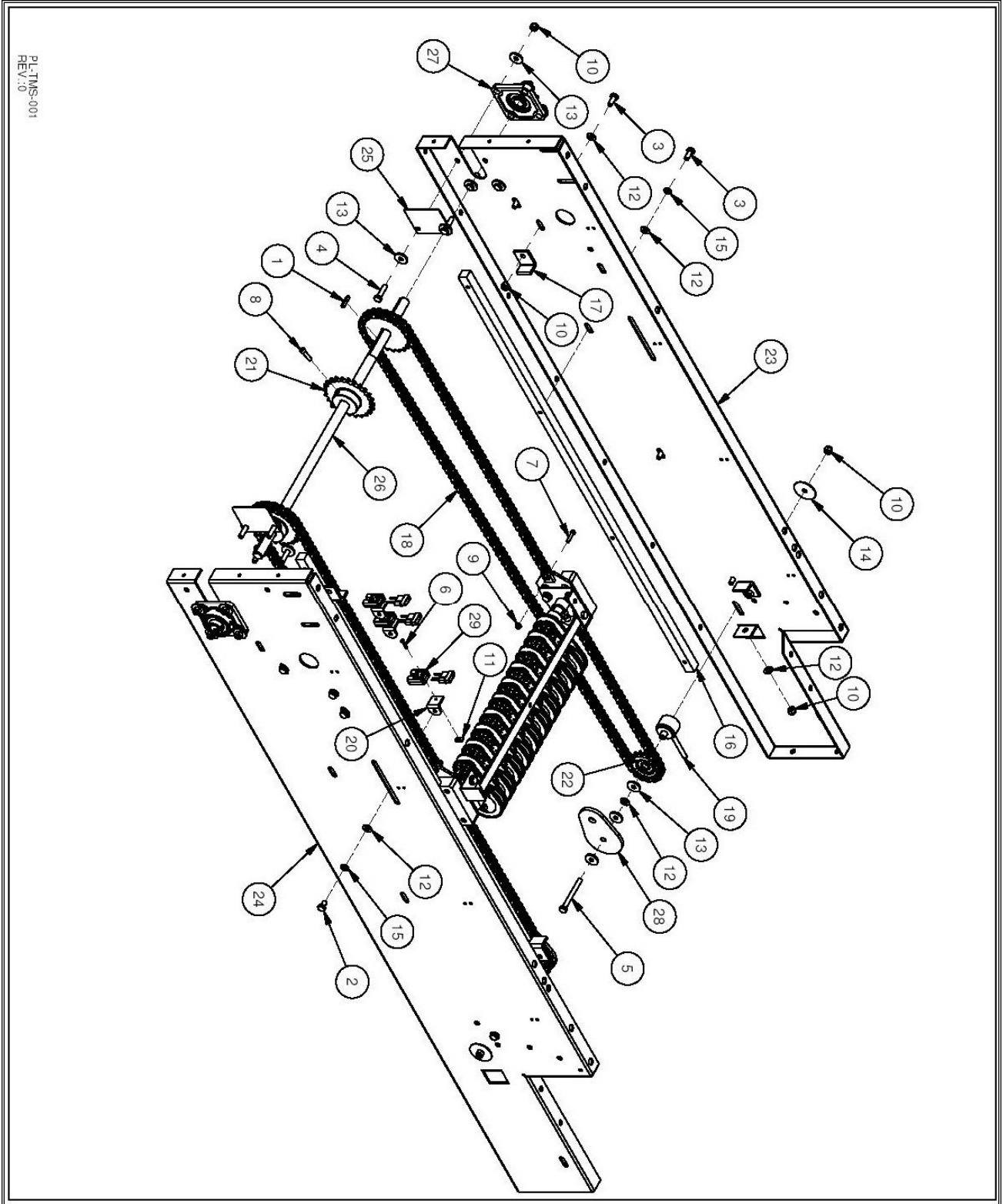


Main Components Part List

Item	Part Number	Description	Qty
1	302-2410-00	KEYWAY 3/16	5
2	311-1100-00	MOTOR ASSEMBLY	1
3	7010-003118-062	5/16-18 UNCX5/8 HEX CAP SCREW	10
4	7010-003118-075	5/16-18 UNCX3/4 HEX CAP SCREW	53
5	7010-003118-100	5/16-18 UNCX1 HEX CAP SCREW	12
6	7010-003118-125	5/16-18 UNCX1 1/4 HEX CAP SCREW	15
7	7010-003118-150	5/16-18 UNCX1 1/2 HEX CAP SCREW	4
8	7010-003716-100	3/8-16 UNCX1 HEX CAP SCREW	4
9	7012-003118-075	5/16-18 UNC X 3/4 CARRIAGE BOLT	2
10	7036-003118-000	HEX NYLON NUT 5/16-18 UNC	45
11	7038-000632-000	6-32 UNC HEX KEEP NUT	6
12	7045-003118-037	5/16-18 UNC TEE NUT	7
13	7050-034068-006	11/32 X 11/16 X 1/16 FLAT WASHER	67
14	7050-034100-012	11/32 X 1 X 1/8 FLAT WASHER	40
15	7060-031057-009	5/16 LOCK WASHER	56
16	7060-037067-010	3/8 LOCK WASHER	4
17	8664-137112-012	CAOUTCHOU PROTECTOR	1
18	9102005	SENSOR PLATE FRONT	1
19	9102006	PINSETTER SUPPORT PLATE	1
20	9102007	SIDE GUARD	2
21	9102025	SHAFT	1
22	9102026	LOWER REEL ARM STOPPER	1
23	9102029	ROPE HOLDING	1
24	9102030	UPPER REEL ARM STOPPER	2
25	9102037	STRING SUPPORT	1
26	9102200	SIDE FRAME-RIGHT	1
27	9102210	BOTTOM MOUNTING PLATE	1
28	9102230	COMMAND SUPPORT CHANNEL	1
29	9102281	DRIVE CHAIN	1
30	9102292	SPROCKET 40B24, 5/8 BORE	1
31	9122027	REEL ARM SHAFT ASSEMBLY	1
32	9122057	PIN DETECTION ASSEMBLY	10
33	9122220	BRAKE SUPPORT ASSEMBLY	1
34	M-0690-01-1	CHAIN LINK #40	1
35	M-BMQ1133-3	MOTOR REDUCER	1
36	S-080	EXTENSION SPRING	10
37	SB-9802300-10	PIN DETECTOR TMS ASS'Y	1



Frame Assembly

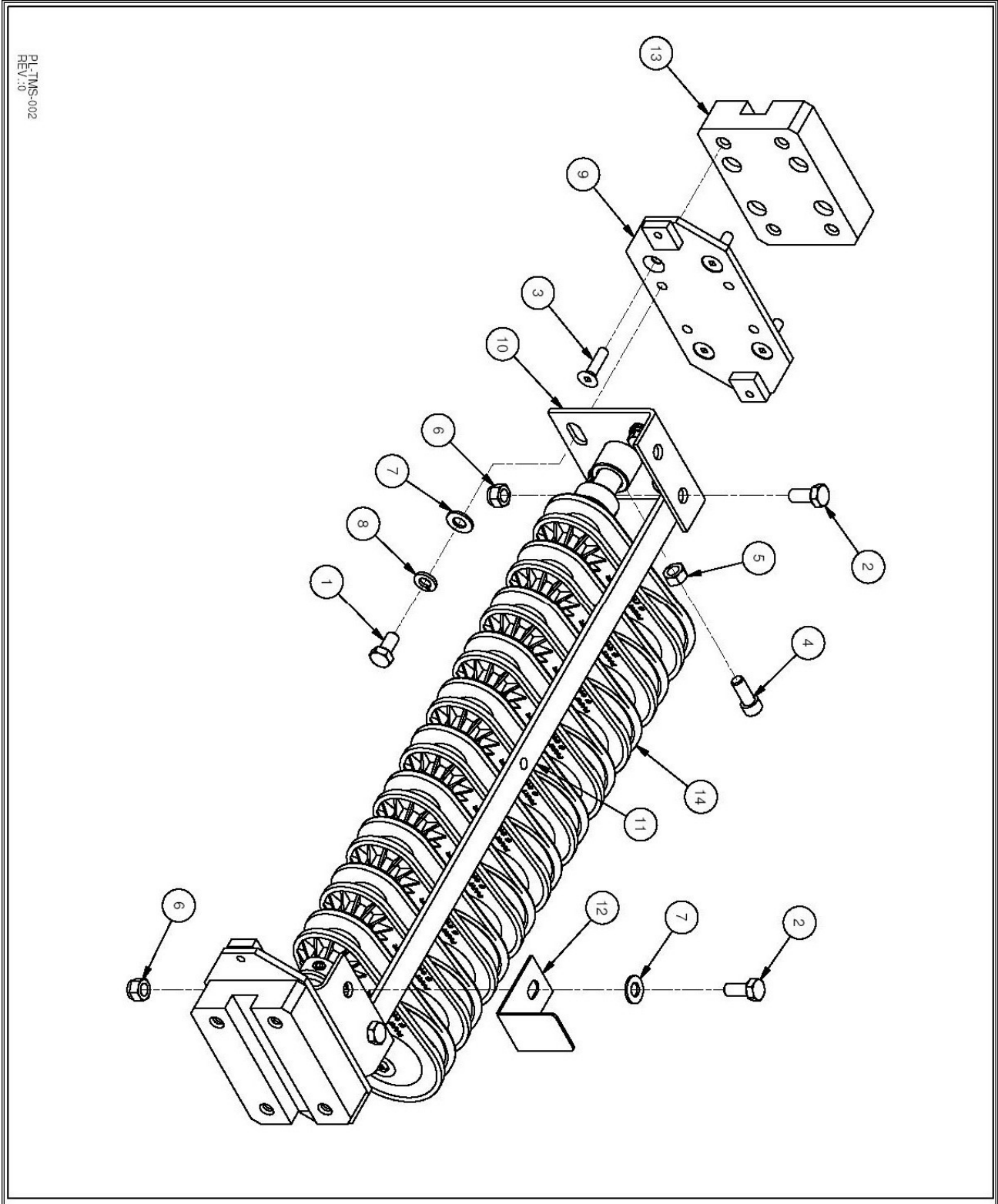


Frame Assembly Part List

Item	Part Number	Description	Qty
1	302-2410-00	KEYWAY 3/16	4
2	7010-003118-050	5/16-18 UNCX1/2 HEX CAP SCREW	3
3	7010-003118-075	5/16-18 UNCX3/4 HEX CAP SCREW	53
4	7010-003118-125	5/16-18 UNCX1 1/4 HEX CAP SCREW	15
5	7010-003118-300	5/16-18 UNCX3 HEX CAP SCREW	2
6	7016-410632-075	MA SC RH SOCK 6-32 UNCX3/4	3
7	7018-001032-087	10-32 UNFX7/8 HEX SO CA SCW	4
8	7018-002520-087	1/4-20 UNCX7/8 HEX SO CA SCW	8
9	7036-001032-000	HEX NYLON NUT 10-32 UNF	12
10	7036-003118-000	HEX NYLON NUT 5/16-18 UNC	45
11	7046-000632-006	6-32 X 1/16 WELD NUT	3
12	7050-034068-006	11/32 X 11/16 X 1/16 FLAT WASHER	67
13	7050-034100-012	11/32 X 1 X 1/8 FLAT WASHER	40
14	7050-034175-012	11/32 X 1 3/4 X 1/16 FLAT WASHER	2
15	7060-031057-009	5/16 LOCK WASHER	56
16	9102016	DRAWBAR GUIDE	2
17	9102017	DRAWBAR STOPPER	4
18	9102019	DRAWBAR CHAIN #40	2
19	9102036	TENSIONNER	2
20	9102054	OPTICAL SENSOR SUPPORT	3
21	9102092	SPROCKET 40B24, 3/4 BORE	3
22	9102094	SPROCKET 40B15	2
23	9102200	SIDE FRAME-RIGHT	1
24	9102205	SIDE FRAME-LEFT	1
25	9102260	PLATE BLANK	2
26	9102350	DRIVE SHAFT	1
27	M-0690-21	FLANGE BEARING	2
28	P-001A	DRAWBAR SHEAVE PLATE	2
29	SB-ECIL-325-FS	OPTICAL SENSOR ASS'Y WHITE	3



Drawbar Assembly



PL-TMS-002
REV:0

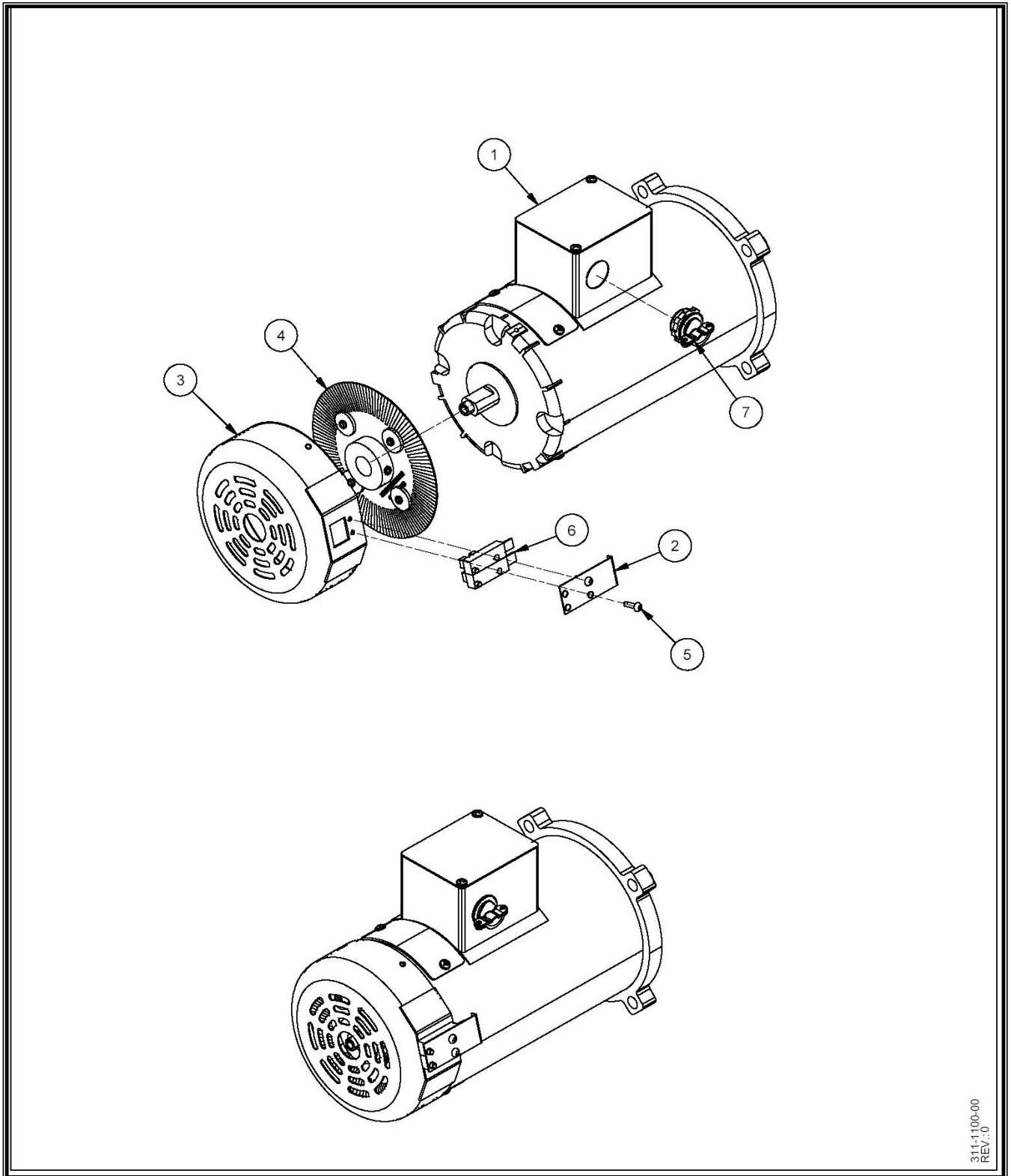


Drawbar Assembly Part List

Item	Part Number	Description	Qty
1	7010-003118-062	5/16-18 UNCX5/8 HEX CAP SCREW	10
2	7010-003118-075	5/16-18 UNCX3/4 HEX CAP SCREW	53
3	7016-312520-100	1/4-20 UNC X 1 FH MA SC	8
4	7018-003118-075	5/16-18 UNCX3/4 HEX SO CA SCW	2
5	7034-003118-000	5/16-18 UNC HEXAGON NUT	2
6	7036-003118-000	HEX NYLON NUT 5/16-18 UNC	45
7	7050-034068-006	11/32 X 11/16 X 1/16 FLAT WASHER	67
8	7060-031057-009	5/16 LOCK WASHER	56
9	9102011	DRAWBAR CHAIN PLATE	2
10	9102213	DRAWBAR ADJUSTMENT PLATE	2
11	9102250	DRAWBAR BRACE	1
12	9102255	ACTUATOR BRACKET	1
13	9103011	DRAWBAR GUIDE	2
14	9122015	DRAWBAR ASSEMBLY	1



311-1100-00 DC Motor Assembly



311-1100-00
REV.:0

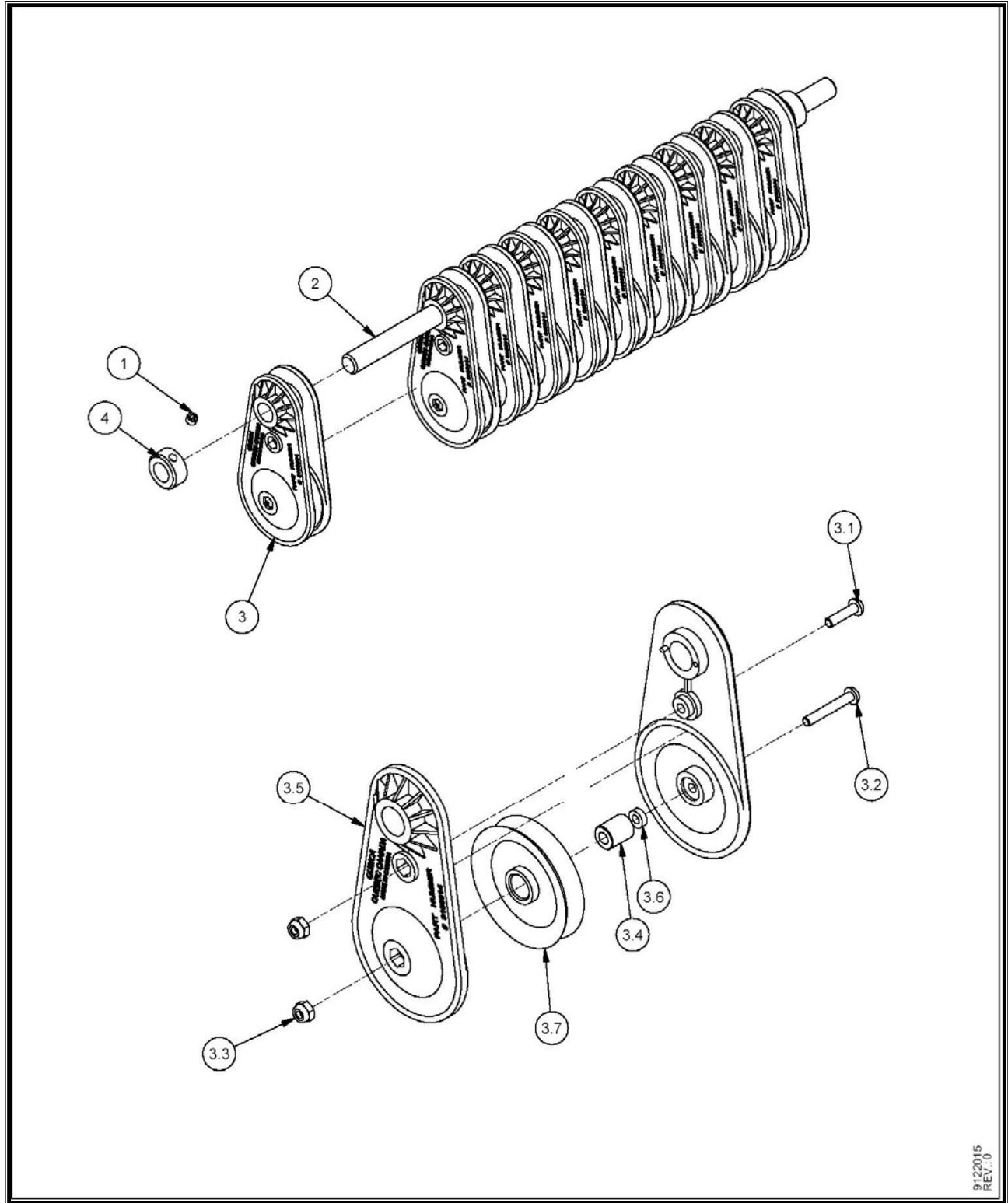


311-1100-00 DC Motor Assembly Part List

Item	Part Number	Description	Qty
1	301-1100-00	ELECTRIC MOTOR, 180VDC 3/4HP	1
2	302-2200-00	CONNECTION RETAINER	1
3	302-2210-00	ENCODER, DC MOTOR COVER	1
4	322-2220-00	MOTOR ENCODER PLATE ASS'Y	1
5	7016-410632-050	MA SC RH SOCK 6-32 UNCX1/2	2
6	E-GP1A05	ENCODER OPTICAL SENSOR	2
7	E-THS3350	CONNECTEUR A LOOMEX	1



9122015 Drawbar Shaft assembly

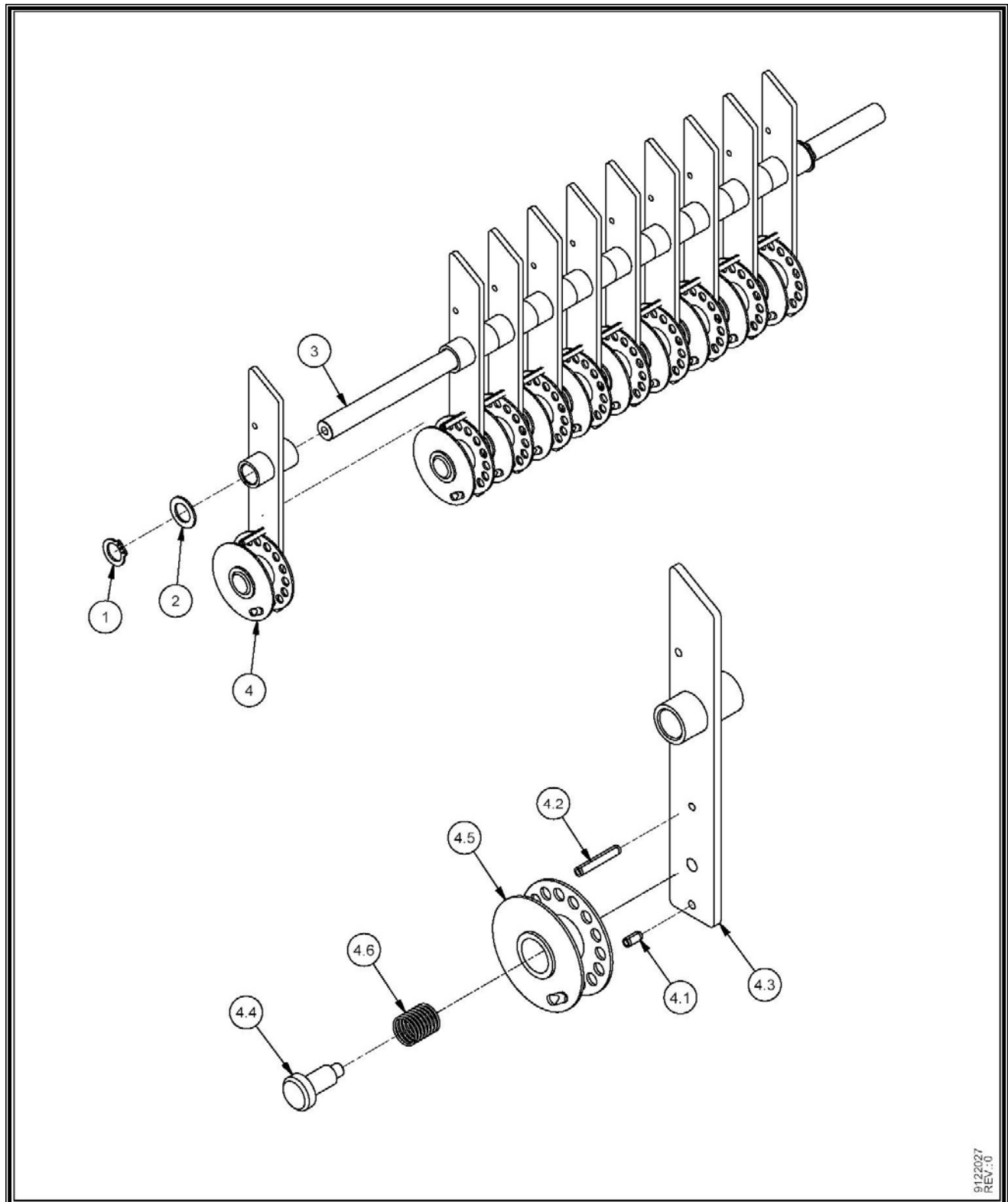


9122015 Drawbar Shaft assembly Part List

Item	Part Number	Description	Qty
1	7014-003118-025	5/16-18 UNC X 1/4 SET SCREW	2
2	9102015	DRAWBAR SHAFT	1
3	9133014	SHEAF PLATE ASSEMBLY	10
3.1	7016-411032-075	MA SC RH SOCK 10-32 UNFX3/4	1
3.2	7016-411032-125	MA SC RH SOCK 10-32 UNFX1 1/4	1
3.3	7036-001032-000	HEX NYLON NUT 10-32 UNF	2
3.4	9102020	BUSHING	1
3.5	9103014	SHEAVE PLATE	2
3.6	9103071	PLASTIC SPACER	1
3.7	P-016A	PULLEY	1
4	M-0190	STEEL COLLAR	2



9122027 Reel Arm assembly

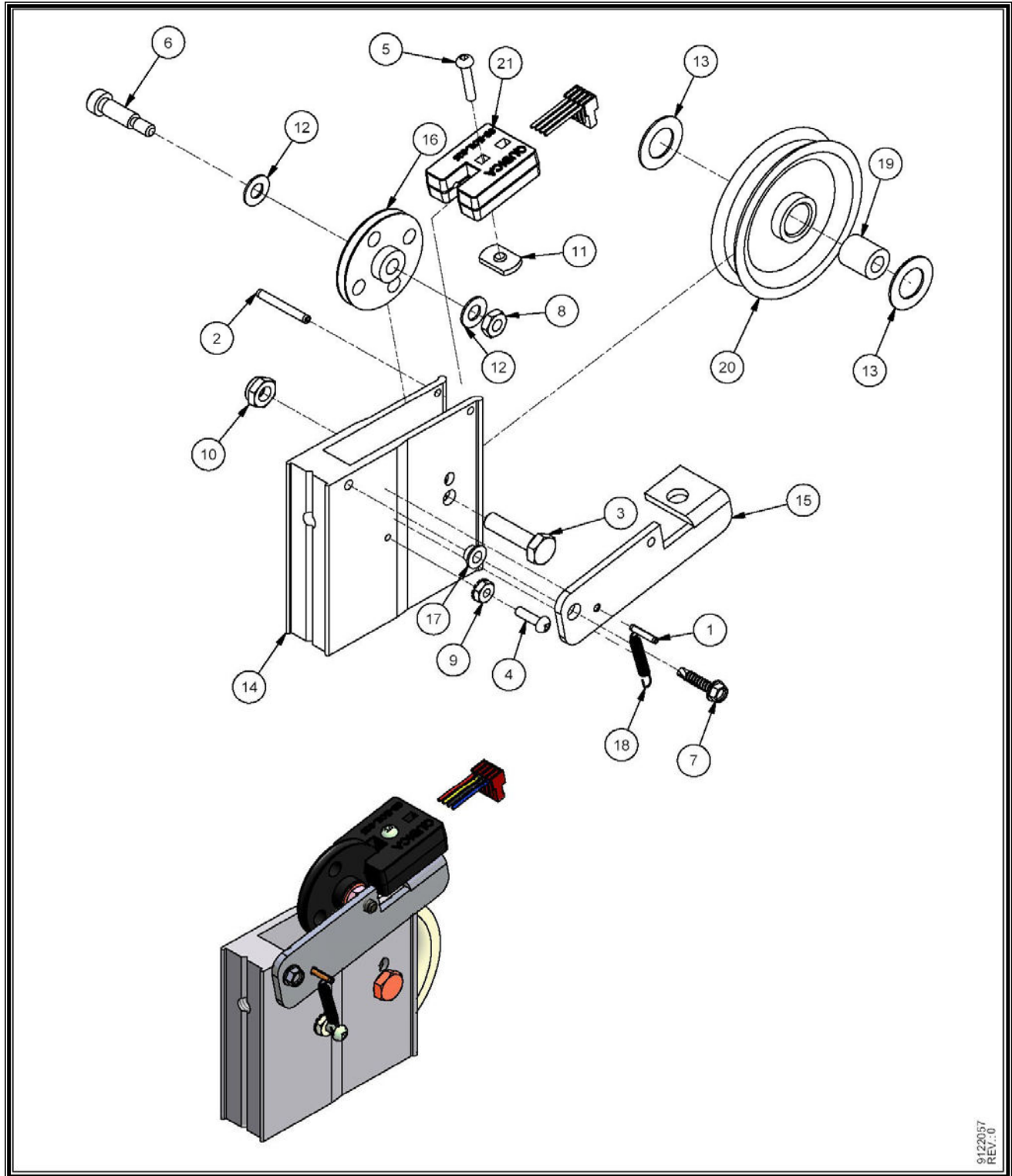


9122027 Reel Arm assembly part List

Item	Part Number	Description	Qty
1	7002-710000-62	5/8 EXTERNAL RETAIN. RING	2
2	7052-062100-006	5/8 X 1 X 1/16 FLAT WASHER	2
3	9102027	REEL ARM SHAFT	1
4	912202	REEL ARM ASSEMBLY	10
4.1	7006-001800-037	SPRING PIN 3/16 X 3/8	1
4.2	7006-001800-112	SPRING PIN 3/16 X 1 1/8	1
4.3	9102028	REEL ARM	1
4.4	M-0011	STORAGE REEL AXLE	1
4.5	M-0042	STORAGE REEL	1
4.6	S-074	STORAGE REEL SPRING	1



9122057 Pulley Detection Assembly



9122057
REV.:0

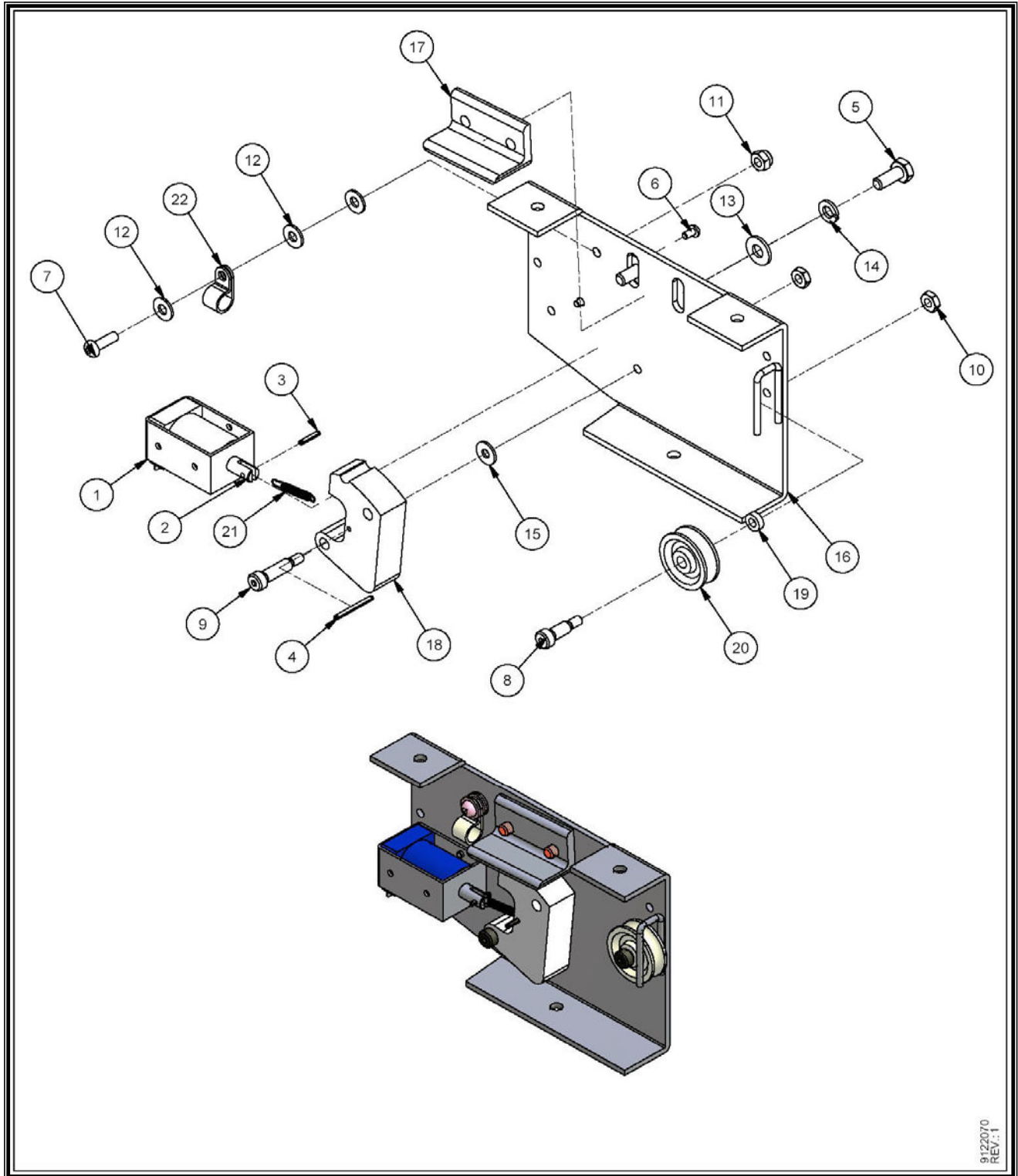


9122057 Pulley Detection Assembly Part List

Item	Part Number	Description	Qty
1	7006-000900-050	SPRING PIN 3/32 X 1/2	1
2	7006-001200-100	SPRING PIN 1/8 X 1	1
3	7010-002520-100	1/4-20 UNC X 1 HEX CAP SCREW	1
4	7016-410632-050	MA SC RH SOCK 6-32 UNC X 1/2	1
5	7016-410632-075	MA SC RH SOCK 6-32 UNC X 3/4	1
6	7020-002500-062	1/4 X 5/8 SHOULDER SCREW	1
7	7027-200818-075	#8-18 X 3/4 TECK SCW HEX WASHER	1
8	7034-001024-000	10-24 UNC HEXAGON NUT	1
9	7038-000632-000	6-32 UNC HEX KEEP NUT	1
10	7044-002520-000	HEX THIN NYLON NUT 1/4-20 UNC	1
11	7046-000632-006	6-32 X 1/16 WELD NUT	1
12	7052-025050-003	1/4 X 1/2 X 1/32 FLAT WASHER	2
13	7052-050087-003	1/2 X 7/8 X 1/32 FLAT WASHER	2
14	9102057	SENSOR SHEAVE	1
15	9102058	SUPPORT BRACKET	1
16	9103058	WHEEL MOVEMENT DETECTOR	1
17	9103059	NYLON SHOULDER WASHER	1
18	9105070	EXTENSION SPRING	1
19	M-0100B	BUSHING	1
20	P-016A	PULLEY	1
21	SB-ECIL-325-PD	OPTICAL SENSOR ASS'Y RED	1



9122070 Pin Brake Assembly



9122070
REV.:1

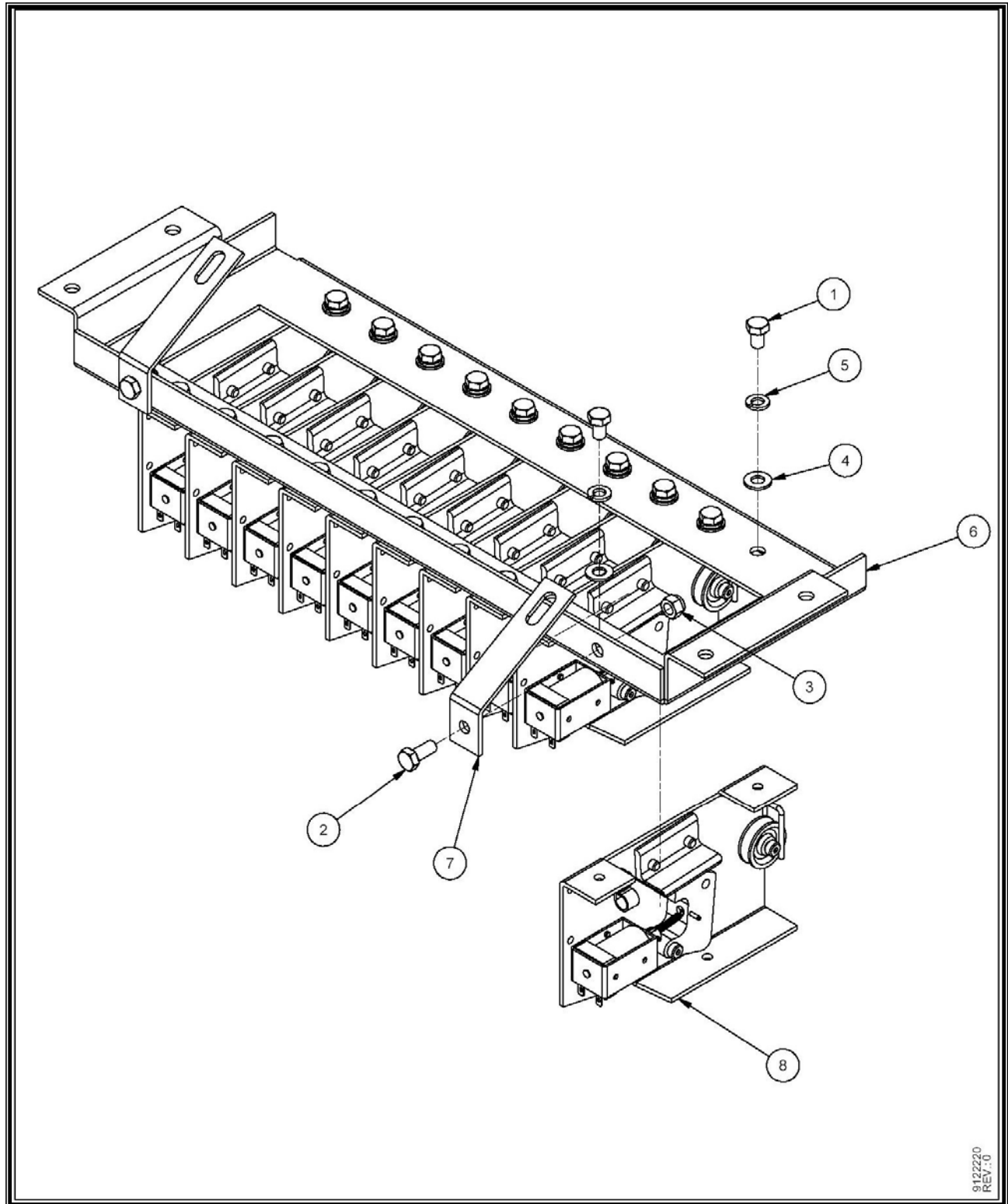


9122070 Pin Brake Assembly Parts List

Item	Part Number	Description	Qty
1	301-5170-00	SOLENOID	1
2	302-5540-00	SOLENOID SHAFT	1
3	7006-000900-050	SPRING PIN 3/32 X 1/2	1
4	7006-000900-100	SPRING PIN 3/32 X 1	1
5	7010-002528-062	1/4-28 UNFX5/8 HEX CAP SCREW	2
6	7016-410632-025	MA SC RH SOCK 6-32 UNCX1/4	2
7	7016-411032-062	MA SC RH SOCK 10-32 UNFX5/8	1
8	7020-002500-050	1/4 X 1/2 SHOULDER SCREW	1
9	7020-002500-075	1/4 X 3/4 SHOULDER SCREW	1
10	7034-001024-000	10-24 UNC HEXAGON NUT	2
11	7036-001032-000	HEX NYLON NUT 10-32 UNF	1
12	7050-021050-006	7/32 X 1/2 X 3/64 FLAT WASHER	3
13	7050-028062-006	9/32 X 5/8 X 1/16 FLAT WASHER	2
14	7060-025046-006	1/4 LOCK WASHER	2
15	7150-019050-004	.193 X 1/2 X 3/64 FLAT WASHER	1
16	9102070	BRAKE PLATE	1
17	9102071	BRAKE ANGLE PLATE	1
18	9103070	BRAKE CAM	1
19	9103071	PLASTIC SPACER	1
20	9103072	GUIDE WHEEL	1
21	9105070	EXTENSION SPRING	1
22	E-660-09	CABLE CLAMP	1



9122220 Ten Pins Brakes Assembly



9122220
REV.0

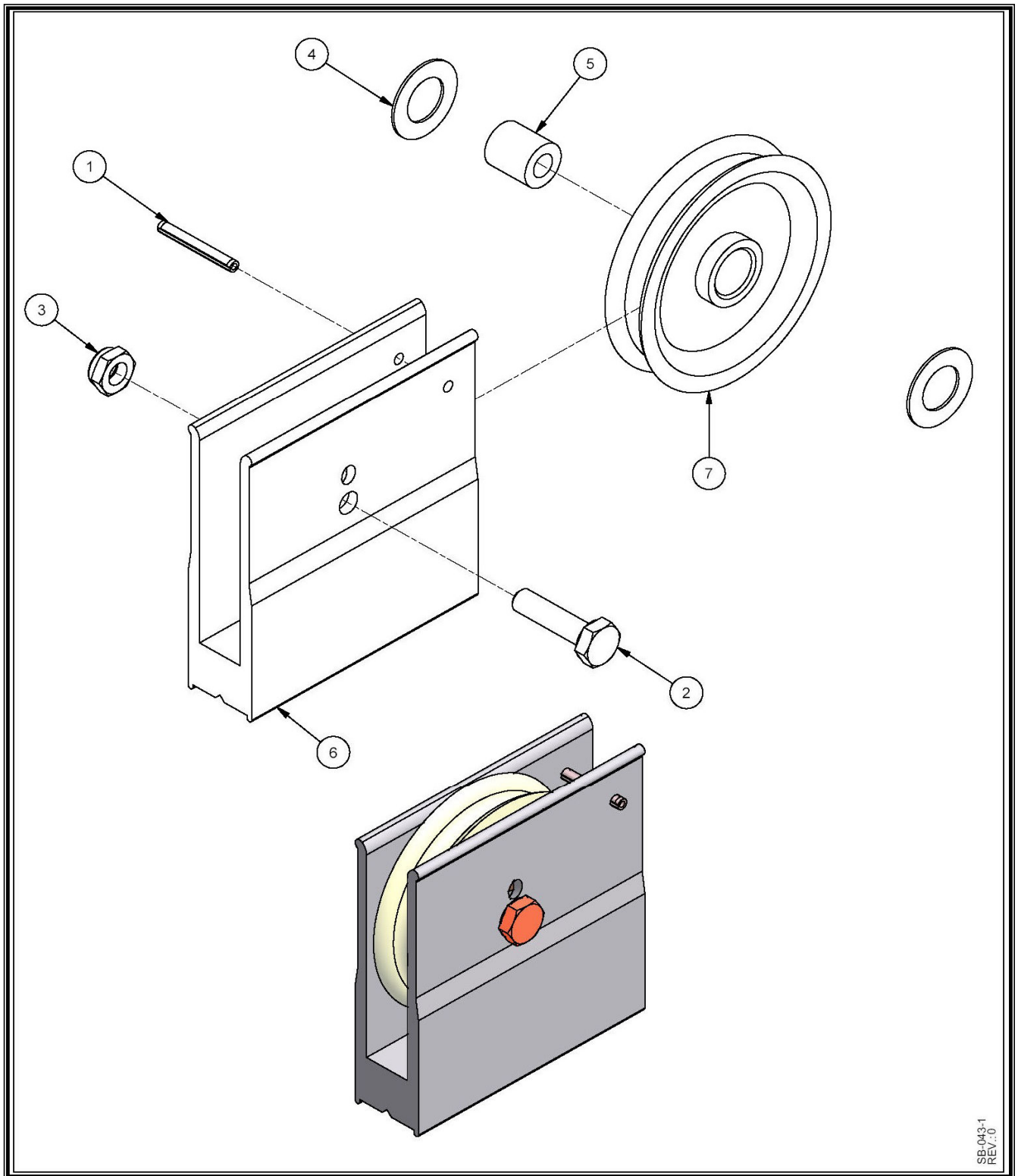


912220 Pin Brake Assembly Parts List

Item	Part Number	Description	Qty
1	7010-003118-050	5/16-18 UNCX1/2 HEX CAP SCREW	20
2	7010-003118-075	5/16-18 UNCX3/4 HEX CAP SCREW	2
3	7036-003118-000	HEX NYLON NUT 5/16-18 UNC	2
4	7050-034068-006	11/32 X 11/16 X 1/16 FLAT WASHER	20
5	7060-031057-009	5/16" LOCK WASHER	20
6	9102220	BRAKE CHANNEL SUPPORT	1
7	9102221	CONTROLLER BRACKET	2
8	9122070	PIN BRAKE ASS'Y	10



SB-043-01 Pulley Assembly

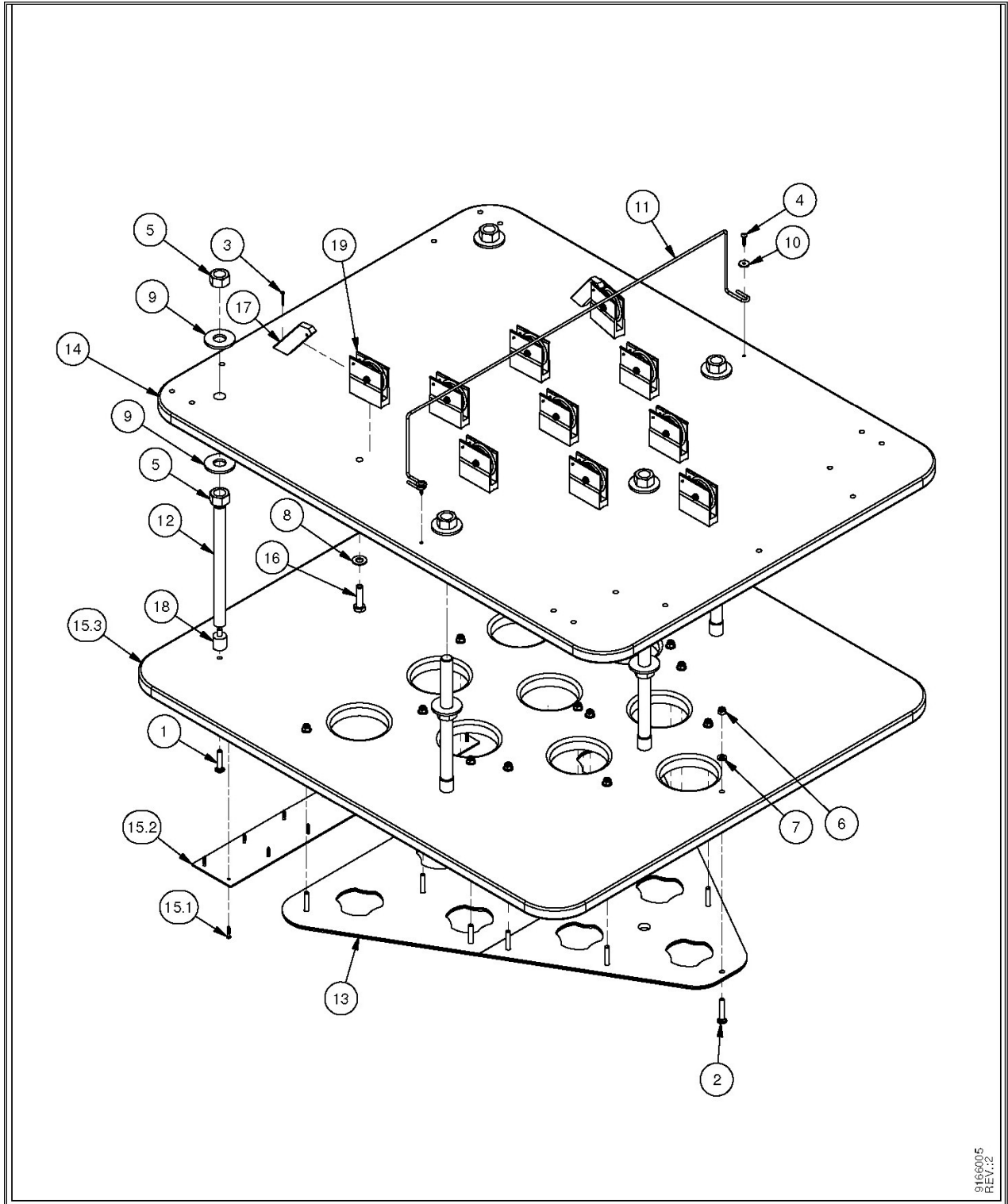


SB-043-01 Pulley Assembly Parts List

Item	Part Number	Description	Qty
1	7006-001200-100	SPRING PIN 1/8 X 1	1
2	7010-002520-100	1/4-20 UNCX1 HEX CAP SCREW	1
3	7044-002520-000	HEX THIN NYLON NUT 1/4-20 UNC	1
4	7052-050087-003	1/2 X 7/8 X 1/32 FLAT WASHER	2
5	M-0100B	BUSHING	1
6	M-043-1	SHEAVE	1
7	P-016A	PULLEY	1



9166005 Table and Stabilization Assembly (ME-B03)

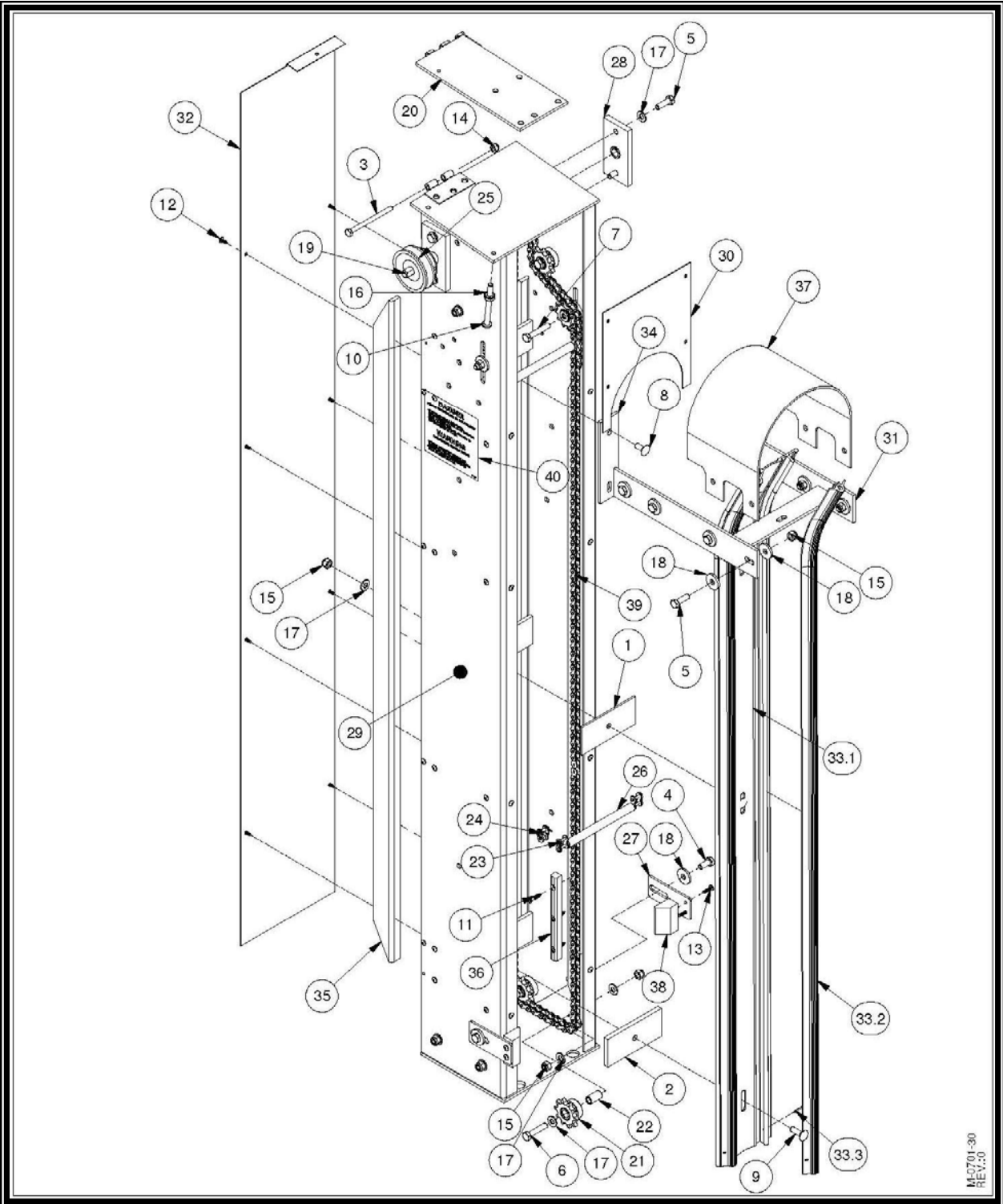


9166005 Tables and Stabilization Parts List (ME-B03)

Item	Part Number	Description	Qty
1	7012-003118-150	5/16-18 UNC X 1 1/2 CARRIAGE BOLT	5
2	7012-003118-175	5/16-18 UNC X 1 3/4 CARRIAGE BOLT	14
3	7022-410600-125	#6 X 1 1/8 TAP SCW PH SOCK	2
4	7024-711000-100	#10 X 1 TAP SCW PH SOCK	2
5	7034-008709-000	7/8-9 UNC HEXAGON NUT	10
6	7036-003118-000	HEX NYLON NUT 5/16-18 UNC	14
7	7050-034068-006	11/32 X 11/16 X 1/16 FLAT WASHER	14
8	7050-050106-009	17/32 X 1 1/16 X 3/32 FLAT WASHER	10
9	7052-093225-018	15/16 X 2 1/4 X 3/16 FLAT WASHER	10
10	7150-019075-009	.193 X 3/4 X 3/32 FLAT WASHER	2
11	9102038	STRING SUPPORT	1
12	9102039	SPACER ROD	5
13	9103005	CENTERING RING	1
14	9106004	PINSETTER SUPPORT TABLE	1
15.1	7022-310800-100	#8 X 1 WOOD SCW FH SOCK	14
15.2	9103006	PLASTIC PROTECTOR	1
15.3	9106005	BOTTOM TABLE ASS'Y	1
16	M-0041	SPECIAL SCREW	10
17	P-043	PULLEY SHEAVE GUARD	2
18	R-014	BUMPER PAD	5
19	SB-043-1	PULLEY SHEAF	10



M-0701-25 Rear Ball Lift



M-0701-25 Rear Ball Lift Parts List

Item	Part Number	Description	Qty
1	50W-0700-90	BALL LIFT TRACK SPACER MID	1
2	50W-0700-91	BALL LIFT TRACK SPACER BOTTOM	1
3	7010-002520-350	1/4-20 UNCX3 1/2 HEX CAP SCREW	1
4	7010-003118-075	5/16-18 UNCX3/4 HEX CAP SCREW	2
5	7010-003118-100	5/16-18 UNCX1 HEX CAP SCREW	12
6	7010-003118-150	5/16-18 UNCX1 1/2 HEX CAP SCREW	6
7	7010-003118-175	5/16-18 UNCX1 3/4 HEX CAP SCREW	2
8	7012-003118-075	5/16-18 UNC X 3/4 CARRIAGE BOLT	1
9	7012-003118-100	5/16-18 UNC X 1 CARRIAGE BOLT	2
10	7016-413118-300	5/16-18 UNCX3 MA SC RH SO	1
11	7022-310800-100	#8 X 1 WOOD SCW FH SOCK	6
12	7024-710800-050	#8 X 1/2 TAP SCW PH SOCK	44
13	7024-710800-075	#8 X 3/4 TAP SCW PH SOCK	6
14	7036-002520-000	HEX NYLON NUT 1/4-20 UNC	1
15	7036-003118-000	HEX NYLON NUT 5/16-18 UNC	25
16	7038-003118-000	5/16-18 UNC HEX KEEP NUT	1
17	7050-034068-006	11/32 X 11/16 X 1/16 FLAT WASHER	27
18	7050-034100-012	11/32 X 1 X 1/8 FLAT WASHER	20
19	M-0700-07	DRIVE SHAFT ASSEMBLY	1
20	M-0700-09	MOTOR BASE PLATE	1
21	M-0700-10	IDLER SPROCKET 40B10	8
22	M-0700-10-02	STEEL BUSHING	8
23	M-0700-14	CHAIN COUPLING SPECIAL	8
24	M-0700-15	HALF LINK	2
25	M-0700-22	CARROUSEL PULLEY	1
26	M-0700-27	CROSS CHAIN TRAVEL SHAFT	4
27	M-0700-55	BALL LIFT BOTTOM PROTECTOR	2
28	M-0700-67	STEEL BEARING BLOCK	2
29	M-0700-90	BALL LIFT FRAME ASSEMBLY	1
30	M-0701-100	BALL LIFT FRONT COVER TOP	1



PARTS LISTING

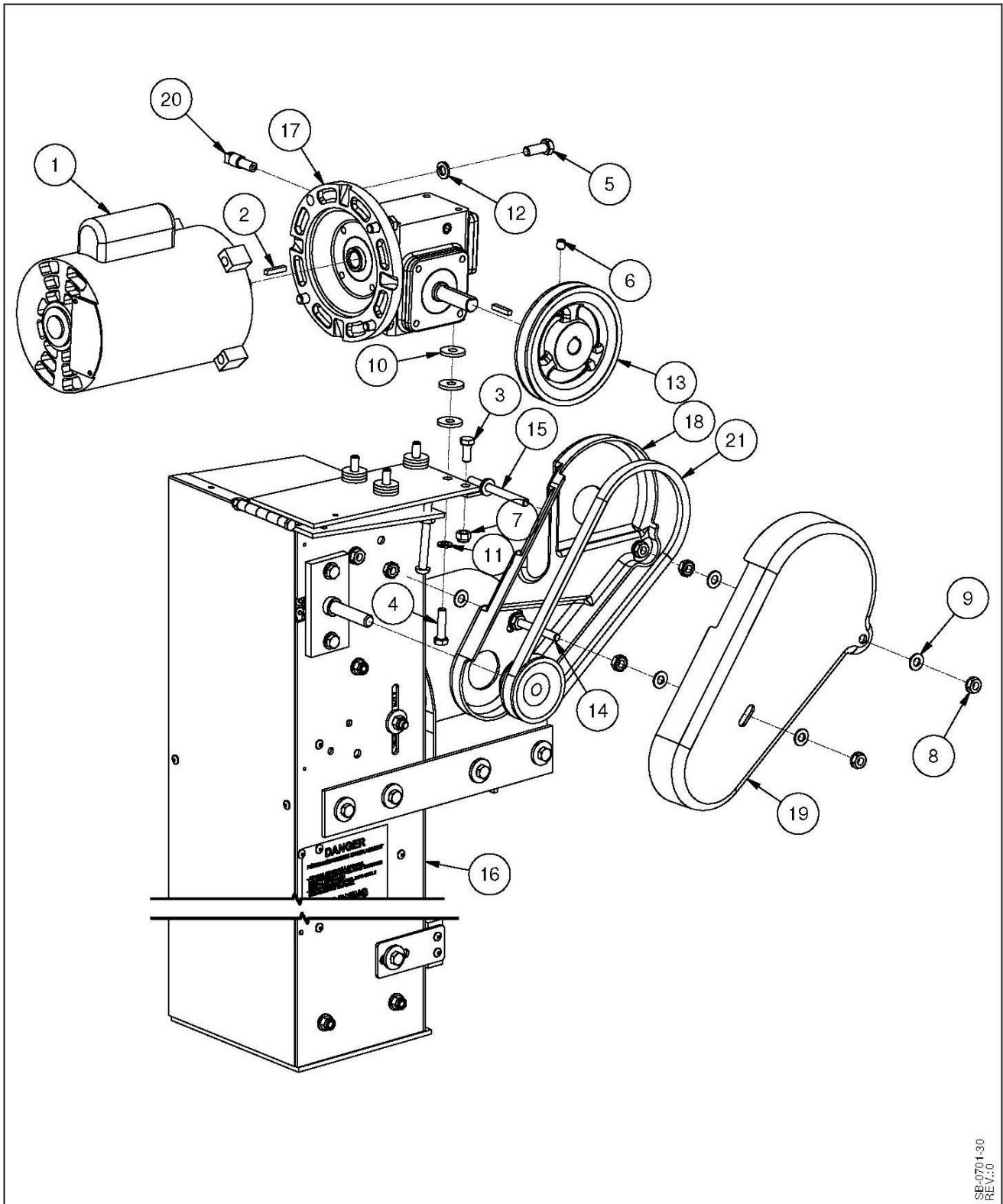


M-0701-25 Rear Ball Lift Parts List

Item	Part Number	Description	Qty
31	M-0701-94	BALL LIFT BRIDGE	1
32	M-0701-96	H66 ELEVATOR REAR COVER	1
33.1	M-0701-97	ALUMINUM TRACK	1
33.2	M-0701-97-1	VINYL TRACK 46 (1.17M)	2
33.3	7006-000900-100	SPRING PIN 3/32 X 1	2
34	M-0701-98	ELEVATOR TRACK BRACKET	1
35	P-0700-69	CHAIN GUIDE	4
36	P-0700-71	BALL GUIDE BOTTOM	2
37	P-700-13	BALL GUARD OUTSIDE	1
38	P-700-55	BOTTOM BALL LIFT GUARD	2
39	SB-0700-13	BALL LIFT CHAIN	2
40	Z-452	WARNING STICKER	2



SB-0701-30 Rear Ball Lift Assembly



SB-0701-30
REV.:0

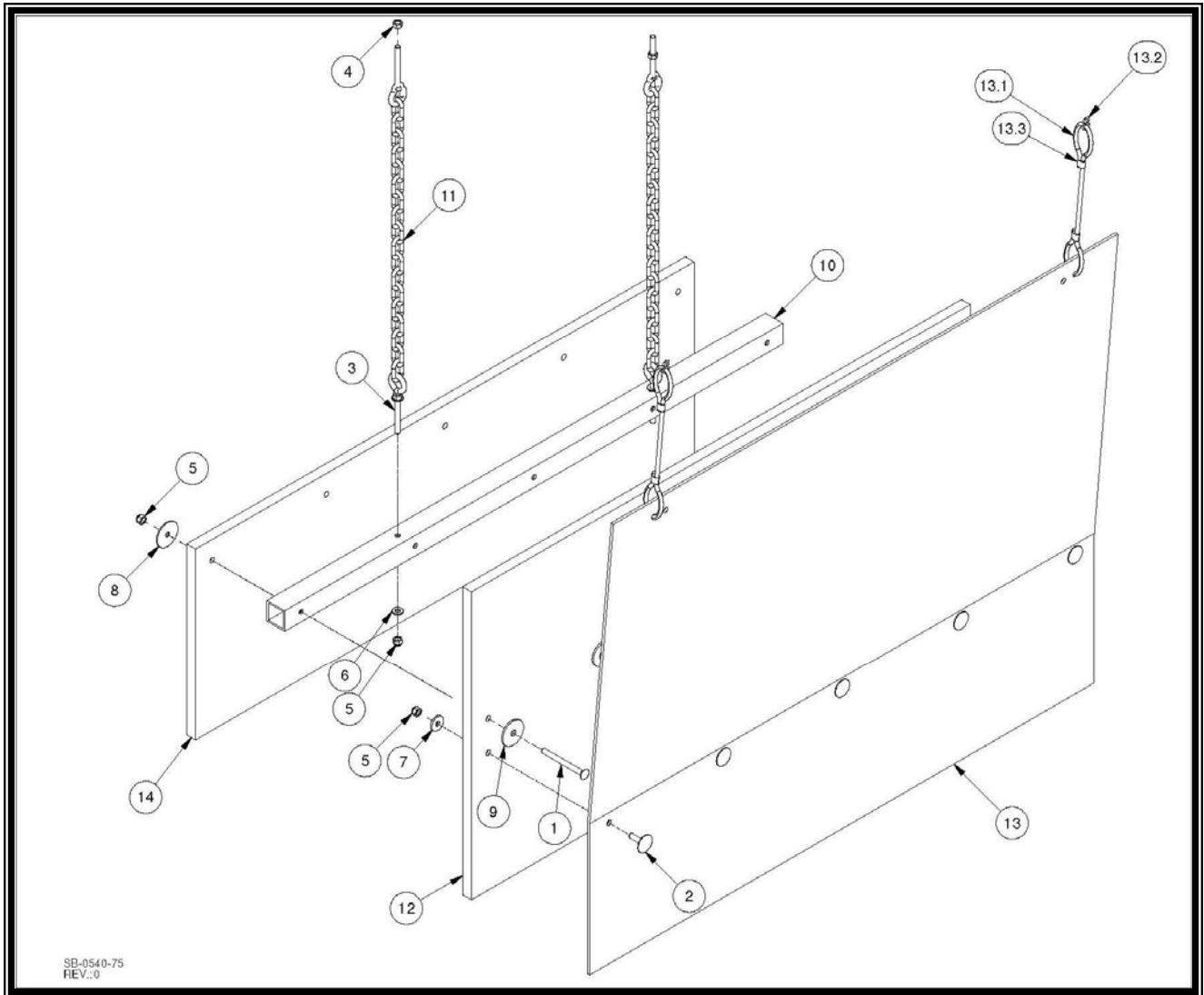


SB-0701-30 Rear Ball Lift Assembly Parts List

Item	Part Number	Description	Qty
1	301-1200-00	ELECTRIC MOTOR 208/230 VAC 1/2	1
2	302-2410-00	KEYWAY 3/16	2
3	7010-003118-075	5/16-18 UNCX3/4 HEX CAP SCREW	1
4	7010-003118-125	5/16-18 UNCX1 1/4 HEX CAP SCREW	4
5	7010-003716-100	3/8-16 UNCX1 HEX CAP SCREW	4
6	7014-003118-037	5/16-18 UNC X 3/8 SET SCREW	2
7	7036-003118-000	HEX NYLON NUT 5/16-18 UNC	1
8	7038-003118-000	5/16-18 UNC HEX KEEP NUT	9
9	7050-034068-006	11/32 X 11/16 X 1/16 FLAT WASHER	11
10	7050-034100-012	11/32 X 1 X 1/8 FLAT WASHER	12
11	7060-031057-009	5/16 LOCK WASHER	4
12	7060-037067-010	3/8 LOCK WASHER	4
13	M-0700-21-2	PULLEY MA50X5/8	1
14	M-0700-29	THREADED ROD	1
15	M-0700-29-1	PULLEY GUARD BRACKET	1
16	M-0701-30	BALL LIFT ASSY	1
17	M-BMQ1133-3	MOTOR REDUCER	1
18	P-0700-100	PULLEY GUARD (INNER)	1
19	P-0700-101	PULLEY GUARD (OUTER)	1
20	P-1133-3	REDUCER VENT	1
21	R-0700-01	V-BELT	1



SB-0540-75 Pit Cushion Assembly

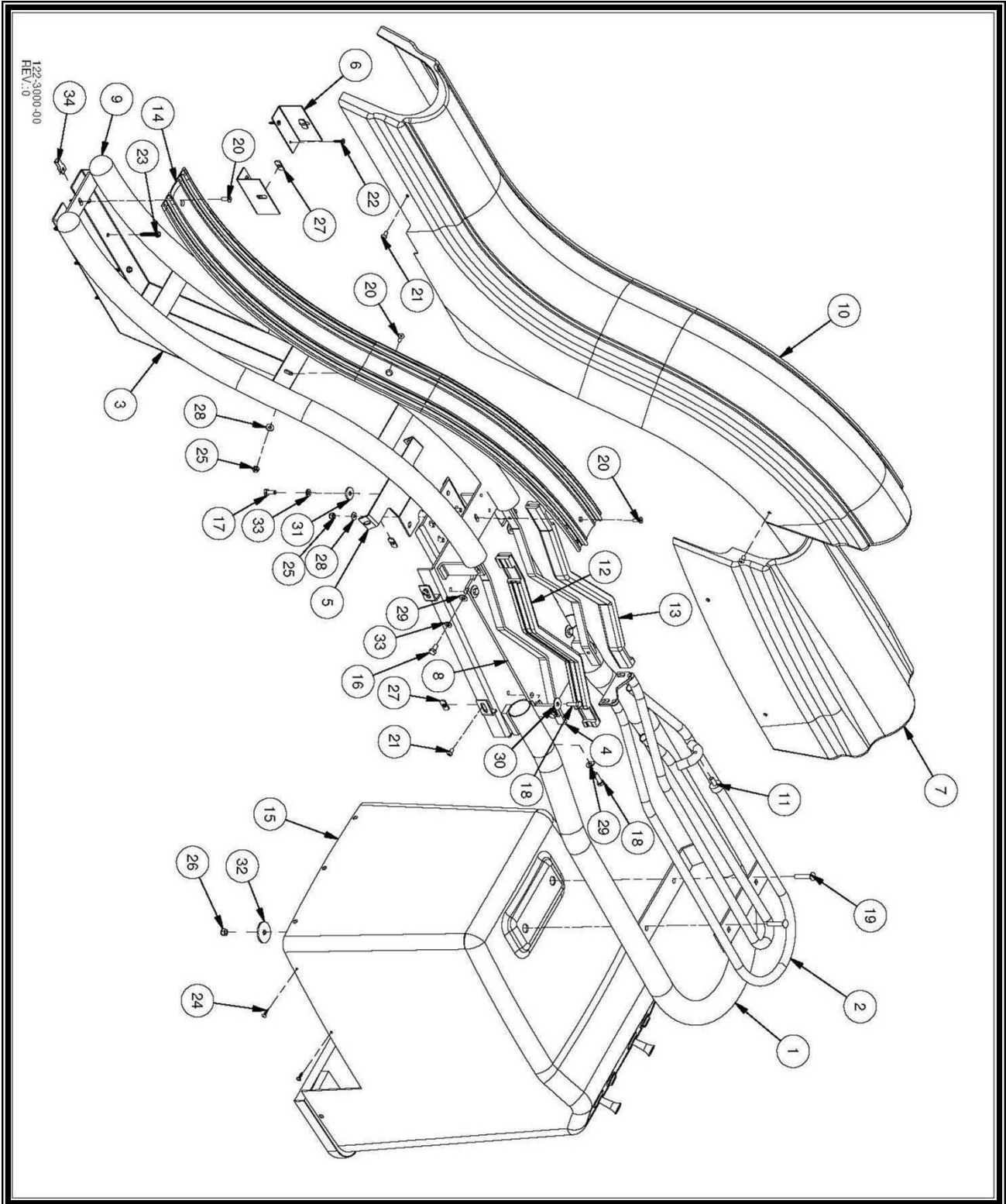


SB-0540-75 Pit Cushion Assembly Parts List

Item	Part Number	Description	Qty
1	7012-003118-350	5/16-18 UNC X 3 1/2 CARRIAGE BOLT	5
2	7013-003118-125	5/16-18 UNC X 1 1/4 ELEVATOR BOLT	5
3	7032-003118-400	5/16-18 UNC X 4 EYE BOLT	4
4	7034-003118-000	5/16-18 UNC HEXAGON NUT	3
5	7036-003118-000	HEX NYLON NUT 5/16-18 UNC	12
6	7050-034068-006	11/32 X 11/16 X 1/16 FLAT WASHER	4
7	7050-034100-012	11/32 X 1 X 1/8 FLAT WASHER	5
8	7050-034175-012	11/32 X 1 3/4 X 1/16 FLAT WASHER	5
9	7050-040175-012	13/32 X 1 3/4 X 1/8 FLAT WASHER	5
10	M-0540-70	CUSHION SUPPORT	1
11	M-0540-75	CUSHION CHAIN	2
12	R-0540-70	CUSHION [FRONT]	1
13	R-0540-75	CUSHION APRON	1
13.1	394-8100-00	BUNGEE CORD	1
13.2	7080-800000-050	S HOOK	1
13.3	7080-800000-060	CLIP FOR BUNGEE CORD	2
14	R-0540-76	CUSHION [REAR]	1



122-3000-00 Ball Rack Assembly



122-3000-00 Ball Rack Assembly Parts List

Item	Part Number	Description	Qty
1	102-3000-00	UPPER BALL RACK	1
2	102-3010-00	H66 BALL RACK INSIDE RAIL	1
3	102-3020-00	BALL RACK DROP ASSY	1
4	102-3030-00	ZIGZAG	2
5	102-3200-00	BALL RACK TUNNEL BRACKET- TOP	1
6	102-3210-00	H66 BALL RACK TUNNEL BRACKET - BOTTOM	2
7	103-3010-00	BALL RACK COVER	1
8	103-3020-00	BALL PROTECTOR	1
9	103-3030-00	CAPS	2
10	103-3200-00	BALL TUNNEL	1
11	104-2010-00	BUMPER PAD	1
12	104-3030-00	ZIGZAG	1
13	104-3030-00	ZIGZAG	2
14	108-3020-00	DROP TRACK	1
15	133-3000-00	HOOD ASSY	1
16	7010-003118-062	5/16-18 UNC X 5/8 HEX CAP SCREW	4
17	7010-003118-075	5/16-18 UNC X 3/4 HEX CAP SCREW	4
18	7010-003118-100	5/16-18 UNC X 1 HEX CAP SCREW	6
19	7012-003118-175	5/16-18 UNC X 1 3/4 CARRIAGE BOLT	2
20	7018-302520-075	1/4-20 UNC X 0.75 FLAT SOCKET HEAD MA. SCREW	3
21	7018-5002520-050	1/4-20 UNC X 1 in / 2 ul BUTTON HEAD HEX SOCKET	8
22	7023-410800-100	#8 X 1 PARTICULE ROUND WASHER HEAD SCREW	4
23	7024-201400-175	#14-20 X 1 3/4 TAP SCW HEX WASHER	6
24	7024-710800-075	#8 X 3/4 TAP SCW PH SOCK	7
25	7036-002520-000	HEX NYLON NUT 1/4-20 UNC	2
26	7036-003118-000	HEX NYLON NUT 5/16-18 UNC	8
27	7046-002520-000	1/4-20 UNC WELD NUT	8
28	7050-028062-006	9/32 X 5/8 X 1/16 FLAT WASHER	2
29	7050-034068-006	11/32 X 11/16 X 1/16 FLAT WASHER	6
30	7050-034100-006	11/32 X 1 X 1/16 FLAT WASHER	4
31	7050-034100-012	11/32 X 1 X 1/8 FLAT WASHER	4
32	7050-040175-012	13/32 X 1 3/4 X 1/8 FLAT WASHER	2
33	7060-031057-009	5/16 LOCK WASHER	8
34	7080-300000-110	SPRING NUT 1/4-20UNC	1

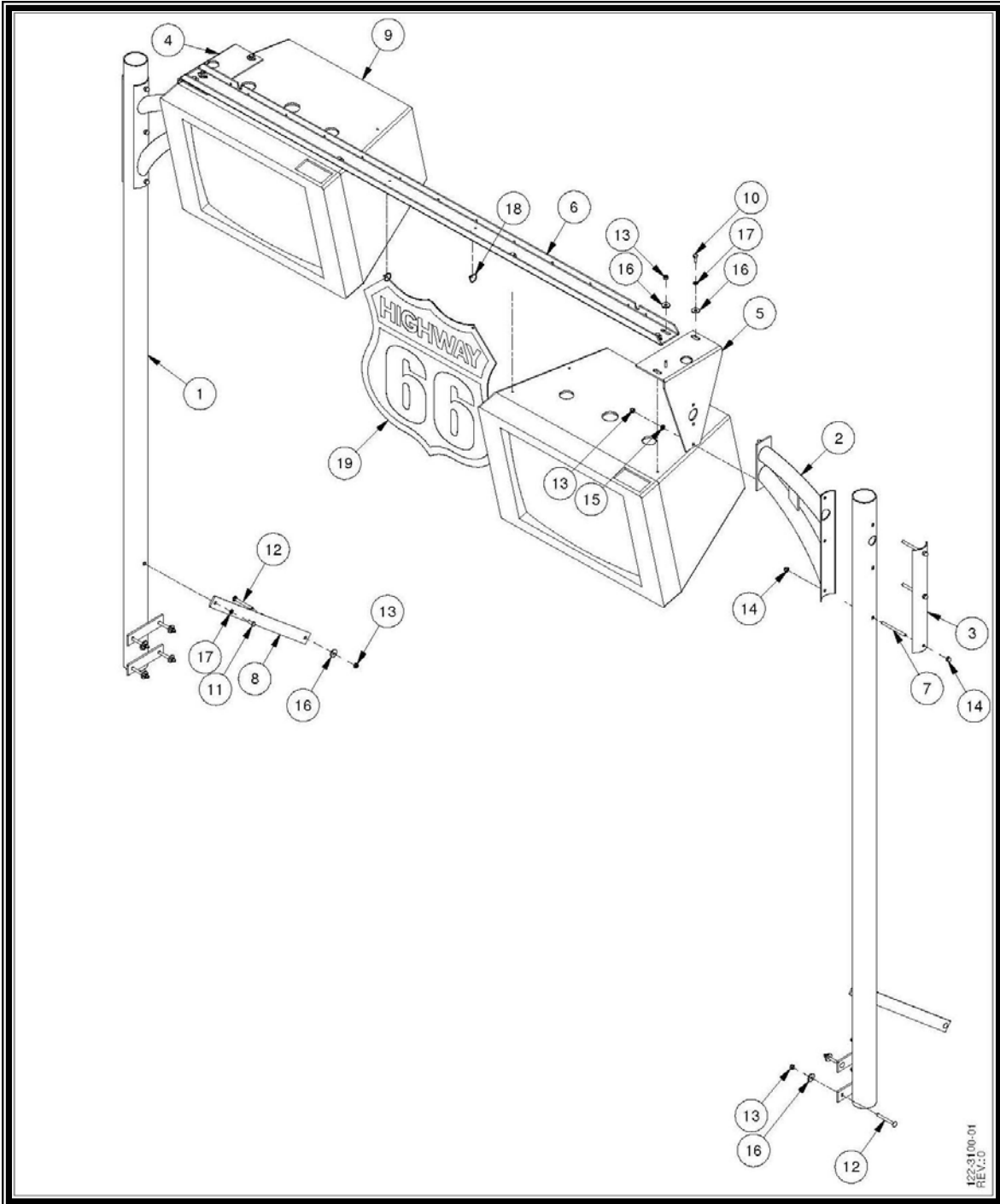


133-3000-00 Ball Rack Hood Assembly Parts List

Item	Part Number	Description	Qty
1	101-3050-00	JOYSTICK - BLACK	2
2	101-3300-00	HIGHWAY 66 COIN-UP 0.25 US\$	1
2	101-3310-00	HIGHWAY 66 COIN COMPARATOR	1
2	101-3311-00	HIGHWAY 66 MULTI COIN COMPARATOR	1
3	102-3050-00	JOYSTICK PLATE	1
4	102-3060-00	CASH DRAWER ANGLE	2
5	102-3070-00	PUSH BUTTON BRACKET	1
5	102-3300-00	HIGHWAY 66 COIN UP DOOR 0.25 US\$	1
5	102-3310-00	HIGHWAY 66 COIN COMPARATOR DOOR	1
5	102-3330-00	HIGHWAY 66 BLANK DOOR	1
6	102-3315-00	REJECT LEVER	1
7	102-3316-00	REJECT LEVER SPRING	1
8	102-3317-00	REJECT LEVER RETAINING WASHER	1
9	102-3320-00	TICKET TRAY ASS'Y	1
10	103-3000-01	HIGHWAY 66 CONSOLE	1
11	106-3000-00	CONSOLE PLANK	1
12	Z-HW66-004	PLASTIC STICKER	1
13	7012-001024-075	10-24 UNC X 3/4 CARRIAGE BOLT	8
14	7038-001024-000	10-24 UNC HEX KEEP NUT	8
15	7024-710800-075	#8 X 3/4 TAP SCW PH SOCK	3
16	7050-018043-004	3/16 X 7/16 X 3/64 FLAT WASHER	4
17	E-591BK	PUSH BUTTON	3
18	E-9801600	ENTROPY 2000 TICKET DISPENSER	1



122-3100-00 Monitors and Supports Assembly

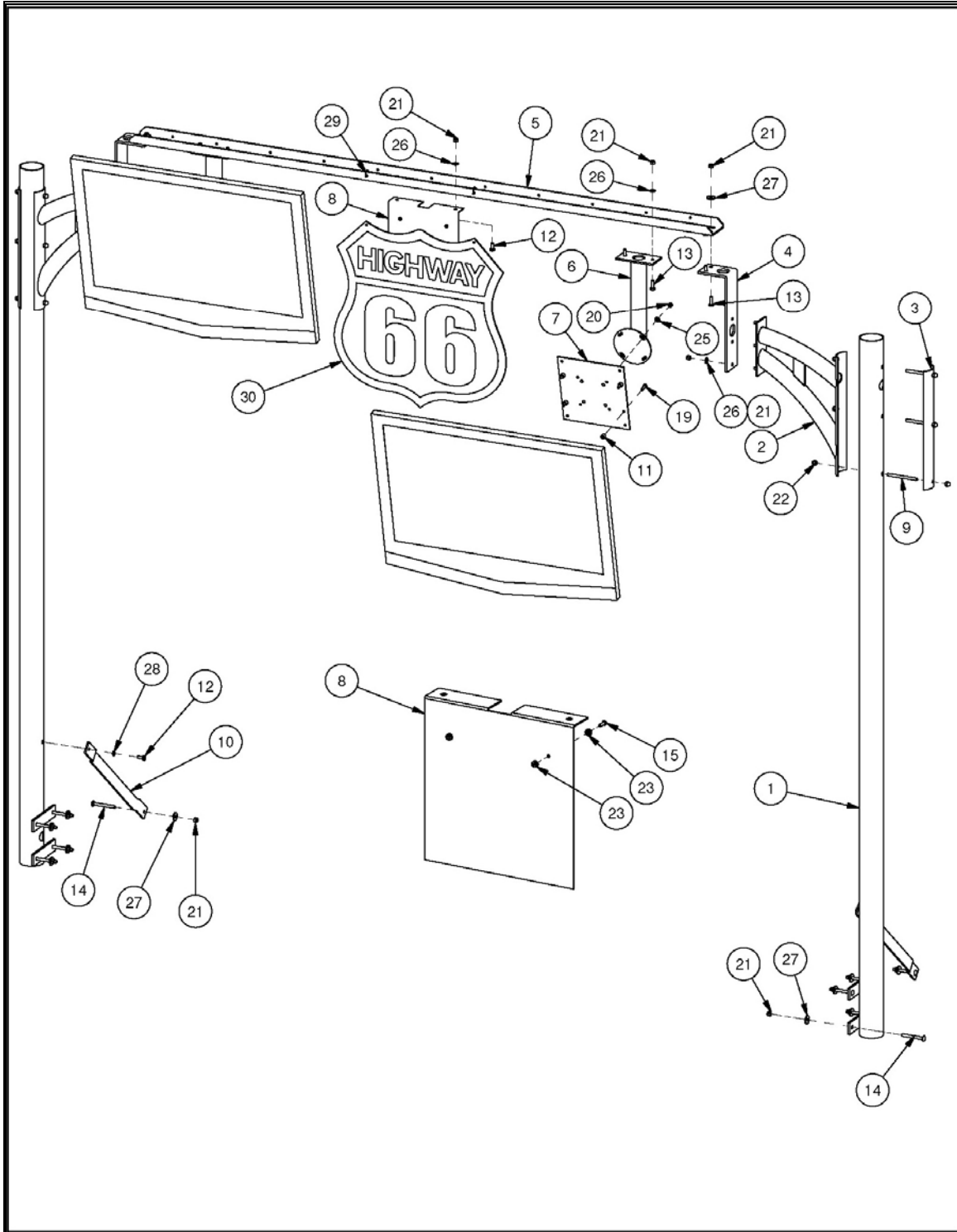


122-3100-00 Monitors and Supports Assembly Parts List

Item	Part Number	Description	Qty
1	102-3100-01	MONITOR SUPPORT POST	2
2	102-3110-00	MONITOR SUPPORT	2
3	102-3120-00	MONITOR SUPPORT CLAMP	2
4	102-3130-00	MONITOR BRACKET RIGHT	1
5	102-3135-00	MONITOR BRACKET LEFT	1
6	102-3140-00	OVERHEAD CHANNEL	1
7	102-3150-00	THREAD ROD	6
8	102-3160-01	OVERHEAD BRACE	2
9	511-2800-00	MONITOR 28" W/CABINET	2
10	7010-000813-075	M8-1.5 X 20 HEX CAP SCREW	6
11	7010-003118-075	5/16-18 UNC X 3/4 HEX CAP SCREW	2
12	7012-003118-300	5/16-18 UNC X 3 CARRIAGE BOLT	10
13	7036-003118-000	HEX NYLON NUT 5/16-18 UNC	18
14	7037-003118-000	HEX CAP NUT 5/16-18 UNC	12
15	7050-034068-006	11/32 X 11/16 X 1/16 FLAT WASHER	6
16	7050-034100-012	11/32 X 1 X 1/8 FLAT WASHER	18
17	7060-031057-009	5/16 LOCK WASHER	8
18	E-056	CABLE TIES	2
19	Z-HW66-003	HIGHWAY PANEL	1



122-3100-02 LCD Supports Assembly

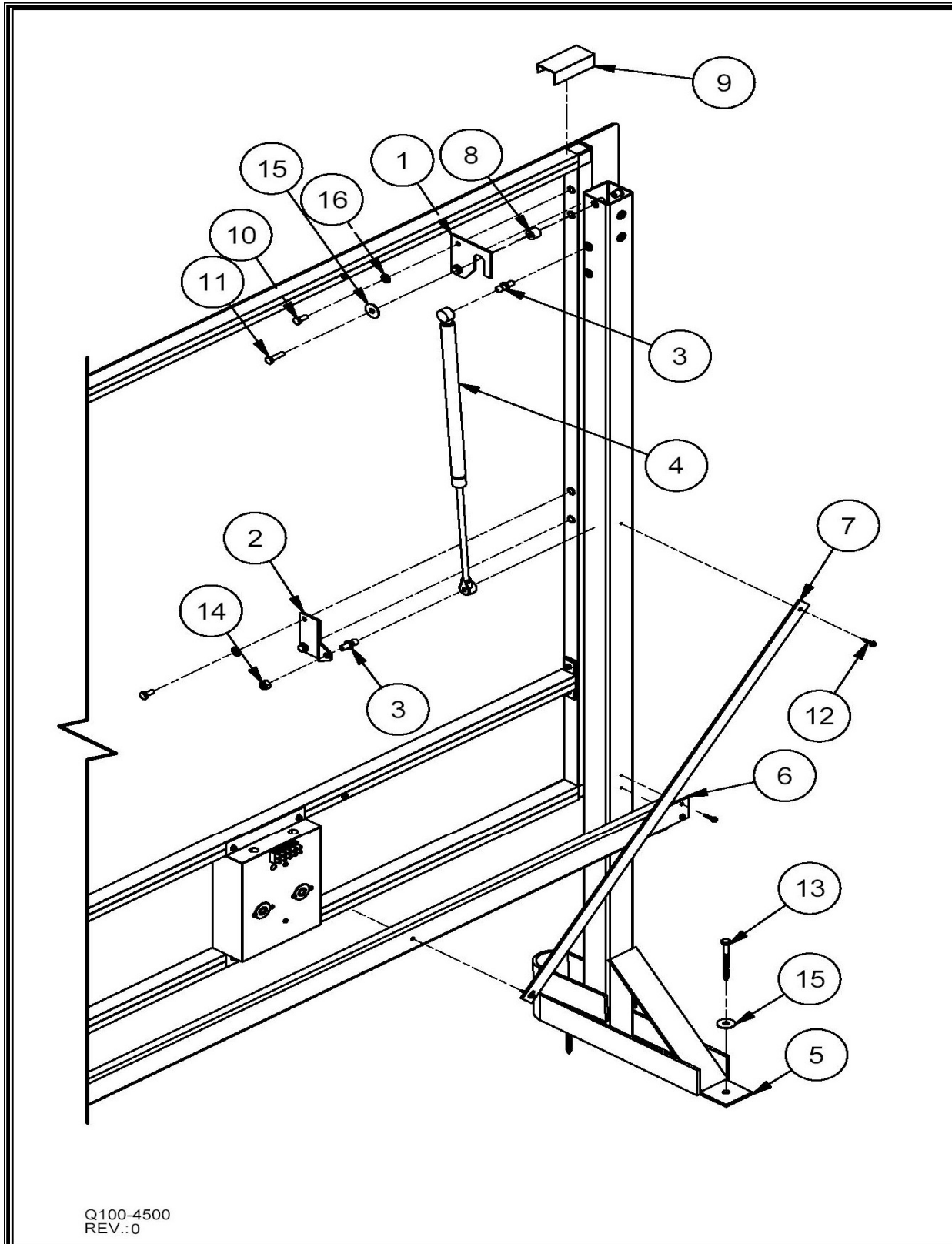


122-3100-02 LCD Supports Assembly Parts List

Item	Part Number	Description	Qty
1	102-3100-01	MONITOR SUPPORT POST	2
2	102-3110-00	MONITOR SUPPORT	2
3	102-3120-00	MONITOR SUPPORT CLAMP	2
4	102-3125-00	LCD SIDE BRACKET	2
5	102-3140-01	OVERHEAD CHANNEL	1
6	102-3145-00	LCD SUPPORT ARM	2
7	102-3146-00	LCD SUPPORT PLATE	2
8	102-3147-00	VIDEO DISTRIBUTION SUPPORT	1
9	102-3150-00	THREAD ROD	6
10	102-3160-01	OVERHEAD BRACE	2
11	303-5865-00	BUSHING	8
12	7010-003118-075	5/16-18 UNC X 3/4 HEX CAP SCREW	4
13	7010-003118-100	5/16-18 UNC X 1 HEX CAP SCREW	8
14	7012-003118-300	5/16-18 UNC X 3 CARRIAGE BOLT	10
15	7016-410632-050	MA SC RH SOCK 6-32 UNC X 1/2	2
16	7016-640407-012	M4 X 0.7 X 12 MA SC PH PHILLIPS	8
17	7016-640407-020	M4 X 0.7 X 20 MA SC PH PHILLIPS	8
18	7016-640610-016	M6 X 1.0 X 16 MA SC PH PHILLIPS	8
19	7016-640610-025	M6 X 1.0 X 25 MA SC PH PHILLIPS	8
20	7036-002520-000	HEX NYLON NUT 1/4-20 UNC	8
21	7036-003118-000	HEX NYLON NUT 5/16-18 UNC	26
22	7037-003118-000	HEX CAP NUT 5/16-18 UNC	12
23	7038-000632-000	6-32 UNC HEX KEEP NUT	4
24	7050-018048-004	3/16 X 31/64 X 3/64 FLAT WASHER	8
25	7050-028062-006	9/32 X 5/8 X 1/16 FLAT WASHER	8
26	7050-034068-006	11/32 X 11/16 X 1/16 FLAT WASHER	16
27	7050-034100-012	11/32 X 1 X 1/8 FLAT WASHER	14
28	7060-031057-009	5/16 LOCK WASHER	2
29	E-056	CABLE TIES	2
30	Z-HW66-003	HIGHWAY PANEL	1



Q100-4500 Masking Unit

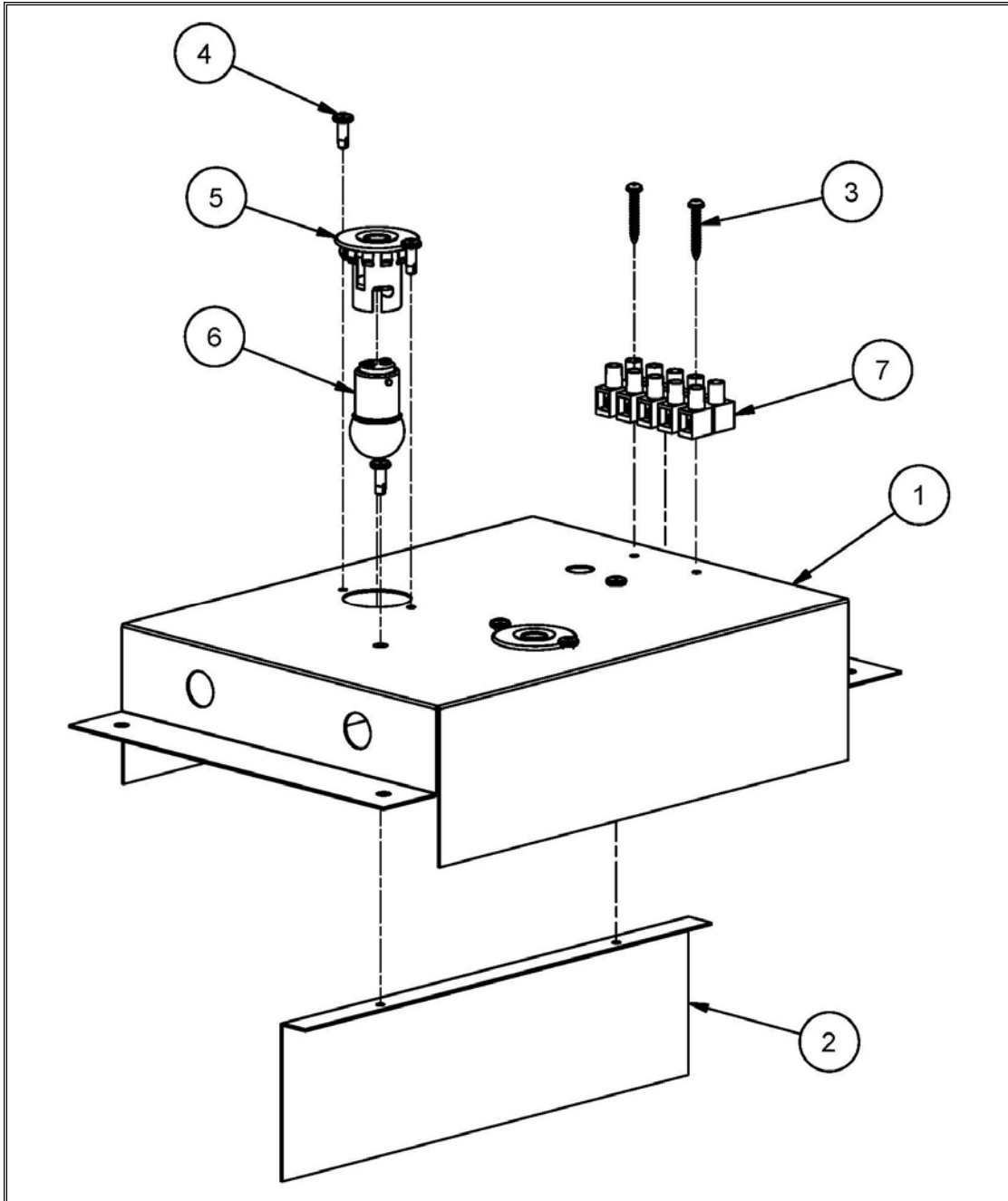


Q100-4500 Masking Unit Parts List

Item	Part Number	Description	Qty
1	102-4010-00	MASKING HOOK CLAMP	2
2	102-4020-00	MASKING SHOCK BRACKET	2
3	102-4030-00	BALL STUD	4
4	102-4040-00	GAS SHOCK	2
5	102-4050-00	MASKING FOOT	2
6	102-4500-00	H66 MASKING UNION BRACE	1
7	102-4510-00	H66 MASKING FLAT BRACE	2
8	103-4030-00	BUSHING	2
9	188-4500-00	H66 MASKING UNIT FRAME ASS'Y	1
10	7010-002520-062	1/4-20 UNCX5/8 HEX CAP SCREW	8
11	7010-002520-100	1/4-20 UNCX1 HEX CAP SCREW	2
12	7027-200818-075	#8-18 X 3/4 TECK SCW HEX WASHER	25
13	7028-002500-300	1/4 X 3 LAG SCREW	4
14	7036-003118-000	HEX NYLON NUT 5/16-18 UNC	2
15	7050-034100-006	11/32 X 1 X 1/16 FLAT WASHER	6
16	7060-031057-009	5/16" LOCK WASHER	8



Q100-4150 ONE/TWO Ball Light

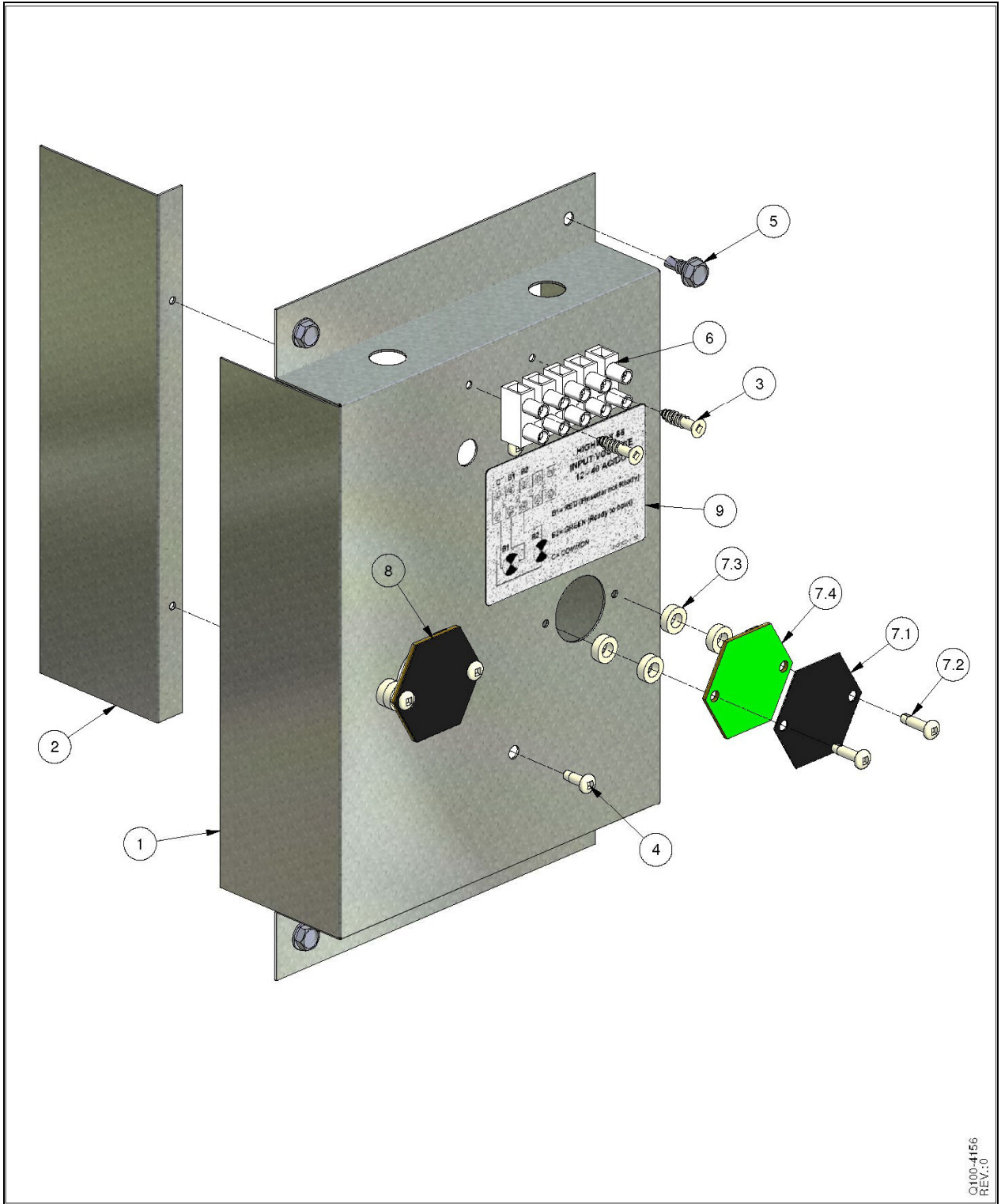


Q100-4150 ONE/TWO Ball Light Parts List

Item	Part Number	Description	Qty
1	102-4150-00	ONE/TWO BALL LIGHT SOCKET	1
2	102-4160-00	SEPARATOR PANEL	1
3	7024-610400-075	#4 X 3/4 TAP SCW PH SOCK	2
4	7025-610600-037	#6-32 X 3/8 THR. CUT P.H. SOCK	6
5	E-12-240XT	LAMP SOCKET	2
6	E-1252	MINIATURE LIGHT BULB 28V	2
7	E-323HDS12-5	TERMINAL STRIP (5 POSITION)	1



Q100-4156 Stop/Go LED



Q100-4156
REV:0

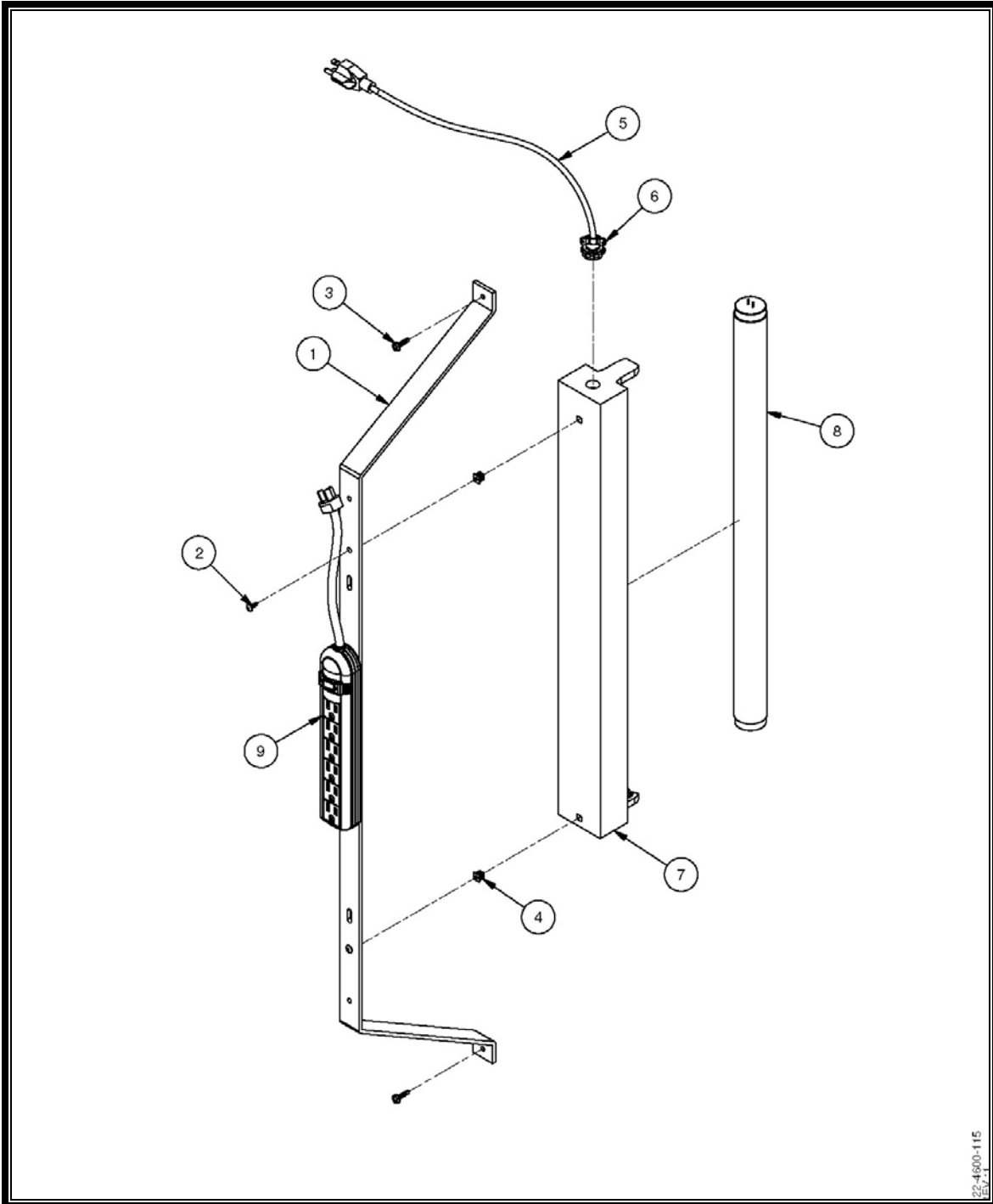


Q100-4156 Stop/Go LED Parts List

Item	Part Number	Description	Qty
1	102-4150-00	ONE/TWO BALL LIGHT SOCKET	1
2	102-4160-00	SEPARATOR PANEL	1
3	7022-310600-075	#6 X 3/4 WOOD SCW FH SOCK	2
4	7025-610600-037	#6-32 X 3/8 THR. CUT P.H. SOCK	2
5	7027-201016-050	#10-16 X 1/2 TECK SCW HEX WASHER	4
6	E-323HDS12-5	TERMINAL STRIP (5 POSITION)	1
7	E-LED1240G	LED 12/40V AC/DC - GREEN	1
7.1	103-4150-00	LED PROTECTOR	1
7.2	7025-610600-050	#6-32 X 1/2 THR. CUT P.H. SOCK	2
7.3	7652-020037-012	NYLON SPACER WASHER	4
7.4	E-MD05-01G	LED PCB - GREEN	1
8	E-LED1240R	LED 12/40V AC/DC - RED	1
9	Z-Q100-4156	STICKER	1



122-4600-115 Fluorescent Support 115 Vac

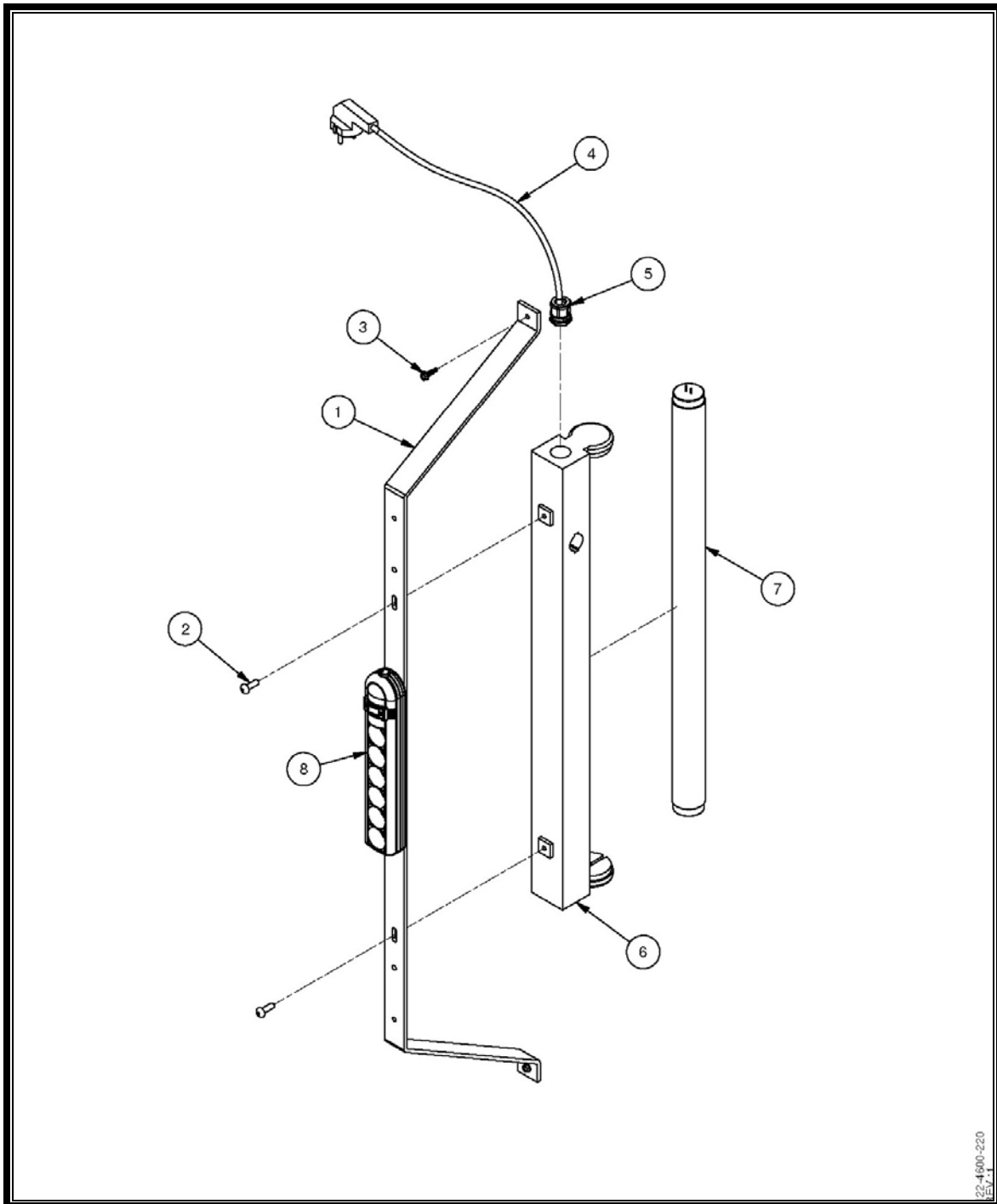


122-4600-115 Fluorescent Support 115 Vac Parts List

Item	Part Number	Description	Qty
1	102-4110-00	FLUORESCENT BRACKET	1
2	7024-710800-050	#8 X 1/2 TAP SCW PH SOCK	2
3	7027-201016-075	#10-16 X 3/4 TECK SCW HEX WASHER	2
4	7080-800000-240	NYLON EXPANSION NUT 5/16-10	2
5	E-020-183-6-110	CORD 110V 6'	1
6	E-3302M	CONNECTEUR A LOOMEX	1
7	E-F24	FIXTURE 24"	1
8	E-F24T	20W FLUORESCENT LIGHT 24"	1
9	E-PB-4A-115	POWER BAR 4 OUTLETS 115V	1



122-4600-220 Fluorescent Support 220 Vac

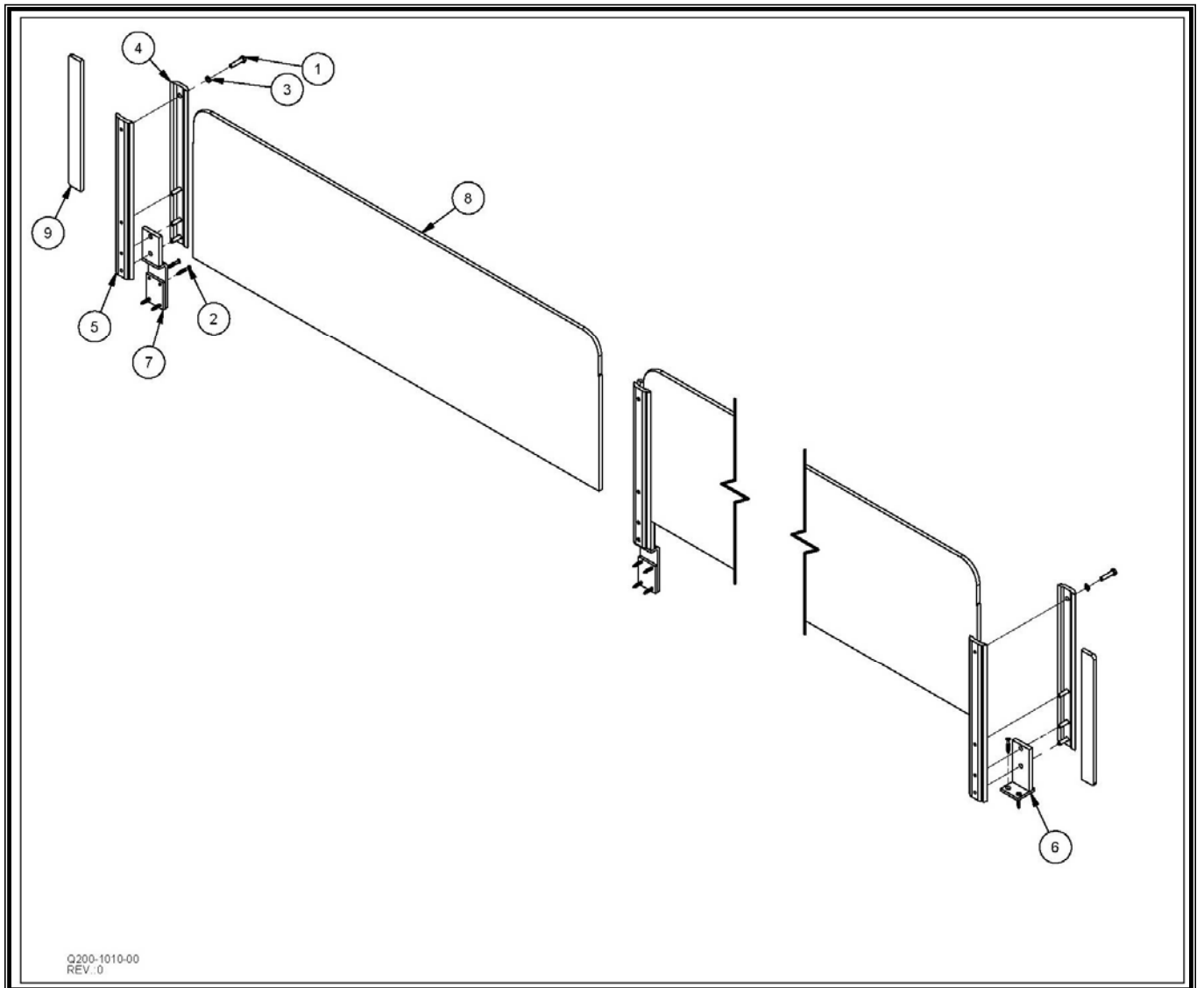


122-4600-220 Fluorescent Support 220 Vac Parts List

Item	Part Number	Description	Qty
1	102-4110-00	FLUORESCENT BRACKET	1
2	7016-412520-075	MA SC RH SOCK 1/4-20 UNCX3/4	2
3	7027-201016-075	#10-16 X 3/4 TECK SCW HEX WASHER	2
4	E-020-183-8-220	CORD 220V 8	1
5	E-565	PLASTIC WIRE CONNECTOR	1
6	E-F24T8	FIXTURE 24" 1 TUBE 50HZ 220V	1
7	E-F24TT8	18W FLUORESCENT LIGHT 24" T8	1
8	E-PB-4A-220	POWER BAR 4 OUTLETS 220V	1



Q200-1010-00 Lateral Safety Guard

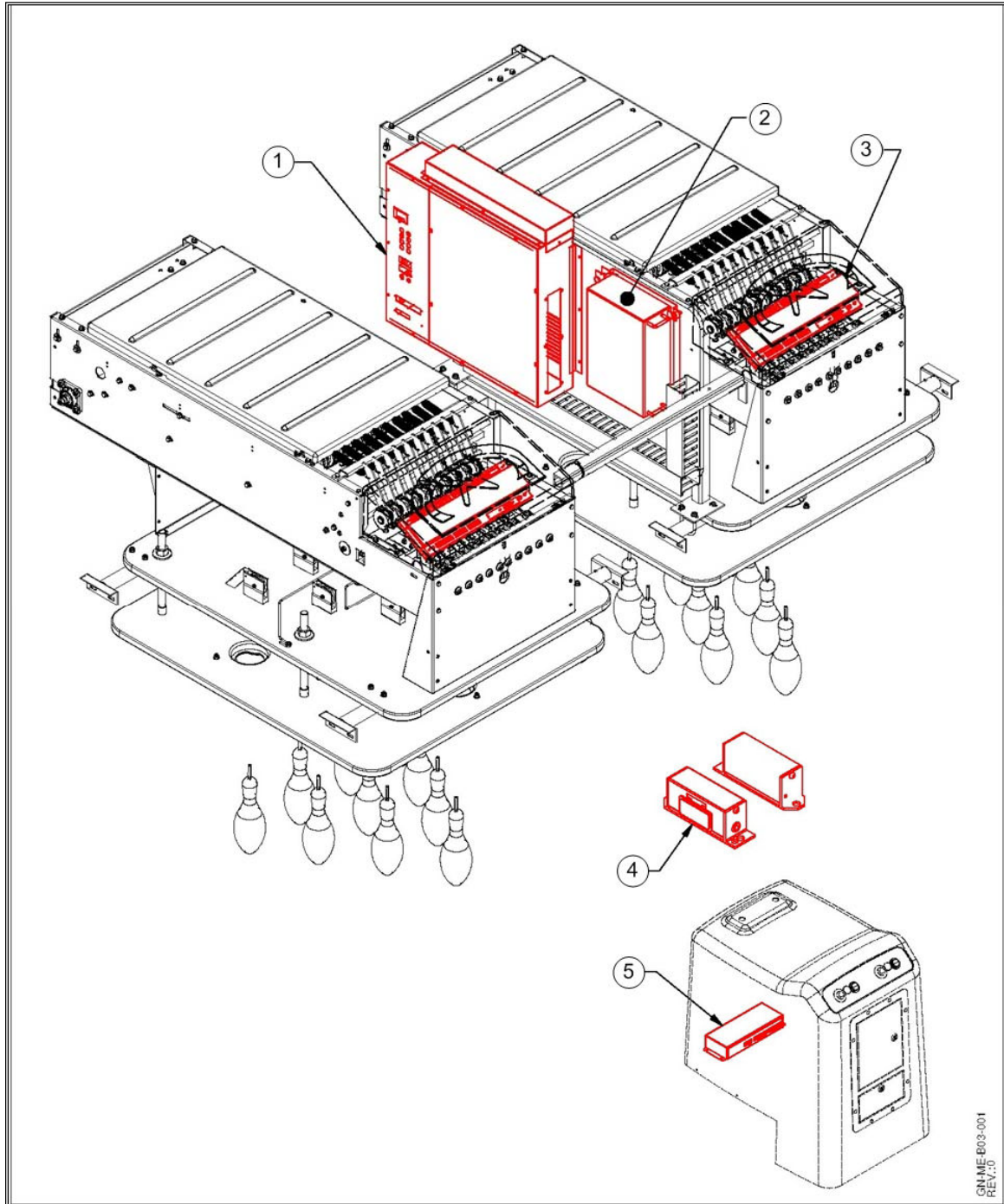


Q200-1010-00 Lateral Safety Guard Parts List

Item	Part Number	Description	Qty
1	7010-003118-137	5/16-18 UNC X 1 3/8 HEX CAP SCREW	36
2	7022-311000-150	#10 X 1 1/2 WOOD SCW FH SOCK	34
3	7052-034056-003	11 in / 32 ul X 9 in / 16 ul X 1 in / 32 ul FLAT WASHER	36
4	M-0540-100	SAFETY GUARD CLAMP	9
5	M-0540-105	SAFETY GUARD CLAMP (THD)	9
6	M-0540-110	SAFETY GUARD BRACKET (AP)	1
7	M-0540-120	SAFETY GUARD BRACKET (LANE)	8
8	P-0540-100	SAFETY GUARD GLASS	8
9	P-0540-110	SAFETY GUARD SPACER	2



Electronic Components



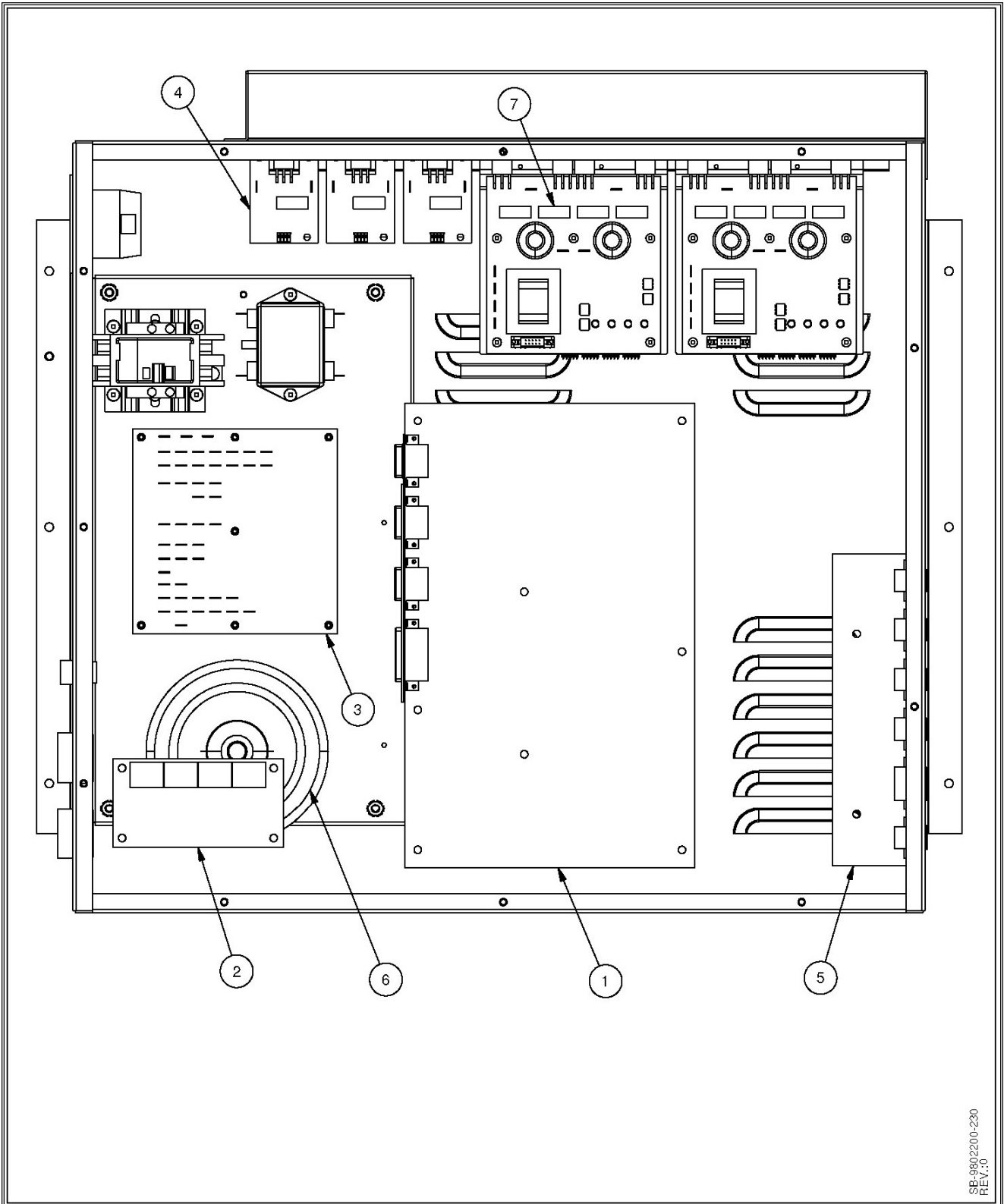
Electronic Components Parts List

Item	Part Number	Description	Qty
1	SB-9802200-230	POWER BOX	1
2	511-0023-00	Q-AMS VIDEO CONTROLER	1
3	SB-9802300-10	PIN DETECTORS	2
4	SB-1500-31-Q	BALL DETECTOR	2
5	511-0024-00	I/O CONTROLER	1



PARTS LISTING

SB-9802200-230 Power Box



SB-9802200-230
REV.:0

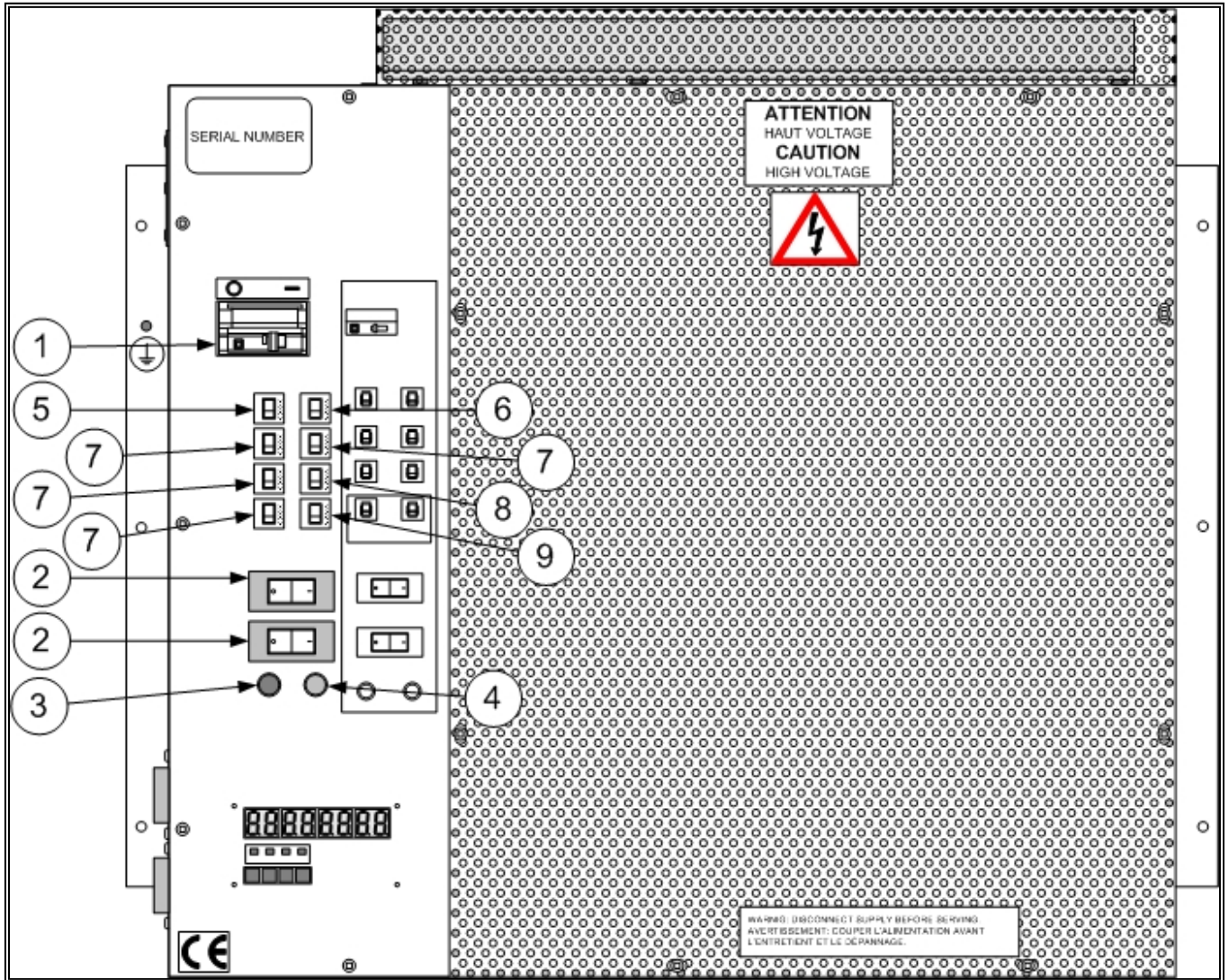


SB-9802200-230 Power Box Parts List

Item	Part Number	Description	Qty
1	E-MD01-01	CENTRAL PROCESSING UNIT PCB	1
2	E-MD01-03	PCB DISPLAY FULL SET	1
3	E-MD03-01	POWER CONNECTING BOARD	1
4	E-MD92-01	AC DRIVE PCB	3
5	E-MD98-02	CONNECTOR PANEL	1
6	E-TM120U5	TOROID POWER TRANSFORM	1
7	SB-9808210-230	DC DRIVE ASS'Y	2



Power Box Front Panel



Power Box Front Panel Parts List

Item	Part Number	Description	Qty
1	E-QUO220	20A CIRCUIT BREAKER	1
2	E-3120-F321-8	ETA THERMAL CIRCUIT BREAKER 8A	2
3	E-1090C1-28	RED LED 24VAC	1
4	E-1052C5-115	115VAC GREEN PILOT LAMP	1
5	E-W28XQ1A-2	OVERLOAD 2A PB	1
6	E-W28XQ1A-3	OVERLOAD 3A PB	1
7	E-W28XQ1A-5	OVERLOAD 5A PB	3
8	E-W28XQ1A-8	OVERLOAD 8A PB	1
9	E-W28XQ1A-4	OVERLOAD 4A PB	1



Parts Number Index

Note: this listing does not include the installation parts.

101-3050-00 (JOYSTICK - BLACK)	107
101-3300-00 (HIGHWAY 66 COIN-UP 0.25 US\$).....	107
101-3310-00 (HIGHWAY 66 COIN COMPARATOR).....	107
101-3311-00 (HIGHWAY 66 MULTI COIN COMPARATOR).....	107
102-3000-00 (UPPER BALL RACK)	105
102-3010-00 (H66 BALL RACK INSIDE RAIL).....	105
102-3020-00 (BALL RACK DROP ASSY).....	105
102-3030-00 (ZIGZAG)	105
102-3050-00 (JOYSTICK PLATE).....	107
102-3060-00 (CASH DRAWER ANGLE)	107
102-3070-00 (PUSH BUTTON BRACKET).....	107
102-3100-01 (MONITOR SUPPORT POST).....	109, 111
102-3110-00 (MONITOR SUPPORT).....	109, 111
102-3120-00 (MONITOR SUPPORT CLAMP).....	109, 111
102-3125-00 (LCD SIDE BRACKET).....	111
102-3130-00 (MONITOR BRACKET RIGHT)	109
102-3135-00 (MONITOR BRACKET LEFT)	109
102-3140-00 (OVERHEAD CHANNEL).....	109
102-3140-01 (OVERHEAD CHANNEL).....	111
102-3145-00 (LCD SUPPORT ARM)	111
102-3146-00 (LCD SUPPORT PLATE).....	111
102-3147-00 (VIDEO DISTRIBUTION SUPPORT).....	111
102-3150-00 (THREAD ROD).....	109, 111
102-3160-01 (OVERHEAD BRACE).....	109, 111
102-3200-00 (BALL RACK TUNNEL BRACKET- TOP).....	105
102-3210-00 (H66 BALL RACK TUNNEL BRACKET - BOTTOM)	105
102-3300-00 (HIGHWAY 66 COIN UP DOOR 0.25 US\$).....	107
102-3310-00 (HIGHWAY 66 COIN COMPARATOR DOOR)	107
102-3315-00 (REJECT LEVER)	107
102-3316-00 (REJECT LEVER SPRING).....	107
102-3317-00 (REJECT LEVER RETAINING WASHER).....	107
102-3320-00 (TICKET TRAY ASS'Y).....	107
102-3330-00 (HIGHWAY 66 BLANK DOOR)	107
102-4010-00 (MASKING HOOK CLAMP).....	113
102-4020-00 (MASKING SHOCK BRACKET)	113
102-4030-00 (BALL STUD)	113
102-4040-00 (GAS SHOCK).....	113
102-4050-00 (MASKING FOOT)	113
102-4110-00 (FLUORESCENT BRACKET)	119, 121
102-4150-00 (ONE/TWO BALL LIGHT SOCKET)	115, 117
102-4160-00 (SEPARATOR PANEL).....	115, 117
102-4500-00 (H66 MASKING UNION BRACE)	113



102-4510-00 (H66 MASKING FLAT BRACE).....	113
103-3000-01 (HIGHWAY 66 CONSOLE).....	107
103-3010-00 (BALL RACK COVER).....	105
103-3020-00 (BALL PROTECTOR).....	105
103-3030-00 (CAPS).....	105
103-3200-00 (BALL TUNNEL).....	105
103-4030-00 (BUSHING).....	113
103-4150-00 (LED PROTECTOR).....	117
104-2010-00 (BUMPER PAD).....	105
104-3030-00 (ZIGZAG).....	105
106-3000-00 (CONSOLE PLANK).....	107
108-3020-00 (DROP TRACK).....	105
133-3000-00 (HOOD ASSY).....	105
188-4500-00 (H66 MASKING UNIT FRAME ASS'Y).....	113
301-1100-00 (ELECTRIC MOTOR, 180VDC 3/4HP).....	81
301-1200-00 (ELECTRIC MOTOR 208/230 VAC 1/2).....	101
301-5170-00 (SOLENOID).....	89
302-2200-00 (CONNECTION RETAINER).....	81
302-2210-00 (ENCODER, DC MOTOR COVER).....	81
302-2410-00 (KEYWAY 3/16).....	75, 77, 101
302-5540-00 (SOLENOID SHAFT).....	89
303-5865-00 (BUSHING).....	111
311-1100-00 (MOTOR ASSEMBLY).....	75
322-2220-00 (MOTOR ENCODER PLATE ASS'Y).....	81
394-8100-00 (BUNGEE CORD).....	103
50W-0700-90 (BALL LIFT TRACK SPACER MID).....	97
50W-0700-91 (BALL LIFT TRACK SPACER BOTTOM).....	97
511-0023-00 (Q-AMS VIDEO CONTROLER).....	125
511-0024-00 (I/O CONTROLER).....	125
511-2800-00 (MONITOR 28 W/CABINET).....	109
7002-710000-62 (5/8 EXTERNAL RETAIN. RING).....	85
7006-000900-050 (SPRING PIN 3/32 X 1/2).....	87, 89
7006-000900-100 (SPRING PIN 3/32 X 1).....	89, 99
7006-001200-100 (SPRING PIN 1/8 X 1).....	87, 93
7006-001800-037 (SPRING PIN 3/16 X 3/8).....	85
7006-001800-112 (SPRING PIN 3/16 X 1 1/8).....	85
7010-000813-075 (M8-1.5 X 20 HEX CAP SCREW).....	109
7010-002520-062 (1/4-20 UNCX5/8 HEX CAP SCREW).....	113
7010-002520-100 (1/4-20 UNCX1 HEX CAP SCREW).....	87, 93, 113
7010-002520-350 (1/4-20 UNCX3 1/2 HEX CAP SCREW).....	97
7010-002528-062 (1/4-28 UNFX5/8 HEX CAP SCREW).....	89
7010-003118-050 (5/16-18 UNCX1/2 HEX CAP SCREW).....	77, 91
7010-003118-062 (5/16-18 UNCX5/8 HEX CAP SCREW).....	75, 79, 105
7010-003118-075 (5/16-18 UNCX3/4 HEX CAP SCREW).....	71, 75, 77, 79, 91, 97, 101, 105, 109, 111
7010-003118-100 (5/16-18 UNCX1 HEX CAP SCREW).....	75, 97, 105, 111



PARTS NUMBER INDEX

7010-003118-125 (5/16-18 UNCX1 1/4 HEX CAP SCREW)	75, 77, 101
7010-003118-137 (5/16-18 UNCX1 3/8 HEX CAP SCREW)	123
7010-003118-150 (5/16-18 UNCX1 1/2 HEX CAP SCREW)	75, 97
7010-003118-175 (5/16-18 UNCX1 3/4 HEX CAP SCREW)	97
7010-003118-300 (5/16-18 UNCX3 HEX CAP SCREW)	77
7010-003716-100 (3/8-16 UNCX1 HEX CAP SCREW)	75, 101
7012-001024-075 (10-24 UNC X 3/4 CARRIAGE BOLT)	107
7012-003118-075 (5/16-18 UNC X 3/4 CARRIAGE BOLT)	75, 97
7012-003118-100 (5/16-18 UNC X 1 CARRIAGE BOLT)	97
7012-003118-150 (5/16-18 UNC X 1 1/2 CARRIAGE BOLT)	95
7012-003118-175 (5/16-18 UNC X 1 3/4 CARRIAGE BOLT)	95, 105
7012-003118-300 (5/16-18 UNC X 3 CARRIAGE BOLT)	109, 111
7012-003118-350 (5/16-18 UNC X 3 1/2 CARRIAGE BOLT)	103
7013-003118-125 (5/16-18 UNC X 1 1/4 ELEVATOR BOLT)	103
7014-003118-025 (5/16-18 UNC X 1/4 SET SCREW)	83
7014-003118-037 (5/16-18 UNC X 3/8 SET SCREW)	101
7016-312520-100 (1/4-20 UNC X 1 FH MA SC)	79
7016-410632-025 (MA SC RH SOCK 6-32 UNCX1/4)	89
7016-410632-050 (MA SC RH SOCK 6-32 UNCX1/2)	81, 87, 111
7016-410632-075 (MA SC RH SOCK 6-32 UNCX3/4)	77, 87
7016-411032-050 (10-32 UNFX1/2 MA SC RH SO)	71
7016-411032-062 (10-32 UNFX5/8 MA SC RH SO)	71
7016-411032-062 (MA SC RH SOCK 10-32 UNFX5/8)	89
7016-411032-075 (MA SC RH SOCK 10-32 UNFX3/4)	83
7016-411032-125 (MA SC RH SOCK 10-32 UNFX1 1/4)	83
7016-412520-075 (MA SC RH SOCK 1/4-20 UNCX3/4)	121
7016-413118-300 (5/16-18 UNCX3 MA SC RH SO)	97
7016-640407-012 (M4X0.7 X 12 MA SC PH PHILLIPS)	111
7016-640407-020 (M4X0.7 X 20 MA SC PH PHILLIPS)	111
7016-640610-016 (M6X1.0 X 16 MA SC PH PHILLIPS)	111
7016-640610-025 (M6X1.0 X 25 MA SC PH PHILLIPS)	111
7018-001032-087 (10-32 UNFX7/8 HEX SO CA SCW)	77
7018-002520-087 (1/4-20 UNCX7/8 HEX SO CA SCW)	77
7018-003118-075 (5/16-18 UNCX3/4 HEX SO CA SCW)	79
7018-302520-075 (1/4-20 UNC X 0.75 FLAT SOCKET HEAD MA. SCRE)	105
7018-5002520-050 (1/4-20 UNC X 1 in / 2 ul BUTTON HEAD HEX SOCKET)	105
7020-002500-050 (1/4 X 1/2 SHOULDER SCREW)	89
7020-002500-062 (1/4 X 5/8 SHOULDER SCREW)	87
7020-002500-075 (1/4 X 3/4 SHOULDER SCREW)	89
7022-310600-075 (#6 X 3/4 WOOD SCW FH SOCK)	117
7022-310800-100 (#8 X 1 WOOD SCW FH SOCK)	95, 97
7022-311000-150 (#10 X 1 1/2 WOOD SCW FH SOCK)	123
7022-410600-125 (#6 X 1 1/8 TAP SCW PH SOCK)	95
7022-411000-037 (#10 X 1 TAP SCW PH SOC)	71
7023-410800-100 (#8 X 1 PARTICULE ROUND WASHER HEAD SCREW)	105



PARTS NUMBER INDEX

7024-201400-175 (#14-20 X 1 3/4 TAP SCW HEX WASHER)	105
7024-610400-075 (#4 X 3/4 TAP SCW PH SOCK).....	115
7024-710800-050 (#8 X 1/2 TAP SCW PH SOCK).....	97, 119
7024-710800-075 (#8 X 3/4 TAP SCW PH SOCK).....	97, 105, 107
7024-711000-100 (#10 X 1 TAP SCW PH SOCK)	95
7025-610600-037 (#6-32 X 3/8 THR. CUT P.H. SOCK).....	115, 117
7025-610600-050 (#6-32 X 1/2 THR. CUT P.H. SOCK).....	117
7027-200818-075 (#8-18 X 3/4 TECK SCW HEX WASHER).....	87, 113
7027-201016-050 (#10-16 X 1/2 TECK SCW HEX WASHER)	117
7027-201016-075 (#10-16 X 3/4 TECK SCW HEX WASHER)	119, 121
7028-002500-300 (1/4 X 3 LAG SCREW).....	113
7032-003118-400 (5/16-18 UNC X 4 EYE BOLT).....	103
7034-001024-000 (10-24 UNC HEXAGON NUT)	87, 89
7034-003118-000 (5/16-18 UNC HEXAGON NUT).....	79, 103
7034-008709-000 (7/8-9 UNC HEXAGON NUT)	95
7036-001032-000 (HEX NYLON NUT 10-32 UNF)	71, 73, 77, 83, 89
7036-002520-000 (HEX NYLON NUT 1/4-20 UNC).....	97, 105, 111
7036-003118-000 (HEX NYLON NUT 5/16-18 UNC).....	71, 75, 77, 79, 91, 95, 97, 101, 103, 105, 109, 111, 113
7037-003118-000 (HEX CAP NUT 5/16-18 UNC).....	109, 111
7038-000632-000 (6-32 UNC HEX KEEP NUT).....	75, 87, 111
7038-001024-000 (10-24 UNC HEX KEEP NUT).....	107
7038-003118-000 (5/16-18 UNC HEX KEEP NUT).....	97, 101
7044-002520-000 (HEX THIN NYLON NUT 1/4-20 UNC).....	87, 93
7045-003118-037 (5/16-18 UNC TEE NUT).....	75
7046-000632-006 (6-32 X 1/16 WELD NUT).....	77, 87
7046-002520-000 (1/4-20 UNC WELD NUT)	105
7050-018043-004 (3/16 X 7/16 X 3/64 FLAT WASHER).....	107
7050-018048-004 (3/16 X 31/64 X 3/64 FLAT WASHER).....	73, 111
7050-021050-006 (7/32 X 1/2 X 3/64 FLAT WASHER).....	71, 89
7050-028062-006 (9/32 X 5/8 X 1/16 FLAT WASHER).....	89, 105, 111
7050-034068-006 (11/32 X 11/16 X 1/16 FLAT WASHER).....	71, 75, 77, 79, 91, 95, 97, 101, 103, 105, 109, 111
7050-034100-006 (11/32 X 1 X 1/16 FLAT WASHER).....	105, 113
7050-034100-012 (11/32 X 1 X 1/8 FLAT WASHER).....	75, 77, 97, 101, 103, 105, 109, 111
7050-034175-012 (11/32 X 1 3/4 X 1/16 FLAT WASHER).....	77, 103
7050-040175-012 (13/32 X 1 3/4 X 1/8 FLAT WASHER).....	103, 105
7052-025050-003 (1/4 X 1/2 X 1/32 FLAT WASHER).....	87
7052-034056-003 (11 in / 32 ul X 9 in / 16 ul X 1 in / 32 ul FLAT WASHER).....	123
7052-050087-003 (1/2 X 7/8 X 1/32 FLAT WASHER).....	87, 93
7052-062100-006 (5/8 X 1 X 1/16 FLAT WASHER).....	85
7052-093225-018 (15/16 X 2 1/4 X 3/16 FLAT WASHER).....	95
7060-025046-006 (1/4 LOCK WASHER)	89
7060-031057-009 (5/16 LOCK WASHER)	75, 77, 79, 91, 101, 105, 109, 111, 113
7060-037067-010 (3/8 LOCK WASHER)	75, 101
7080-300000-110 (SPRING NUT 1/4-20UNC).....	105
7080-800000-050 (S HOOK)	103



PARTS NUMBER INDEX

7080-800000-060 (CLIP FOR BUNGEE CORD)	103
7080-800000-240 (NYLON EXPANSION NUT 5/16-10)	119
7150-019050-004 (.193 X 1/2 X 3/64 FLAT WASHE).....	89
7150-019075-009 (.193 X 3/4 X 3/32 FLAT WASHER).....	95
7652-020037-012 (NYLON SPACER WASHER).....	117
77050-050106-009 (17/32 X 1 1/16 X 3/32 FLAT WASHER).....	95
8664-137112-012 (CAOUTCHOU PROTECTOR)	75
9102005 (SENSOR PLATE FRONT).....	75
9102006 (PINSETTER SUPPORT PLATE).....	75
9102007 (SIDE GUARD).....	75
9102011 (DRAWBAR CHAIN PLATE)	79
9102015 (DRAWBAR SHAFT).....	83
9102016 (DRAWBAR GUIDE).....	77
9102017 (DRAWBAR STOPPER)	77
9102019 (DRAWBAR CHAIN #40).....	77
9102020 (BUSHING)	83
9102025 (SHAFT)	75
9102026 (LOWER REEL ARM STOPPER)	75
9102027 (REEL ARM SHAFT).....	85
9102028 (REEL ARM).....	85
9102029 (ROPE HOLDING)	75
9102030 (UPPER REEL ARM STOPPER).....	75
9102036 (TENSIONNER).....	77
9102037 (STRING SUPPORT).....	75
9102038 (STRING SUPPORT).....	95
9102039 (SPACER ROD)	95
9102044 (HINGE).....	71
9102047 (D RING CLIP).....	71
9102048 (TOP COVER PIVO)	71
9102054 (OPTICAL SENSOR SUPPORT).....	77
9102057 (SENSOR SHEAVE).....	87
9102058 (SUPPORT BRACKET).....	87
9102070 (BRAKE PLATE).....	89
9102071 (BRAKE ANGLE PLATE)	89
9102092 (SPROCKET 40B24, 3/4 BORE).....	77
9102094 (SPROCKET 40B15).....	77
9102200 (SIDE FRAME-RIGHT).....	75, 77
9102203 (TOP COVER BRACKET).....	71
9102205 (SIDE FRAME-LEFT)	77
9102210 (BOTTOM MOUNTING PLATE).....	75
9102213 (DRAWBAR ADJUSTMENT PLATE)	79
9102220 (BRAKE CHANNEL SUPPORT)	91
9102221 (CONTROLLER BRACKET).....	91
9102230 (COMMAND SUPPORT CHANNEL).....	75
9102250 (DRAWBAR BRACE).....	79



9102255 (ACTUATOR BRACKET)	79
9102260 (PLATE BLANK).....	77
9102281 (DRIVE CHAIN).....	75
9102292 (SPROCKET 40B24, 5/8 BORE).....	75
9102350 (DRIVE SHAFT).....	77
9103005 (CENTERING RING)	95
9103006 (PLASTIC PROTECTOR).....	95
9103011 (DRAWBAR GUIDE).....	79
9103014 (SHEAVE PLATE).....	83
9103058 (WHEEL MOVEMENT DETECTOR).....	87
9103059 (NYLON SHOULDER WASHER)	87
9103070 (BRAKE CAM)	89
9103071 (PLASTIC SPACER).....	83, 89
9103072 (GUIDE WHEEL).....	89
9103201 (PIN DETECTION COVER TMS).....	71
9103202 (REAR COVER).....	71
9103203 (TOP COVER).....	71
9105070 (EXTENSION SPRING).....	87, 89
9106004 (PINSETTER SUPPORT TABLE).....	95
9106005 (BOTTOM TABLE ASS'Y).....	95
9122015 (DRAWBAR ASSEMBLY).....	79
912202 (REEL ARM ASSEMBLY)	85
9122027 (REEL ARM SHAFT ASSEMBLY).....	75
9122057 (PIN DETECTION ASSEMBLY)	75
9122070 (PIN BRAKE ASS'Y).....	91
9122220 (BRAKE SUPPORT ASSEMBLY)	75
9133014 (SHEAF PLATE ASSEMBLY)	83
E-020-183-6-110 (CORD 110V 6').....	119
E-020-183-8-220 (CORD 220V 8').....	121
E-056 (CABLE TIES).....	109, 111
E-1052C5-115 (115VAC GREEN PILOT LAMP).....	129
E-1090C1-28 (RED LED 24VAC).....	129
E-12-240XT (LAMP SOCKET).....	115
E-1252 (MINIATURE LIGHT BULB 28V).....	115
E-3120-F321-8 (ETA THERMAL CIRCUIT BREAKER 8A)	129
E-323HDS12-5 (TERMINAL STRIP (5 POSITION)).....	115, 117
E-3302M (CONNECTEUR A LOOMEX)	119
E-565 (PLASTIC WIRE CONNECTOR).....	121
E-591BK (PUSH BUTTON)	107
E-660-09 (CABLE CLAMP).....	89
E-9801600 (ENTROPY 2000 TICKET DISPENSER).....	107
E-F24 (FIXTURE 24").....	119
E-F24T (20W FLUORESCENT LIGHT 24").....	119
E-F24T8 (FIXTURE 24" 1 TUBE 50HZ 220V)	121
E-F24TT8 (18W FLUORESCENT LIGHT 24" T8).....	121



PARTS NUMBER INDEX

E-GP1A05 (ENCODER OPTICAL SENSOR).....	81
E-LED1240G (LED 12/40V AC/DC - GREEN)	117
E-LED1240R (LED 12/40V AC/DC - RED).....	117
E-MD01-01 (CENTRAL PROCESSING UNIT PCB).....	127
E-MD01-03 (PCB DISPLAY FULL SET).....	127
E-MD03-01 (POWER CONNECTING BOARD).....	127
E-MD05-01G (LED PCB - GREEN)	117
E-MD92-01 (AC DRIVE PCB).....	127
E-MD98-02 (CONNECTOR PANEL).....	127
E-PB-4A-115 (POWER BAR 4 OUTLETS 115V)	119
E-PB-4A-220 (POWER BAR 4 OUTLETS 220V)	121
E-QUO220 (20A CIRCUIT BREAKER).....	129
E-THS3350 (CONNECTEUR A LOOMEX)	81
E-TM120U5 (TOROID POWER TRANSFORM)	127
E-W28XQ1A-2 (OVERLOAD 2A PB)	129
E-W28XQ1A-3 (OVERLOAD 3A PB)	129
E-W28XQ1A-4 (OVERLOAD 4A PB)	129
E-W28XQ1A-5 (OVERLOAD 5A PB)	129
E-W28XQ1A-8 (OVERLOAD 8A PB)	129
I-022A (STRING ASSEMBLY 14 FOOT (4.3 METERS)).....	73
M-0011 (STORAGE REEL AXLE).....	85
M-0041 (SPECIAL SCREW).....	95
M-0042 (STORAGE REEL).....	85
M-0100B (BUSHING).....	87, 93
M-0190 (STEEL COLLAR).....	83
M-043-1 (SHEAVE).....	93
M-0540-100 (SAFETY GUARD CLAMP)	123
M-0540-105 (SAFETY GUARD CLAMP (THD))	123
M-0540-110 (SAFETY GUARD BRACKET (AP)).....	123
M-0540-120 (SAFETY GUARD BRACKET (LANE)).....	123
M-0540-70 (CUSHION SUPPORT)	103
M-0540-75 (CUSHION CHAIN)	103
M-0690-01-1 (CHAIN LINK #40).....	75
M-0690-21 (FLANGE BEARING).....	77
M-0700-07 (DRIVE SHAFT ASSEMBLY)	97
M-0700-09 (MOTOR BASE PLATE)	97
M-0700-10 (IDLER SPROCKET 40B10).....	97
M-0700-10-02 (STEEL BUSHING)	97
M-0700-14 (CHAIN COUPLING SPECIAL)	97
M-0700-15 (HALF LINK).....	97
M-0700-21-2 (PULLEY MA50X5/8)	101
M-0700-22 (CARROUSEL PULLEY)	97
M-0700-27 (CROSS CHAIN TRAVEL SHAFT).....	97
M-0700-29 (THREADED ROD).....	101
M-0700-29-1 (PULLEY GUARD BRACKET).....	101



PARTS NUMBER INDEX

M-0700-55 (BALL LIFT BOTTOM PROTECTOR)	97
M-0700-67 (STEEL BEARING BLOCK)	97
M-0700-90 (BALL LIFT FRAME ASSEMBLY)	97
M-0701-100 (BALL LIFT FRONT COVER TOP)	97
M-0701-30 (BALL LIFT ASSY).....	101
M-0701-94 (BALL LIFT BRIDGE).....	99
M-0701-96 (H66 ELEVATOR REAR COVER)	99
M-0701-97 (ALUMINUM TRACK).....	99
M-0701-97-1 (VINYL TRACK 46 (1.17M)).....	99
M-0701-98 (ELEVATOR TRACK BRACKET).....	99
M-BMQ1133-3 (MOTOR REDUCER)	75, 101
P-001A (DRAWBAR SHEAVE PLATE).....	77
P-016A (PULLEY)	83, 87, 93
P-043 (PULLEY SHEAVE GUARD).....	95
P-0540-100 (SAFETY GUARD GLASS).....	123
P-0540-110 (SAFETY GUARD SPACER)	123
P-0700-100 (PULLEY GUARD (INNER))	101
P-0700-101 (PULLEY GUARD (OUTER))	101
P-0700-69 (CHAIN GUIDE).....	99
P-0700-71 (BALL GUIDE BOTTOM)	99
P-1133-3 (REDUCER VENT).....	101
P-241-1 (MUSHROOM BUSHING).....	73
P-700-13 (BALL GUARD OUTSIDE)	99
P-700-55 (BOTTOM BALL LIFT GUARD).....	99
Q72-0241-50 (HIGHWAY/BUGGY BOWL PIN).....	73
Q81-1050 (PIN STRING - 50 METERS ROLL)	73
R-014 (BUMPER PAD).....	95
R-0540-70 (CUSHION [FRONT])	103
R-0540-75 (CUSHION APRON)	103
R-0540-76 (CUSHION [REAR]).....	103
R-0700-01 (V-BELT)	101
S-074 (STORAGE REEL SPRING).....	85
S-080 (EXTENSION SPRING).....	75
SB-043-1 (PULLEY SHEAF)	95
SB-0700-13 (BALL LIFT CHAIN).....	99
SB-1500-31-Q (BALL DETECTOR).....	125
SB-9802200-230 (POWER BOX).....	125
SB-9802300-10 (PIN DETECTOR TMS ASS'Y).....	75
SB-9802300-10 (PIN DETECTORS).....	125
SB-9808210-230 (DC DRIVE ASS'Y)	127
SB-ECIL-325-FS (OPTICAL SENSOR ASS'Y WHITE)	77
SB-ECIL-325-PD (OPTICAL SENSOR ASS'Y RED)	87
Z-452 (WARNING STICKER)	99
Z-HW66-003 (HIGHWAY PANEL).....	109, 111
Z-HW66-004 (PLASTIC STICKER)	107



PARTS NUMBER INDEX

Z-Q100-4156 (STICKER)117





INSTALLATION MANUAL



Revision Control Sheet

Release	Date	Description	Author
R1	January 2005	Add ball protector, add voltage change instruction.	Andre Hebert
R1.1	May 2005	Change masking unit back light for single one. 122-4600-115 122-4600-220	Andre Hebert
R1.1	May 2005	Update gutter and bumper.	Andre Hebert
R1.1	May 2005	Add ball protector in pit area	Andre Hebert

Document Information Sheet

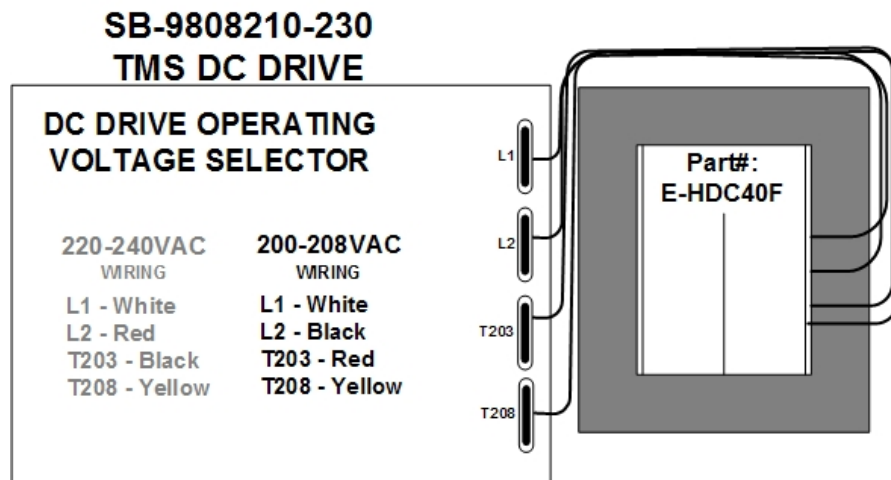
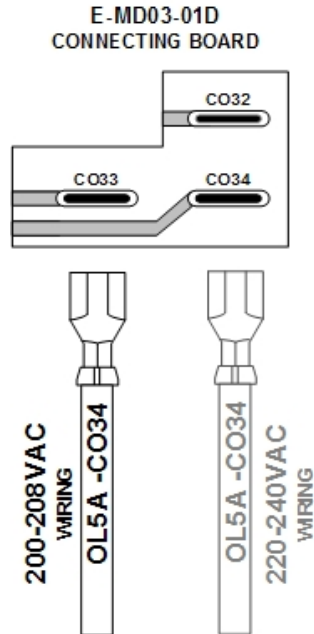
Document name	Release Date	Author
Highway 66 User manual second Edition R1.doc	January 2005	Andre Hebert

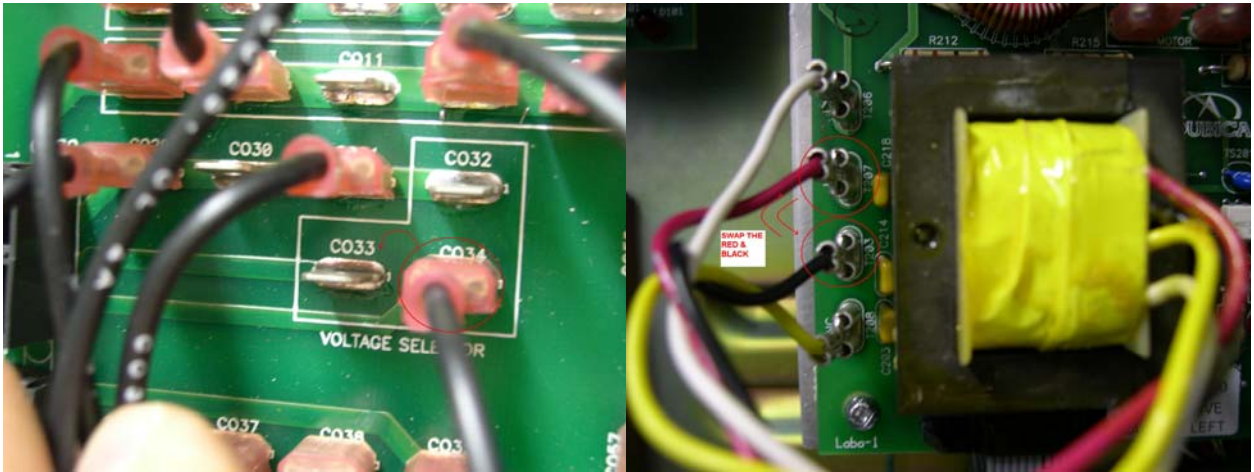


Very Important:

REMOVE POWER BEFORE PROCEEDING!

The power box is shipped wired for 220-240 Vac operating voltage; if the supply voltage is 200-208 Vac you must change the wiring inside the power box. Open both covers of the power box, on the left side you will find the interconnection board (E-MD03-01d) find the wire that is connected on CO34, disconnect it and connect it to CO33. Refer to the picture below.





You also have to change the wiring on each DC Drive, they are located inside the power box in the upper part of the box. On top of the DC Drive you will find a small transformer, refer to the picture to make the right wiring.



Important Notice...

This document is intended to be a reference for QubicaAmf installation approved team. In this document we assume that the installation team received the appropriate training from QubicaAmf Worldwide.

Before starting any installation of Highway 66 read this document carefully and pays good attention to the Warning.

Overview

Read carefully all the Warnings prior to begin installation.



Step by step



Chapter Overview

Read carefully all the Warnings prior to begin installation.



Step 1

Overview

The overall dimension of the unit is:

Length: 39' 9-1/2" (14555mm), we strongly suggest to have at least 2' (610mm) of service area in the back of the machines.

Width: 9' 2-1/2" (2807mm) including the monitor post.

Height: 8' 2-3/8" (2498mm) from floor to top of monitors.

Each optional section will add 7' (2134mm) to the unit; you can have 2 optional sections.

See diagram **HIGHWAY66 39+7+7** (Highway66 general Layout) page A-151

General Layout

Trace out the area where the HW66 unit is to be installed. See diagram **HW66 39 000** page A-152

Follow the instruction from the diagram to trace the A,B,C line on the floor.

Important: If there is optional section to the installation, add 7' (2134mm) for each section to the total length of the unit.

If you have more than one unit to install, the distance between each unit must be 4 3/4" (120mm) between each unit. **Refer to Diagram IN-H66-039-000** page A-152

You must leave 4" (101mm) between the outer edge of the unit and any wall that you might have each side of the unit. This is necessary for the monitor's post that exceeds the unit.

Step 2

Lane Frame Installation Refer to drawing IN-H66-039-001 page A-153

There is 3 different kind of lane frame; the pit frame, the approach frame and the common lane frame.

Layout the pit frame section of left lane, square with line C and B. Layout the pit frame section of right lane in line with line C. The distance between the two pit frame section must be 6 1/4" (159mm), Use the Pit union plank (Item #1) to fixed the two sections together, see Detail A in diagram.

If you have more than one unit to install, layout the pit frame of the other unit along with line C, you must leave 4 3/4" (120mm) between each unit. **Refer to Step 15 and Diagram IN-H66-039-025 and 026** Page A-170 for installation of union kit.

Once you have the pit frame layout, you can layout the common lane section of the first lane along line B. Before screwing those sections in place, verify the total distance from the back of the pit frame section to the end of the last lane section. The distance must be 28' (8534mm) for a standard installation add 7' (2134mm) for each additional section; you can leave space between each lane section in order to meet the exact measurement.

Use 5 #10 x 2 1/2" screw to fixed each lane section together, 3 screw for the sub lane and 2 screw for the base, see detail B in Diagram.

Once all the lane sections of the left lane are fixed together line up lane section of the left lane, use the ball return common plank (**Item #7 of drawing IN-H66-039-002** page A-154), this part will give you the exact distance between the two lanes. Screw that part temporarily since you will need to remove it for the gutter installation.



Step 3

Approach Frame Installation Refer to Drawing [IN-H66-039-002](#) page A-154

At the end of the last lane frame of each lane, screw the approach support (Item #1) using 8 #10 x 2 ½” screw, refer at detail A of the drawing [IN-H66-039-002](#) page A-154. Layout the approach frame of the first lane square with lane B and A, layout the other approach frame be sure to respect distance between each frame.

Install the Link approach to lane (Item #6) before you fixed them, be sure to have 8’ (2438mm) from the edge of the lane frame and the end of the approach frame, if necessary leave space between the two.

Once you have the entire approach frame fixed with the lane frame, install the common approach filler (Item #5 #3 #2 #4).

Important:

If you install more than one unit **Refer to Step 15 and Diagram [IN-H66-039-025](#) and [026](#) Page A-170** for installation of the union kit.

Step 4

Kickbacks and Pit installation

Refer Diagram [IN-H66-039-003](#) page A-Error! Bookmark not defined.

Install the kickbacks as show in the diagram, at the same time install the left and right pit support (Item #1 and 2) and the Double kickback pit support (Item #3). Adjust the height of the leveling foot to support the kickbacks.

At this time you should run the wires from the pinsetter area to the front ball rack and to the monitors post.

Step 5

Machines and Pit Installation

Refer Diagram [IN-H66-039-004](#) page A-156

Install the flat gutter (Item #16) using 6 #10 x 1 ½”.

Install the ball return start plank; follow by the ball return common plank. (Item #3 and 4)

Install the main cross support for the machine (Item #12)

Install the front kickback panel (Item #2)

Install the ball track frame assembly (Item #5)

Install the elevator side bracket (Item #13)

Install the elevator kickback panel (Item #1) refer to detail A of the [IN-H66-039-004](#).

Refer Diagram [IN-H66-039-005A](#) page A-Error! Bookmark not defined.

Install the pit frame assembly (Item #4) and secure it in place using the pit retaining bracket (Item #1).

Install the elevator; note that you have to remove the rear cover of the elevator in order to install it.

Install the two special capping in front of the kickback (Item #12 and 13)

Assemble the drop track using item #2 and 3 and install as show in the drawing.

Install the ball protector as per detail A and B in drawing [IN-H66-039-010B](#) on page A-165

Assemble the elevator motor as show in drawing [IN-H66-039-005B](#) page A-158

Install the machine on their support; refer at **drawing [IN-H66-MEB03-001](#) and [IN-H66-MEB03-002](#) page A-176 and A-177**



Step 6

Monitor Post and Side Panel Installation

Refer to Drawing IN-H66-039-006A page A-159

Install the side panels (Item #1) each side of the unit, start from the foul line.

Counter sink 6 holes per side panel refer to detail B, use drywall screw #6 x 1 5/8".

Assemble the overhead brace (Item #4) to the monitor post, position the post as show in the diagram and mark the 4 fixation holes. Refer to detail A for the dimensions and position of the holes.

At this time you should run the cabling inside the monitors post.

Once you have installed the monitor post, you can proceed with the installation of the monitors and their supports, see diagram IN-H66-039-006B page A-160.

If you install only one unit you can install the rest of the side panel each side of the lane.

Note: If you install more than one unit side by side refer to Step 15 and Diagram IN-H66-039-025 and 026 Page A-170

Step 7

Gutter Installation

In order to provide as much information to ease the installation of the gutter, you will find at the end of this manual a series of picture with reference number.

In this step there are three different procedures for the gutter:

- Installation of the standard gutter.
- Installation with the bumper wall.
- Installation with bumper wall and automatic activation kit, **this option is available only with the BES scoring system.**

For parts list of the gutter please refer to drawing in page A-Error! Bookmark not defined., A-Error! Bookmark not defined., A-Error! Bookmark not defined. and A-Error! Bookmark not defined.

Before starting with the gutter installation, install the gutter junction bloc at each junction of the lane frame see Diagram IN-H66-039-007A page A-161 and picture 1 and 2 page A-192.

Standard Installation (Without Bumper):

Start with the short section in front of the machine, use screw #8 x 2" to screw down the section there is holes in the bottom of the rail. Push the gutter against the lane before screwing it. (See picture #9 page A-194)

Layout the second section and screw it in place, insert the decorative molding. Repeat those operations for each other section, except for the last one. For the last one don't put the screw at the fall line, raise the end of the gutter in order to be able to insert the last section of the decorative molding, push far enough to be able to put the last screw of the gutter. (See picture #10 and 11 in page A-196)

Push back the molding against the approach, on the last 6" of the molding in front of the kickback use silicone to glue in place the molding. (See picture #12 in page A-198)

Installation with Bumper:

The gutter are ship with the bumper rail already insert in the gutter.



Start with the short section in front of the machine. Raise the rail in order to be able to screw the section in place, push the gutter section against the lane. (See **picture #13 page A-199**)

Layout the other section of the gutter, attach the bumper rail together using the plastic rivet, beware to insert the rivet on the side that the hole has the c bore. Use a C clamp to insert the rivets (See **picture 5 page A-194**).

Fix all the others section up to the last one at the approach. On the last section insert a 9" (228mm) long decorative molding before screwing the section in place, once the gutter section is fixing, use silicone to glue in place the decorative molding. Insert an 18" (457mm) decorative molding in the short gutter section in front of the kickback, use silicone to glue it in place.

Installation with Automatic Bumper: Option available only with BES scoring system

Before you start installing the gutter, you must run the air hoses under the lane from the back of the unit.

The first step is to install the activation kit, located in the first lane frame section between the second and third transversal support, it must be mount flush with the top of the transversal support and in a manner that the activation arm is located at $\frac{3}{4}$ " (19mm) from the sub lane. (See **picture 3 and 4 page A-193**). Once the activation kit is in place, complete the air connections before installing the gutter.

Start with the short section in front of the machine. Raise the rail in order to be able to screw the section in place, push the gutter section against the lane.

Layout the other section of the gutter, attach the bumper rail together using the plastic rivet, beware to insert the rivet on the side that the hole has the c bore. Use a C clamp to insert the rivets. (See **pictures 5 page A-194**)

Fix all the others section up to the last one at the approach.

Layout the last gutter section, attach the activation arm to the bumper rail using the plastic rivet, beware to insert the rivet on the side that the hole has the c bore. Use a C clamp to insert the rivets. (See **picture 6 and 7 page A-194**)

Insert a 9" (228mm) long decorative molding in the section close to the approach.

Screw the gutter in place using the hole in the bottom of the rail.

In order to adjust the activation arm and to have it synchronize with the others arm, loosen the two screw that fix the activation kit to his frame, close the rail and tight the screw.(See **Picture 8 page A-195**) Verify the movement of the rail and repeat the adjustment if necessary.

Once everything is tight, glue the decorative molding using silicone.

Insert an 18" (457mm) decorative molding in the short gutter section in front of the kickback, use silicone to glue it in place.

Step 8

Lane panels installation

Drawing IN-H66-039-009 page A-163

Layout the lane panel as show in the diagram, center each panel on top of the sub lane starting with the foul line and the second panel.

At each panel joint, the front panel must be higher then the second refer to **detail B in the diagram**.

Use screw #10 x 1 1/2" to screw the panels don't over tight it, cover the screw with the provided plastic cap.

Each joint must be sealed with silicone in order to prevent any liquid reaching the wood when the lanes are cleaning.

Install panels for both lanes first, and then proceed with the approach filler.

Important

With every optional lane section, you will have a panel of 60" (1829mm) and one of 12" (305mm), the short panel must be install between the last and second last panel.



Once all panels are installed, install the black plastic block in the gutter at the approach.

At this time, install the plastic molding at the back of the lane in the pit area. (See diagram [IN-H66-039-010](#) page A-164). That molding must be flush with the top of the lane, make any necessary adjustments.

Step 9

Capping and Ball Return Installation

See Diagram [IN-H66-039-008](#) page A-162

Install the ball return common plank. (Item #1)

Install the small capping 2 ¾" (Item #6), start with the short section (Item #5) in front of the kickback.

Install the short capping on the front of the kickback (see detail A)

Install the ball return capping as show in detail B of the diagram.

Insert all decorative molding in both the ball return and in the 2 ½" capping.

At the foul line in the ball return capping, the decorative molding must be cut in order to make space for the tunnel bracket. See diagram [IN-H66-039-013](#) page A-168 detail A, for the exact dimension of the trim.

Install the ball detector and their reflector as show in detail C of the diagram.

Step 10

Masking Unit Installation

Start by installing the masking unit post; refer to diagram [IN-H66-039-011](#) page A-166 for the position of these posts.

Look at detail C for fixing the post.

Refer to diagram [IN-H66-Q100-4500](#) page A-174 and [IN-H66-122-4600](#) page A-175 for the detailed assembly of the masking unit.

Install the Pit Lights fluorescent as show in Detail A in diagram [IN-H66-MEB03-001](#) page A-176

Step 11

Ball Rack Installation

Refer Drawing [IN-H66-039-013](#) page A-168 and [IN-H66-122-3000-R1](#) page A-172.

Assembly the ball rack as show in diagram [IN-H66-122-3000-R1](#), but at this time doesn't install the drop track (Item #6), the ball cover (item #4) and the tunnel (Item #5).

Place the assembly perfectly inline with the ball return and perfectly center with on the approach, drill pilot holes at the bottom of the drop at the foul line. Trace the inside of the hood with a pen that trace will guide you for the installation of the wooden consol positioning plate (Item #7 of drawing [IN-H66-039-013](#)).

Remove the ball rack and fix the wooden consol positioning plate at the position you had trace before.

Install the ball rack at his place and use screw item #13 and 14 of drawing [IN-H66-122-3000-R1](#) so secure it in place. Once the ball rack is fix in place, install the molding (Item #1 of drawing [IN-H66-039-012](#) page A-167) that cover the gap under the ball rack between the approach panel.

Install the drop track (Item #6) and the ball cover (Item #4) as show in diagram [IN-H66-122-3000-R1](#).

Install the two bottom ball rack tunnel bracket on the ball return capping at the foul line as show in detail A



of diagram [IN-H66-039-13](#). (Note that you have to trim the decorative molding)
Install the tunnel using the bolts and nuts as show in the diagram [IN-H66-039-13](#).

Step 12

Approach Side Panel Installation

Refer Drawing [IN-H66-039-012](#) page A-167.

Start with the side from the foul line, with item #4, the plastic molding must be flush with the top of the approach, so be sure to adjust the high of the panel before you fixing it in place.

Counter sink 6 holes per side panel refer to **detail B of drawing [IN-H66-039-006A](#) page A-159** use drywall screw #6 x 1 5/8".

Item #5 in front of the approach must be cut to fit each side of the Ball return Hood.

Install the finishing molding of the 2 3/4" capping (Item #11) and the one of the ball track (Item #12 and 13)

Step 13

Lateral Safety Guard Installation (Optional)

The kit includes 6 sections, start by assembling 3 sections with their legs, use the approach leg for the first section. Refer to **diagram [IN-Q200-1010-40](#) page A-173** for details.

Fix the first 3 sections on the side of the lane as show in **diagram [IN-H66-039-014](#) page A-169**, then fix the last 3 sections, install the decals as show in the same diagram.

Step 14

Scoring Connections

Refer to **drawing [IN-ME-B03-003](#) and [IN-ME-B03-004](#) page A-179 and A-180** to make all connections.

Step 15

Union Kit Installation

Drawing [IN-H66-039-025](#) page A-170 and [IN-H66-039-026](#) page A-171

When you multiple unit to install you must use the union kit, to make the joint between two units.

Install the monitors post as show in **detail C of the diagram [IN-H66-039-025](#) page A-170**, note that you have to install only one post between two units.

Cut the lane side panel in two long parts; screw those parts on the side of the lane at 1 1/8" from top of the lane. Once you have those parts screw in place screw the union finishing panel on top of those parts. (See **Detail B of the diagram [IN-H66-039-025](#) page A-170**)

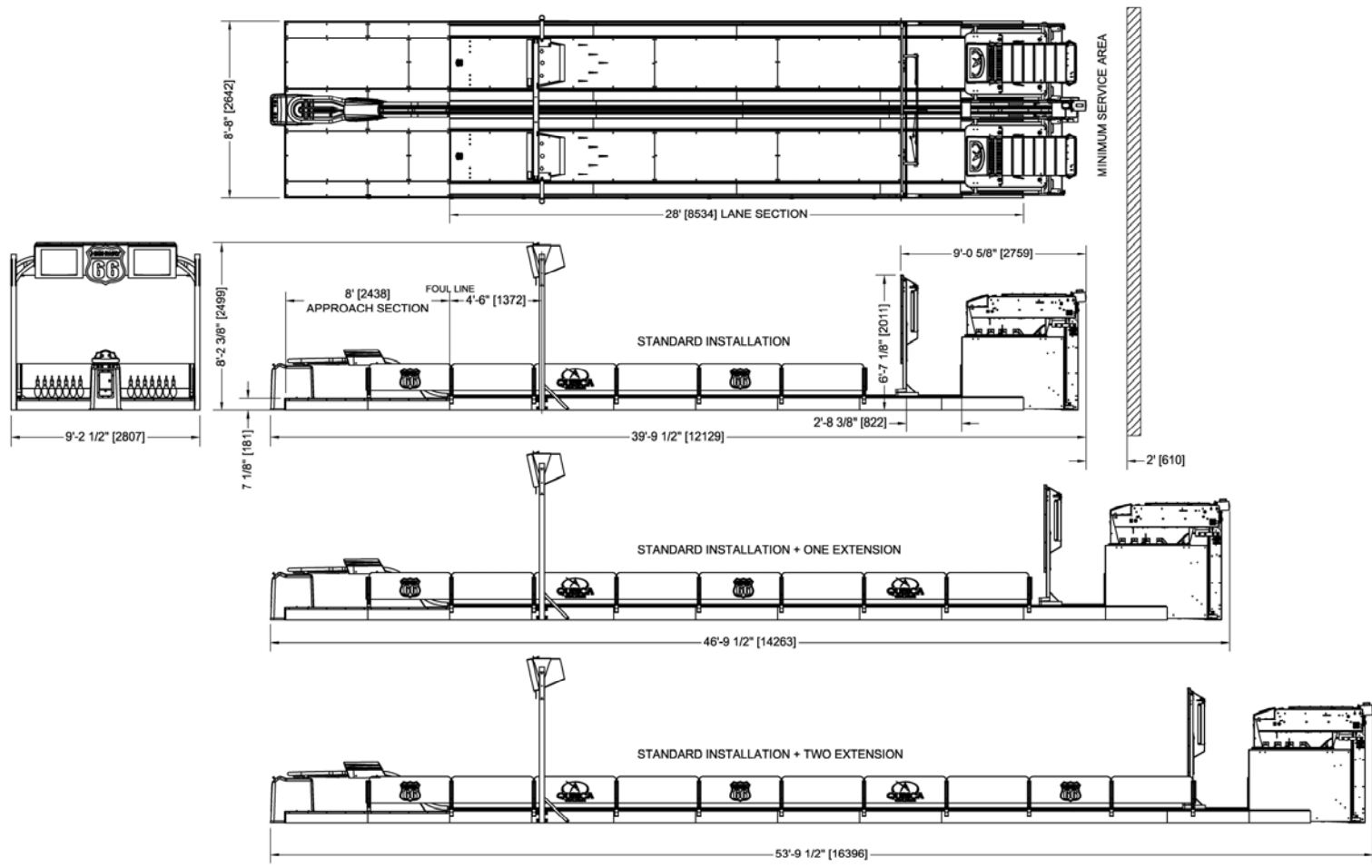
On the approach frame you have to move the sleeper on each frame that make the union, (See **Detail A of the diagram [IN-H66-039-025](#) page A-170**).

Install the approach union panel support item #2 as show in **detail B of drawing [IN-H66-039-026](#) page A-171**.

Install the pit frame union plank item #6 as show in **detail A of drawing [IN-H66-039-026](#) page A-171**.


Once the kickback are all installed, screw in place the front kickback union panel item #7.



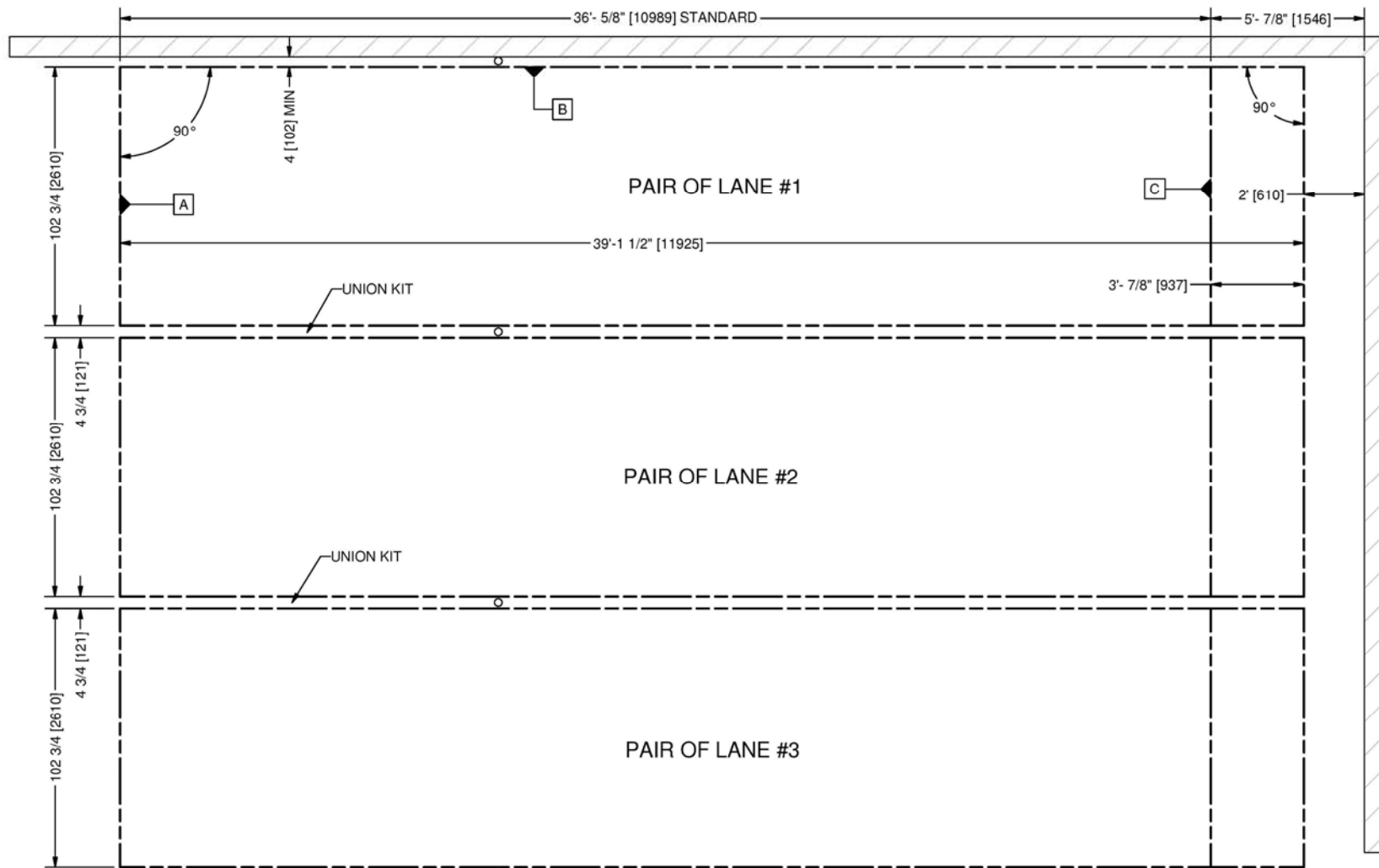


ADDITIONAL LANE SECTION: 7'-0" [2.14m]
 WEIGHT PER PAIR OF LANES: 2545Kg [5600Lb]
 VOLUME PER PAIR OF LANE: 15.8m³
 8 LANES CAN BE LOAD IN A 40' CONTAINER (HIGH CUBE)

Design and specification are subject to change without notice.

	HIGHWAY 66 GENERAL LAYOUT		REV. 2
	DRAFTSMAN: R.DE BLUZE	SCALE: 1:50	DRAWINGS NO.: HIGHWAY66_39+7+7
DATE: 16/06/2004	APPROBATION: C.S.		PAGE 1/1





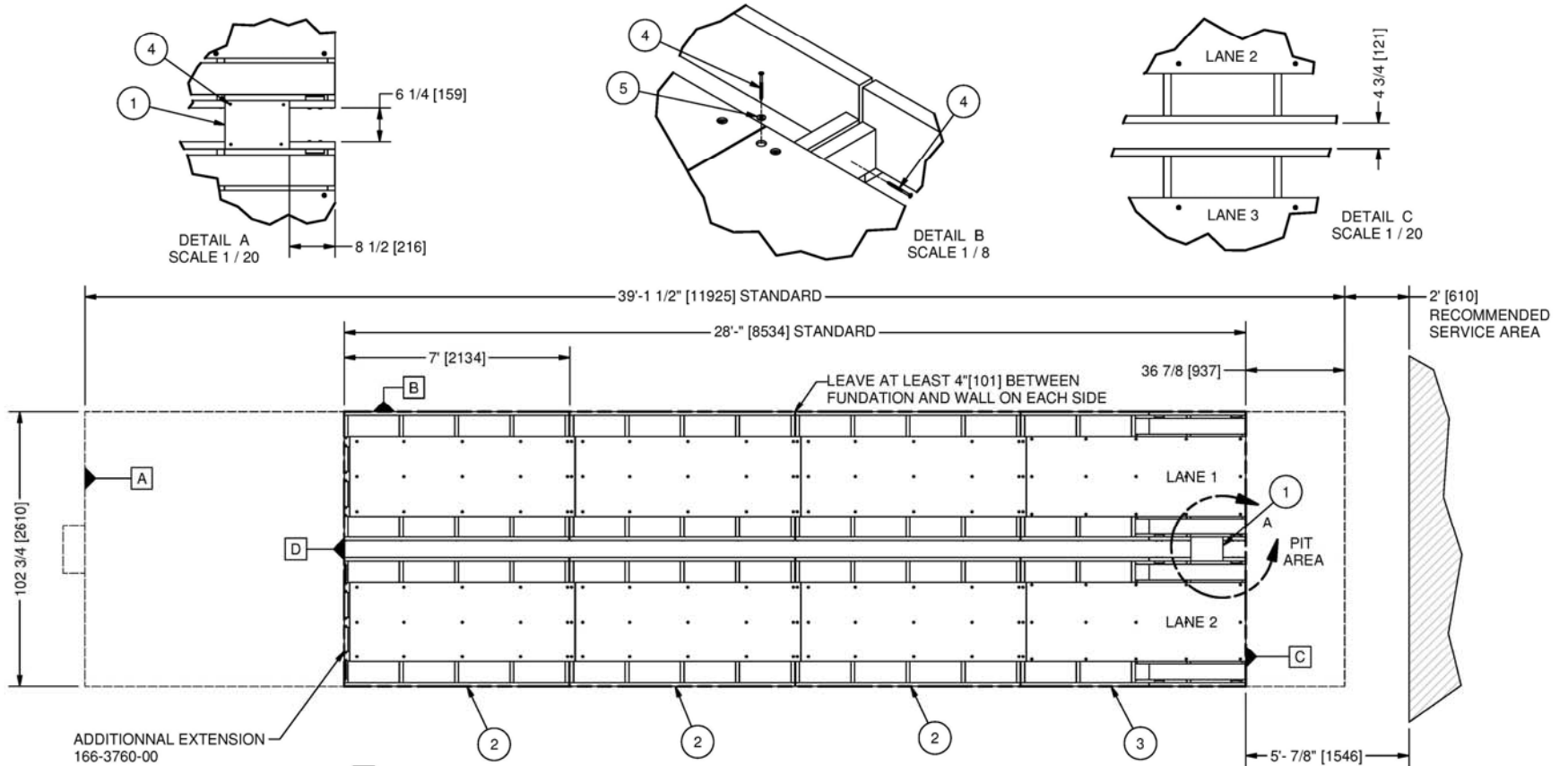
Design and specification are subject to change without notice.



DRAFTSMAN: R. DE BLUZE DATE: 04/10/2004		SCALE: N/A	DRAWING NO.: IN-H66-039-000
		APPROBATION: C.S.	

REV. 0
PAGE 1/1





- A** -CORRESPOND TO THE START OF THE APPROACH AREA
- B** -CORRESPOND TO OUT SIDE EDGE OF HIGHWAY 66 UNIT, MUST BE EXACTLY AT 90° OF **A**
- C** -CORRESPOND TO LINE THAT DELIMITS THE END OF THE PIT FONDATION, MUST BE PARALLEL TO **A**
- D** -EACH ADDITIONAL LANE SECTION LENGHT: 7'-0" [2134]

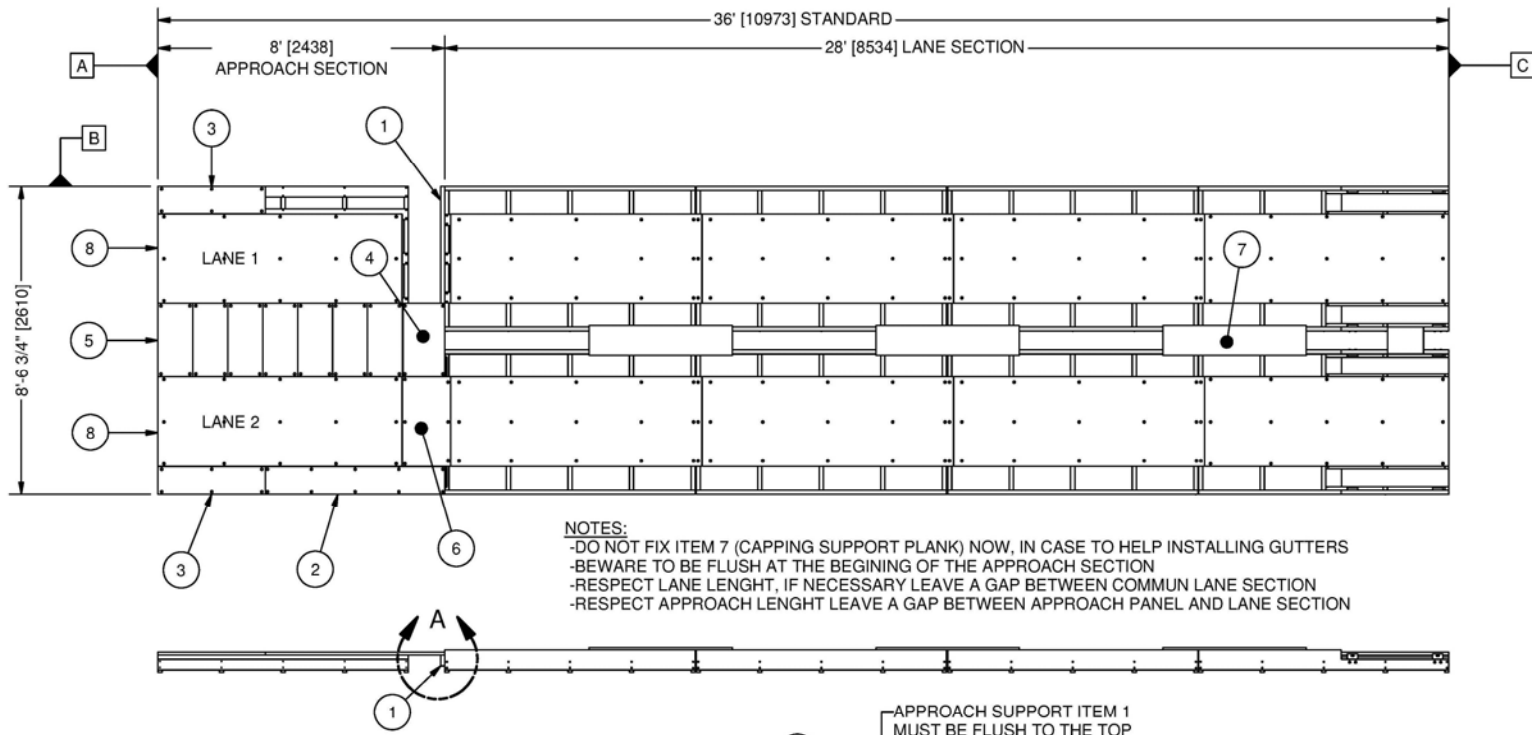
PARTS LIST PER PAIR OF LANE			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	106-3850-00	PIT UNION PLANK	1
2	166-3760-00	LANE FRAME	6
3	166-3770-00	PIT FRAME	2
4	7026-311000-250	#10 X 2 1/2 SELF DR SCW FH SOCK	120
5	7050-028062-006	9/32 X 5/8 X 1/16 FLAT WASHER	106

Design and specification are subject to change without notice.

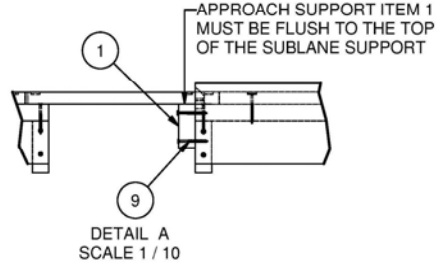


HIGHWAY 66 FONDATION INSTALLATION			REV.
DRAFTSMAN: R.DE BLUZE	SCALE: 1:40	DRAWING NO: IN-H66-039-001	0
DATE: 30/08/2004	APPROBATION: C.S.		PAGE 1/1





NOTES:
 -DO NOT FIX ITEM 7 (CAPPING SUPPORT PLANK) NOW, IN CASE TO HELP INSTALLING GUTTERS
 -BEWARE TO BE FLUSH AT THE BEGINING OF THE APPROACH SECTION
 -RESPECT LANE LENGTH, IF NECESSARY LEAVE A GAP BETWEEN COMMUN LANE SECTION
 -RESPECT APPROACH LENGHT LEAVE A GAP BETWEEN APPROACH PANEL AND LANE SECTION



PARTS LIST PER PAIR OF LANE

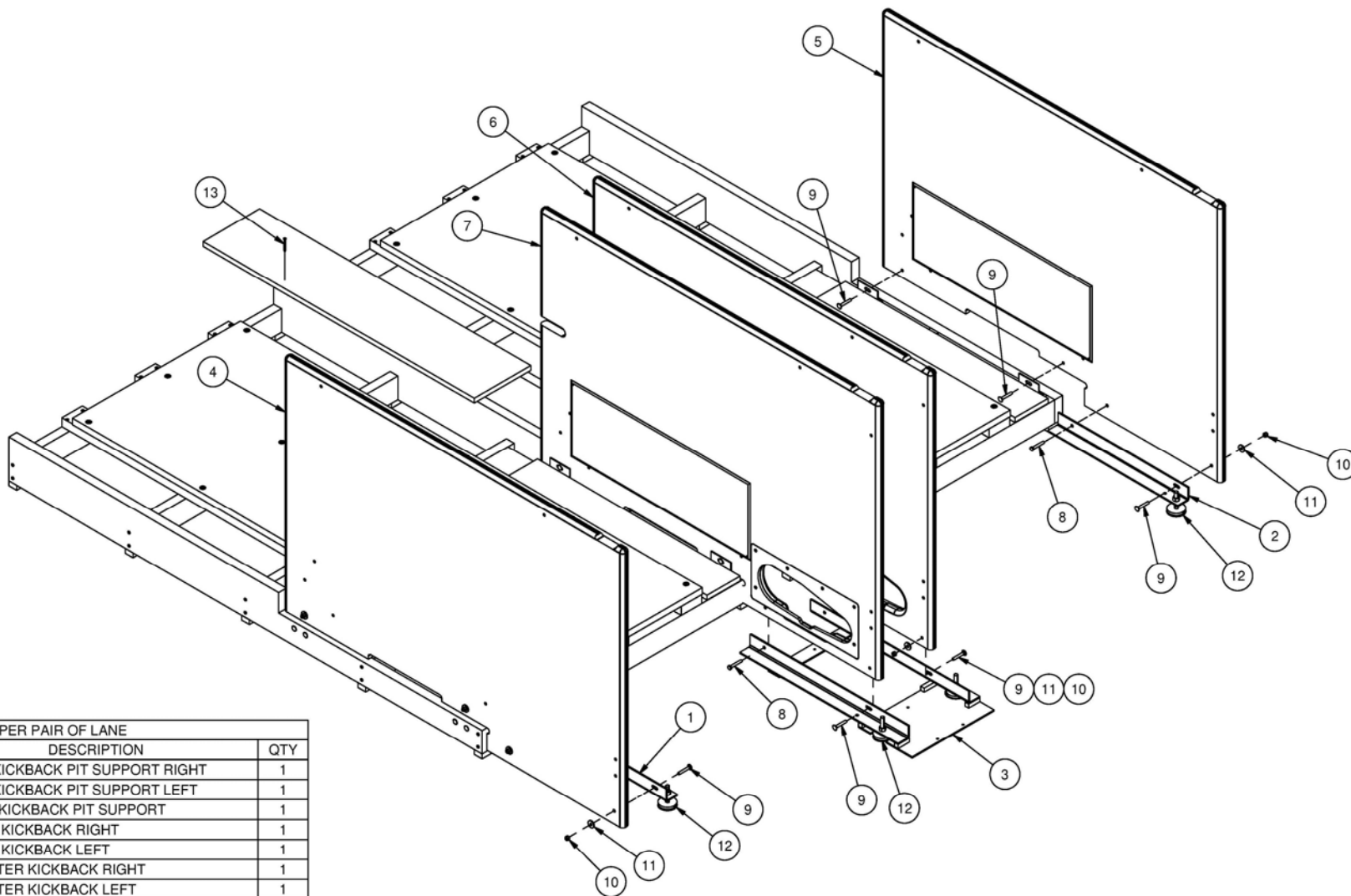
ITEM	PART NUMBER	DESCRIPTION	QTY
1	106-3765-00	APPROACH SUPPORT	2
2	106-3775-00	SIDE SUBLANE APPROACH LONG	2
3	106-3780-00	SIDE SUBLANE APPROACH SHORT	2
4	106-3785-00	APPROACH FILLER UNION	1
5	106-3790-00	COMMON APPROACH FILLER	7
6	106-3795-00	LINK APPROACH TO LANE	2
7	106-3870-00	BALL RETURN COMMON PLANK	6
8	166-3750-00	APPROACH FRAME	2
9	7026-311000-250	#10 X 2 1/2 SELF DR SCW FH SOCK	120

Design and specification are subject to change without notice.



HIGHWAY 66 FONDATION INSTALLATION				REV. 0
DRAFTSMAN: R.DE BLUZE	SCALE: 1:40	DRAWING NO.: IN-H66-039-002		PAGE 1/1
DATE: 31/08/2004	APPROBATION: C.S.			





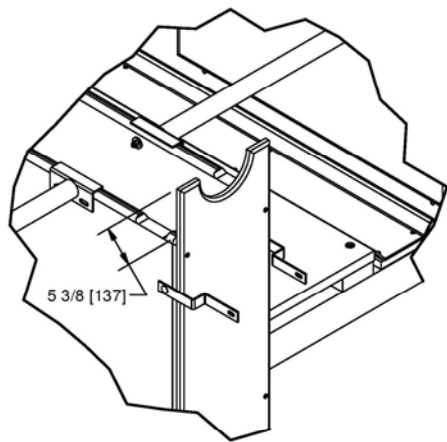
PARTS LIST PER PAIR OF LANE			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	102-3800-00	SINGLE KICKBACK PIT SUPPORT RIGHT	1
2	102-3805-00	SINGLE KICKBACK PIT SUPPORT LEFT	1
3	102-3810-00	DOUBLE KICKBACK PIT SUPPORT	1
4	106-3800-00	H66 EXT. KICKBACK RIGHT	1
5	106-3805-00	H66 EXT. KICKBACK LEFT	1
6	106-3810-00	H66 CENTER KICKBACK RIGHT	1
7	106-3815-00	H66 CENTER KICKBACK LEFT	1
8	7010-003118-200	5/16-18 UNC X 2 HEX CAP SCREW	4
9	7012-003118-200	5/16-18 UNC X 2 CARRIAGE BOLT	34
10	7036-003118-000	HEX NYLON NUT 5/16-18 UNC	49
11	7050-034100-012	11/32 X 1 X 1/8 FLAT WASHER	45
12	9802531	LEVELING FOOT	4
13	7022-310800-200	#8 X 2 WOOD SCW FH SOCK	50

Design and specification are subject to change without notice.

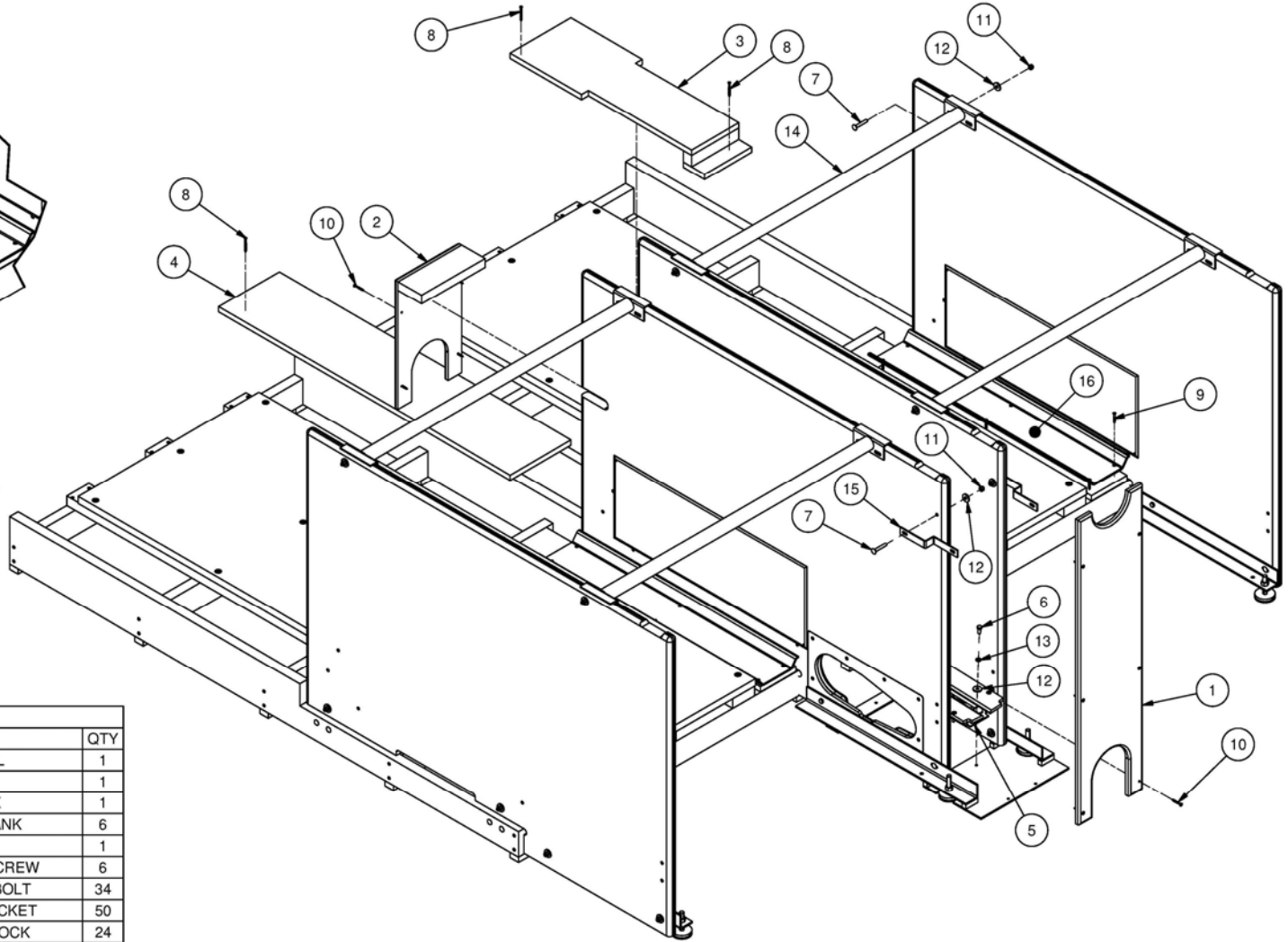


HIGHWAY 66 KICKBACK INSTALLATION			REV. 0
DRAFTSMAN: R.DE BLUZE	SCALE: N/A	DRAWING NO.:	PAGE
DATE: 10/09/2004	APPROBATION:	IN-H66-039-003	1/1





DETAIL A
SCALE 1 / 10



PARTS LIST PER PAIR OF LANE

ITEM	PART NUMBER	DESCRIPTION	QTY
1	106-3820-00	ELEVATOR/KICKBACK PANEL	1
2	106-3830-00	FRONT KICKBACK PANEL	1
3	106-3860-00	BALL RETURN START PLANK	1
4	106-3870-00	BALL RETURN COMMON PLANK	6
5	122-3815-00	BALL TRACK FRAME ASS'Y	1
6	7010-003118-075	5/16-18 UNC X 3/4 HEX CAP SCREW	6
7	7012-003118-200	5/16-18 UNC X 2 CARRIAGE BOLT	34
8	7022-310800-200	#8 X 2 WOOD SCREW FH SOCKET	50
9	7022-311000-150	#10 X 1 1/2 WOOD SCW FH SOCK	24
10	7023-410800-150	#8 X 1 1/2 ROUND WASHER HEAD SC	24
11	7036-003118-000	HEX NYLON NUT 5/16-18 UNC	49
12	7050-034100-012	11/32 X 1 X 1/8 FLAT WASHER	45
13	7060-031057-009	5/16" LOCK WASHER	4
14	M-0540-08	MAIN CROSS SUPPORT	4
15	M-0701-99	ELEVATOR SIDE BRACKET	2
16	P-0009-41	HIGHWAY 66 FLAT GUTTER	4

Design and specification are subject to change without notice.

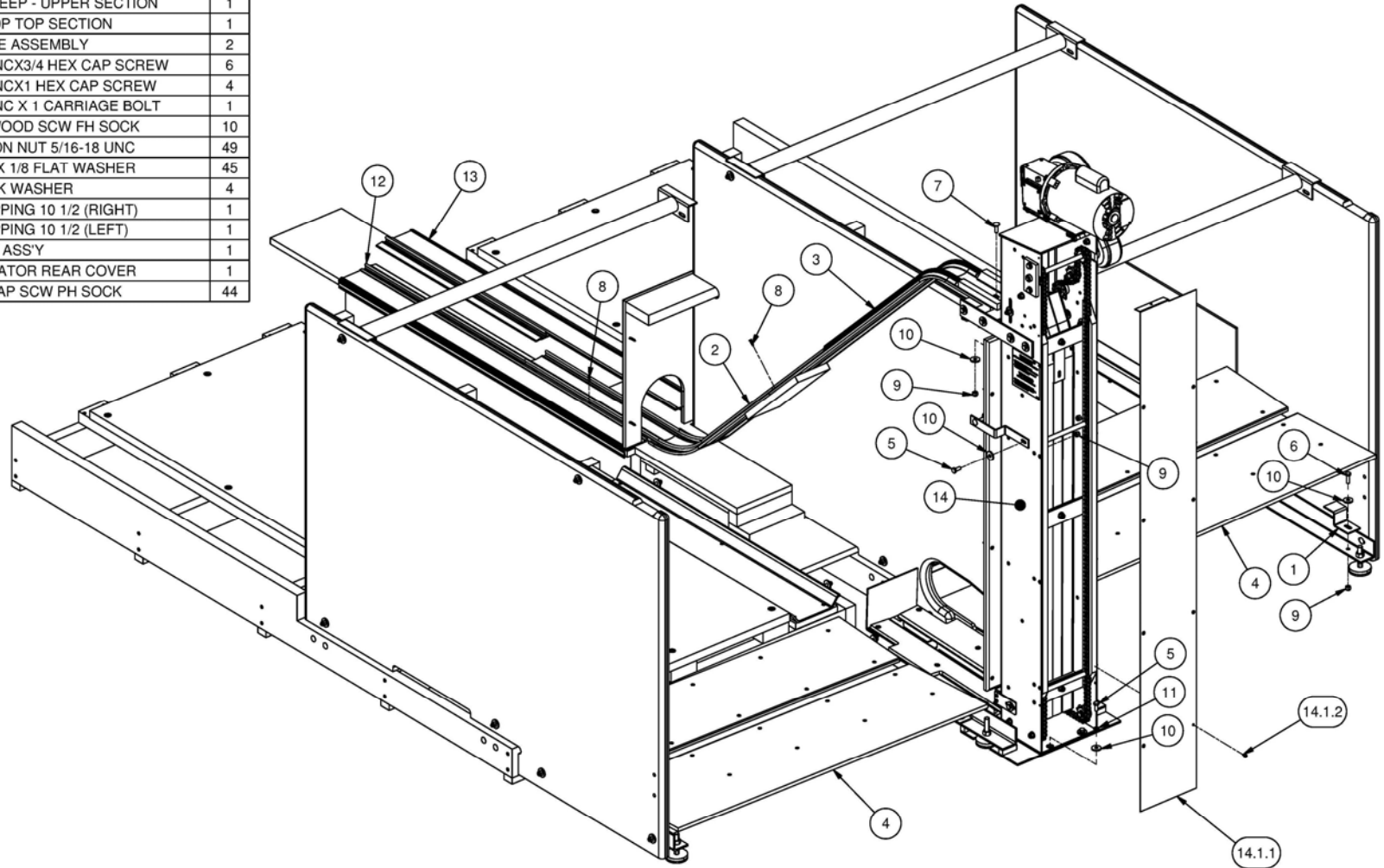


HIGHWAY 66 PIT INSTALLATION STEP 1


DRAFTSMAN:	R.DE BLUZE	SCALE:	N/A	DRAWING NO.:	IN-H66-039-004	REV.	0
DATE:	10/09/2004	APPROBATION:	C.S.			PAGE	1/1



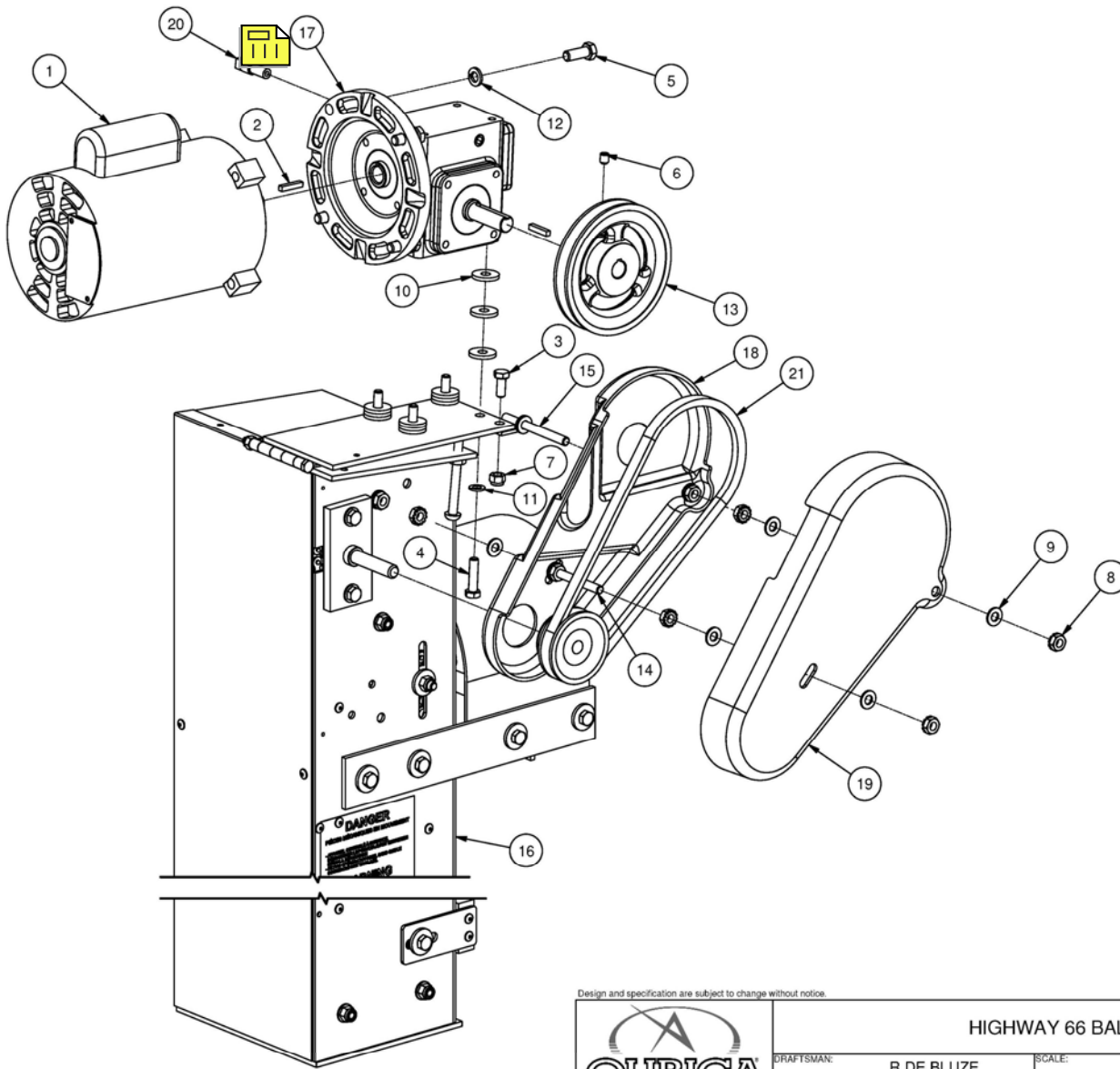
PARTS LIST			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	102-3830-00	PIT RETAINING BRACKET	4
2	108-3810-00	DROP SWEEP - UPPER SECTION	1
3	108-3820-00	BALL DROP TOP SECTION	1
4	166-3950-00	PIT FRAME ASSEMBLY	2
5	7010-003118-075	5/16-18 UNC X 3/4 HEX CAP SCREW	6
6	7010-003118-100	5/16-18 UNC X 1 HEX CAP SCREW	4
7	7012-003118-100	5/16-18 UNC X 1 CARRIAGE BOLT	1
8	7022-310800-075	#8 X 3/4 WOOD SCW FH SOCK	10
9	7036-003118-000	HEX NYLON NUT 5/16-18 UNC	49
10	7050-034100-012	11/32 X 1 X 1/8 FLAT WASHER	45
11	7060-031057-009	5/16" LOCK WASHER	4
12	Q89-0320-48-4	HALF CAPPING 10 1/2 (RIGHT)	1
13	Q89-0320-48-7	HALF CAPPING 10 1/2 (LEFT)	1
14.1	M-0701-30	BALL LIFT ASS'Y	1
14.1.1	M-0701-96	H66 ELEVATOR REAR COVER	1
14.1.2	7024-710800-050	#8 X 1/2 TAP SCW PH SOCK	44



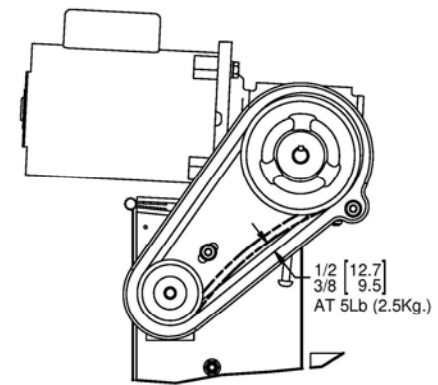
Design and specification are subject to change without notice.

	HIGHWAY 66 BALL ELEVATOR AND PIT INSTALLATION		REV. 0
	DRAFTSMAN: R.DE BLUZE	SCALE: N/A	DRAWING NO.: IN-H66-039-005A
DATE: 13/09/2004	APPROBATION: C.S.		PAGE 1/1





Parts List			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	301-1200-00	ELECTRIC MOTOR 208/230 VAC 1/2	1
2	302-2410-00	KEYWAY 3/16	2
3	7010-003118-075	5/16-18 UNC X 3/4 HEX CAP SCREW	1
4	7010-003118-125	5/16-18 UNC X 1/4 HEX CAP SCREW	4
5	7010-003716-100	3/8-16 UNC X 1 HEX CAP SCREW	4
6	7014-003118-037	5/16-18 UNC X 3/8 SET SCREW	2
7	7036-003118-000	HEX NYLON NUT 5/16-18 UNC	1
8	7038-003118-000	5/16-18 UNC HEX KEEP NUT	9
9	7050-034068-006	11/32 X 11/16 X 1/16 FLAT WASHER	11
10	7050-034100-012	11/32 X 1 X 1/8 FLAT WASHER	12
11	7060-031057-009	5/16" LOCK WASHER	4
12	7060-037067-010	3/8" LOCK WASHER	4
13	M-0700-21-2	PULLEY MA50X5/8	1
14	M-0700-29	THREADED ROD	1
15	M-0700-29-1	PULLEY GUARD BRACKET	1
16	M-0701-30	BALL LIFT ASS'Y	1
17	M-BMQ1133-3	MOTOR REDUCER	1
17.1	M-BMQ1133-17	OUTPUT SEAL	1
17.2	M-BMQ1133-18	INPUT SEAL	1
18	P-0700-100	PULLEY GUARD (INNER)	1
19	P-0700-101	PULLEY GUARD (OUTER)	1
20	P-1133-3	REDUCER VENT	1
21	R-0700-01	V-BELT	1

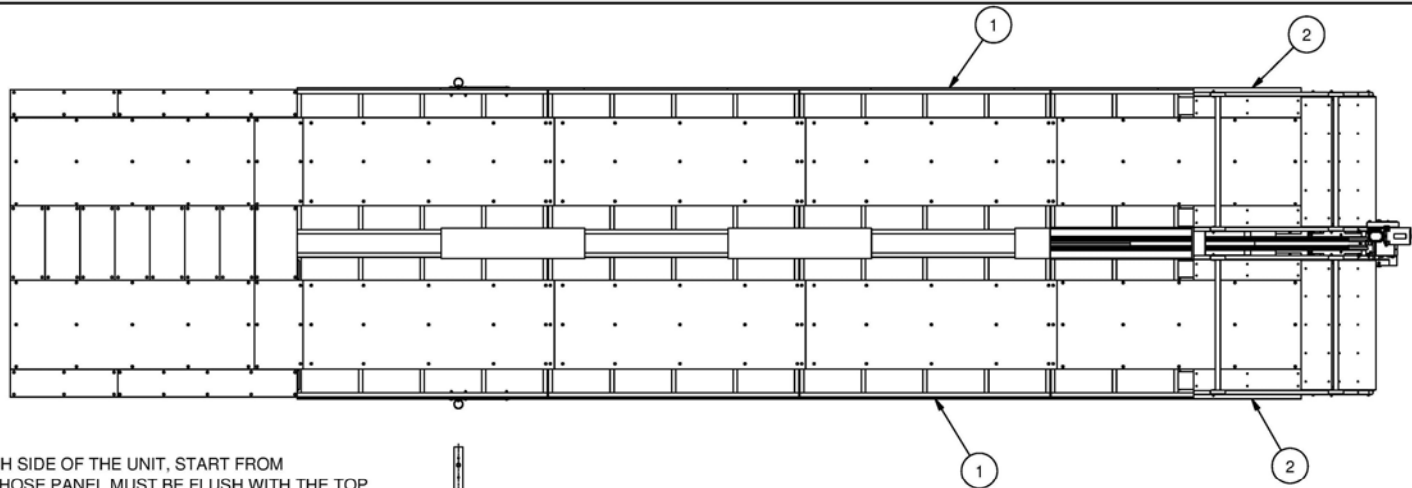


V-BELT ADJUSTMENT
SCALE 1 / 5

Design and specification are subject to change without notice.

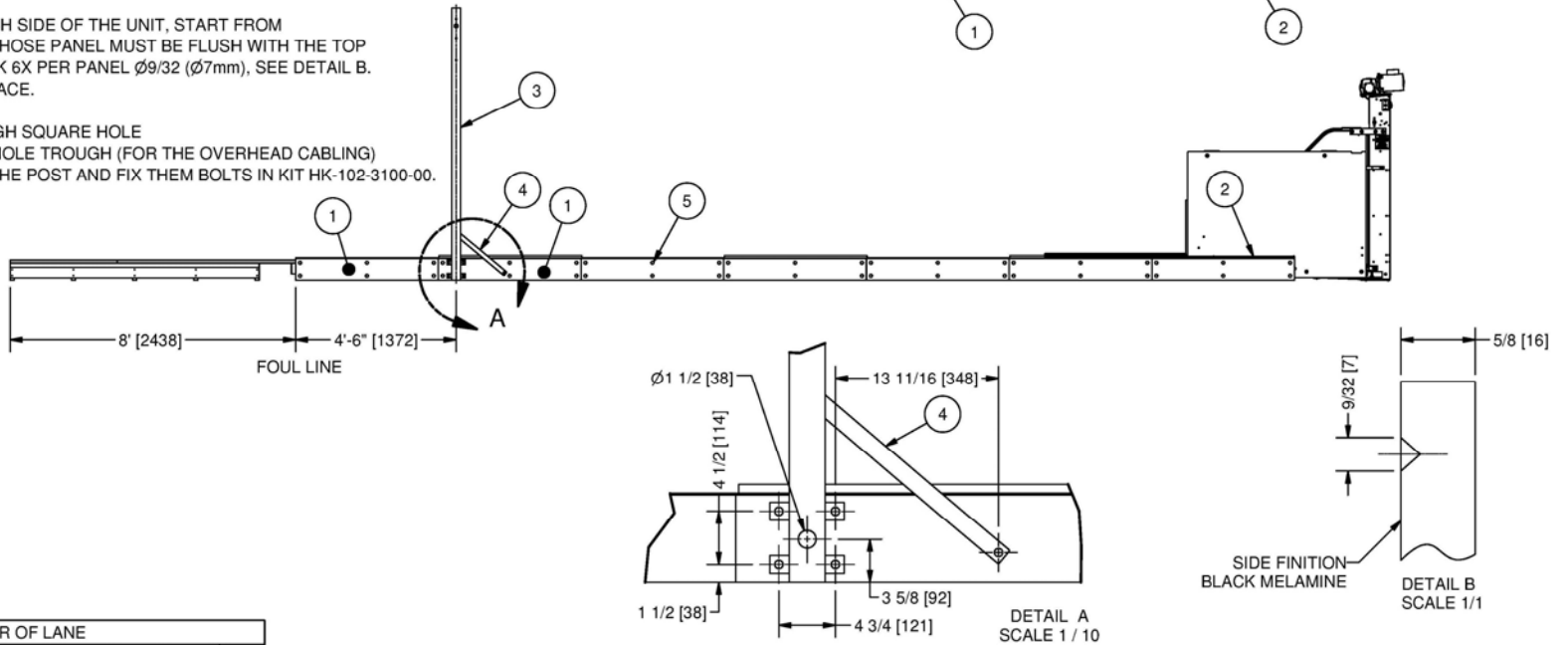
	HIGHWAY 66 BALL ELEVATOR MOTOR INSTALLATION		REV. 0
	DRAFTSMAN: R.DE BLUZE	SCALE:	DRAWING NO.: IN-H66-039-005B
DATE: 13/09/2004	APPROBATION: C.S.		PAGE 1/1





NOTE:

- INSTALL SIDE BLACK FINISH PANEL EACH SIDE OF THE UNIT, START FROM THE FOUL LINE AND UP TO THE BACK. THOSE PANEL MUST BE FLUSH WITH THE TOP OF THE SINGLE DIVISION. COUNTERSINK 6X PER PANEL $\phi 9/32$ ($\phi 7\text{mm}$), SEE DETAIL B.
- PRE-ASSEMBLE THE POST AND THE BRACE.
- POSITION IT AS SHOWN BELOW
- USE A $\phi 11/32$ ($\phi 9\text{mm}$) AND DRILL TROUGH SQUARE HOLE
- USE A $\phi 1/2$ ($\phi 38\text{mm}$) AND DRILL ONE HOLE TROUGH (FOR THE OVERHEAD CABLING)
- USE A CARPENTER LEVEL TO ADJUST THE POST AND FIX THEM BOLTS IN KIT HK-102-3100-00.



PARTS LIST PER PAIR OF LANE			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	106-3980-00	LANE SIDE PANEL	14
2	106-3985-00	SIDE END MOULDING	2
3	102-3100-01	MONITOR SUPPORT POST	2
4	102-3160-01	OVERHEAD BRACE	2
5	7422-340600-162	#6 X 1 5/8 DRYWALL SCW PHOSPHATE	170

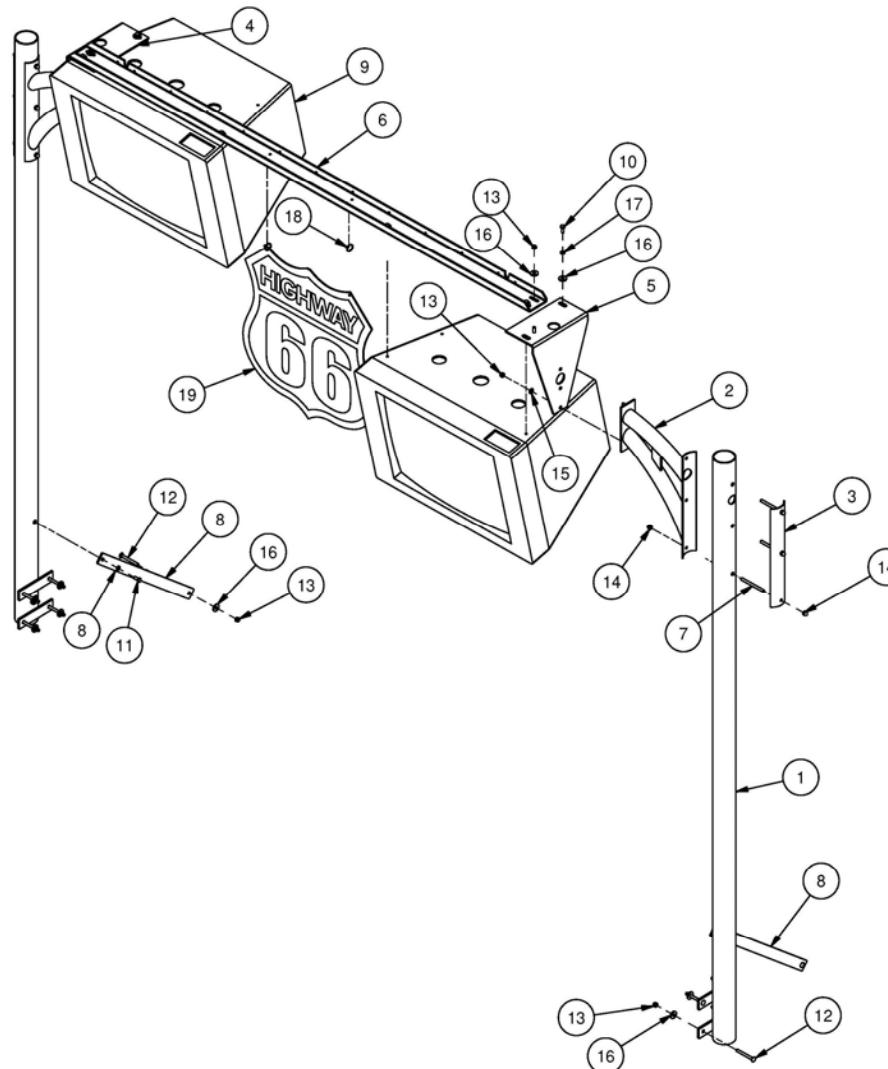
Design and specification are subject to change without notice.



HIGHWAY 66 SIDE FINITION AND OVERHEAD POST INSTALLATION				REV.
DRAFTSMAN:	R.DE BLUZE	SCALE:	N/A	0
DATE:	14/09/2004	APPROBATION:	C.S.	PAGE
DRAWING NO.:			IN-H66-039-006A	1/1



PARTS LIST PER PAIR OF LANE			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	102-3100-01	MONITOR SUPPORT POST	2
2	102-3110-00	MONITOR SUPPORT	2
3	102-3120-00	MONITOR SUPPORT CLAMP	2
4	102-3130-00	MONITOR BRACKET RIGHT	1
5	102-3135-00	MONITOR BRACKET LEFT	1
6	102-3140-00	OVERHEAD CHANNEL	1
7	102-3150-00	THREAD ROD	6
8	102-3160-01	OVERHEAD BRACE	2
9	511-2800-00	MONITOR 28" W/CABINET	2
10	7010-000813-075	M8-1.5 X 20 HEX CAP SCREW	6
11	7010-003118-075	5/16-18 UNC X 3/4 HEX CAP SCREW	2
12	7012-003118-300	5/16-18 UNC X 3 CARRIAGE BOLT	10
13	7036-003118-000	HEX NYLON NUT 5/16-18 UNC	18
14	7037-003118-000	HEX CAP NUT 5/16-18 UNC	12
15	7050-034068-006	11/32 X 11/16 X 1/16 FLAT WASHER	6
16	7050-034100-012	11/32 X 1 X 1/8 FLAT WASHER	18
17	7060-031057-009	5/16" LOCK WASHER	8
18	E-056	CABLE TIES	2
19	Z-HW66-003	HIGHWAY PANEL	1



Design and specification are subject to change without notice.

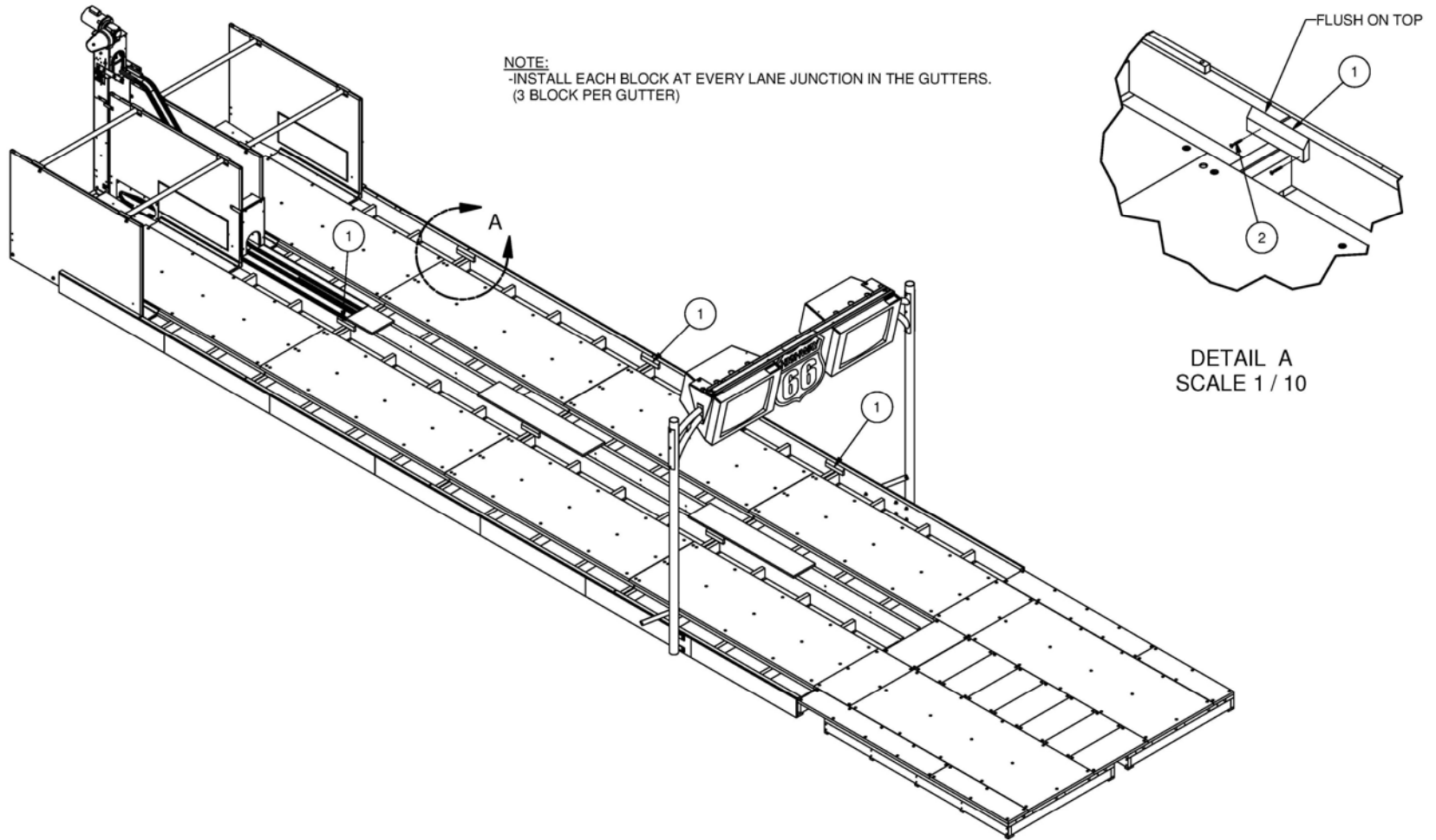


HIGHWAY 66 OVERHEAD INSTALLATION SHEET

DRAFTSMAN:	R.DE BLUZE	SCALE:	N/A	DRAWING NO.:	IN-H66-039-006B
DATE:	14/09/2004	APPROBATION:	C.S.		

REV.	0
PAGE	1/1





NOTE:
-INSTALL EACH BLOCK AT EVERY LANE JUNCTION IN THE GUTTERS.
(3 BLOCK PER GUTTER)

DETAIL A
SCALE 1 / 10

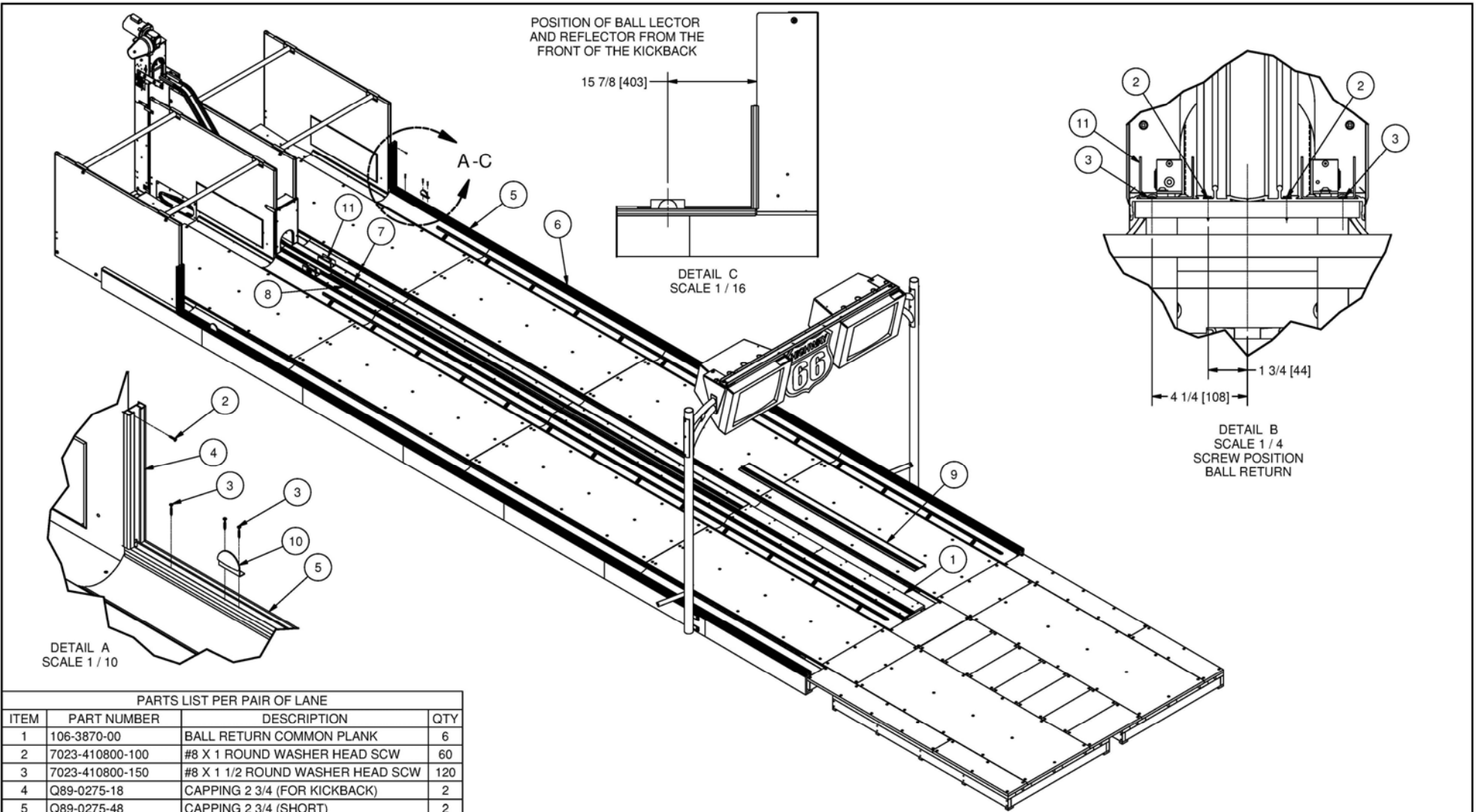
Design and specification are subject to change without notice.

PARTS LIST PER PAIR OF LANE			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	106-3755-00	GUTTER JUNCTION BLOCK	12
2	7026-311000-150	#10 x 1 1/2 SELF DR SCW FH SOCK	24



HIGHWAY 66 GUTTER JUNCTION BLOCK INSTALLATION				REV.
DRAFTSMAN: R.DE BLUZE		SCALE: N/A		0
DATE: 20/09/2004		APPROBATION: C.S.		PAGE 1/1
DRAWING NO: IN-H66-039-007A				





PARTS LIST PER PAIR OF LANE

ITEM	PART NUMBER	DESCRIPTION	QTY
1	106-3870-00	BALL RETURN COMMON PLANK	6
2	7023-410800-100	#8 X 1 ROUND WASHER HEAD SCW	60
3	7023-410800-150	#8 X 1 1/2 ROUND WASHER HEAD SCW	120
4	Q89-0275-18	CAPPING 2 3/4 (FOR KICKBACK)	2
5	Q89-0275-48	CAPPING 2 3/4 (SHORT)	2
6	Q89-0275-84	CAPPING 2 3/4 (COMMUN)	6
7	Q89-0320-48-4	HALF CAPPING 10 1/2 (RIGHT)	1
8	Q89-0320-48-7	HALF CAPPING 10 1/2 (LEFT)	1
9	Q89-0320-84	HALF CAPPING 10 1/2 (COMMON)	6
10	SB-102-3920-00	BALL REFLECTOR ASSEMBLY	2
11	SB-102-3930-00	BALL LECTOR ASSEMBLY	2

Design and specification are subject to change without notice.



HIGHWAY 66 CAPPING AND BALL LECTOR DETECTOR INSTALLATION

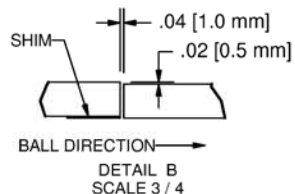
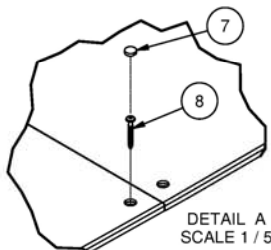
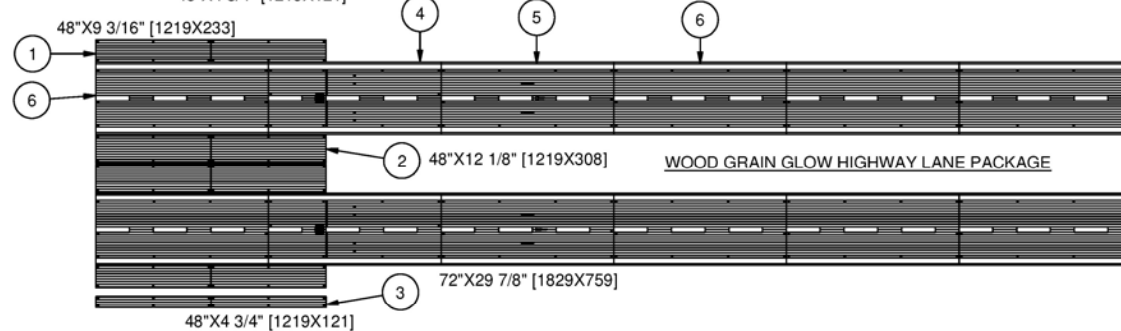
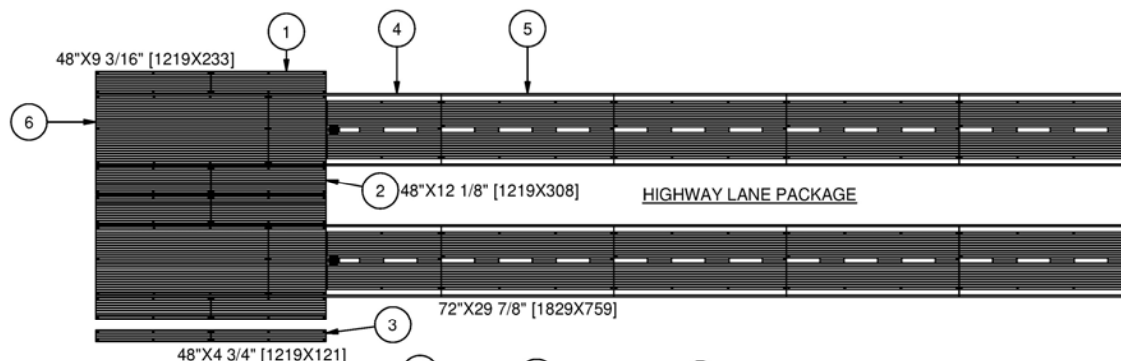
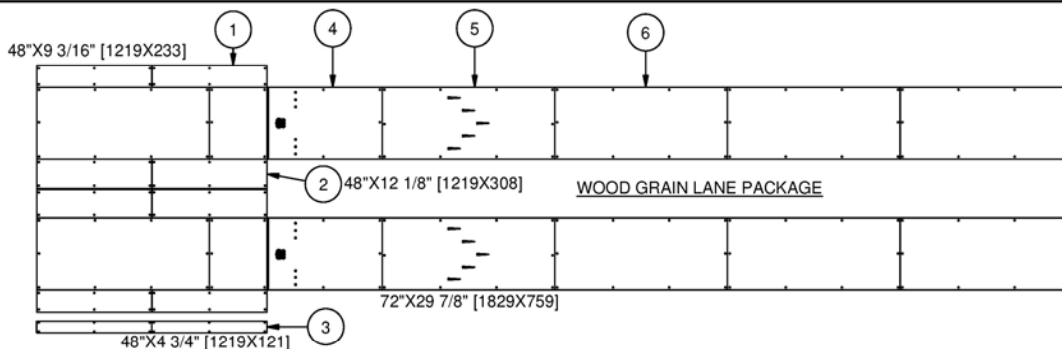
DRAFTSMAN:	R.DE BLUZE	SCALE:	N/A	DRAWING NO.:	IN-H66-039-008	REV.	0
DATE:	20/09/2004	APPROBATION:	C.S.			PAGE	1/1



WOOD GRAIN LANE PACKAGE Q94-1650			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	Q94-1652-2	H66 WOOD SIDE DIVISION PANEL	4
2	Q94-1652-3	H66 WOOD CENTER APPROACH PANEL	4
3	Q94-1652-4	H66 APPROACH UNION KIT	2
4	Q94-1653	H66 WOOD FOUL LINE PANEL	2
5	Q94-1654	H66 WOOD ARROW PANEL	2
6	Q94-1655	H66 WOOD COMMUN PANEL	8
7	Q94-1667	H66 WOOD LANE PLUG	200
8	Q94-1668	LANE SCREW #10X1 1/2	200

HIGHWAY LANE PACKAGE Q94-1760			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	Q94-1762-2	H66 BLACK SIDE DIVISION PANEL	4
2	Q94-1762-3	H66 BLACK CENTER APPROACH PANEL	4
3	Q94-1762-4	H66 APPROACH UNION KIT	2
4	Q94-1763	HIGHWAY FOUL LINE PANEL	2
5	Q94-1765	HIGHWAY COMMUN PANEL	8
6	Q94-1766	H66 BLACK APPROACH & COMMUN PANEL	2
7	Q94-1767	H66 BLACK LANE PLUG	200
8	Q94-1668	LANE SCREW #10X1 1/2	200

WOOD GRAIN GLOW LANE PACKAGE Q94-1670			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	Q94-1672-2	H66 WOOD SIDE DIVISION PANEL	4
2	Q94-1672-3	H66 WOOD SIDE DIVISION PANEL	4
3	Q94-1672-4	H66 WOOD GRAIN APPROACH UNION	2
4	Q94-1673	H66 CONVENTIONAL FOUL LINE PANEL	2
5	Q94-1674	H66 CONVENTIONAL ARROW PANEL	2
6	Q94-1675	H66 CONVENTIONAL COMMON PANEL	8
7	Q94-1667	H66 WOOD LANE PLUG	200
8	Q94-1668	LANE SCREW #10X1 1/2	200

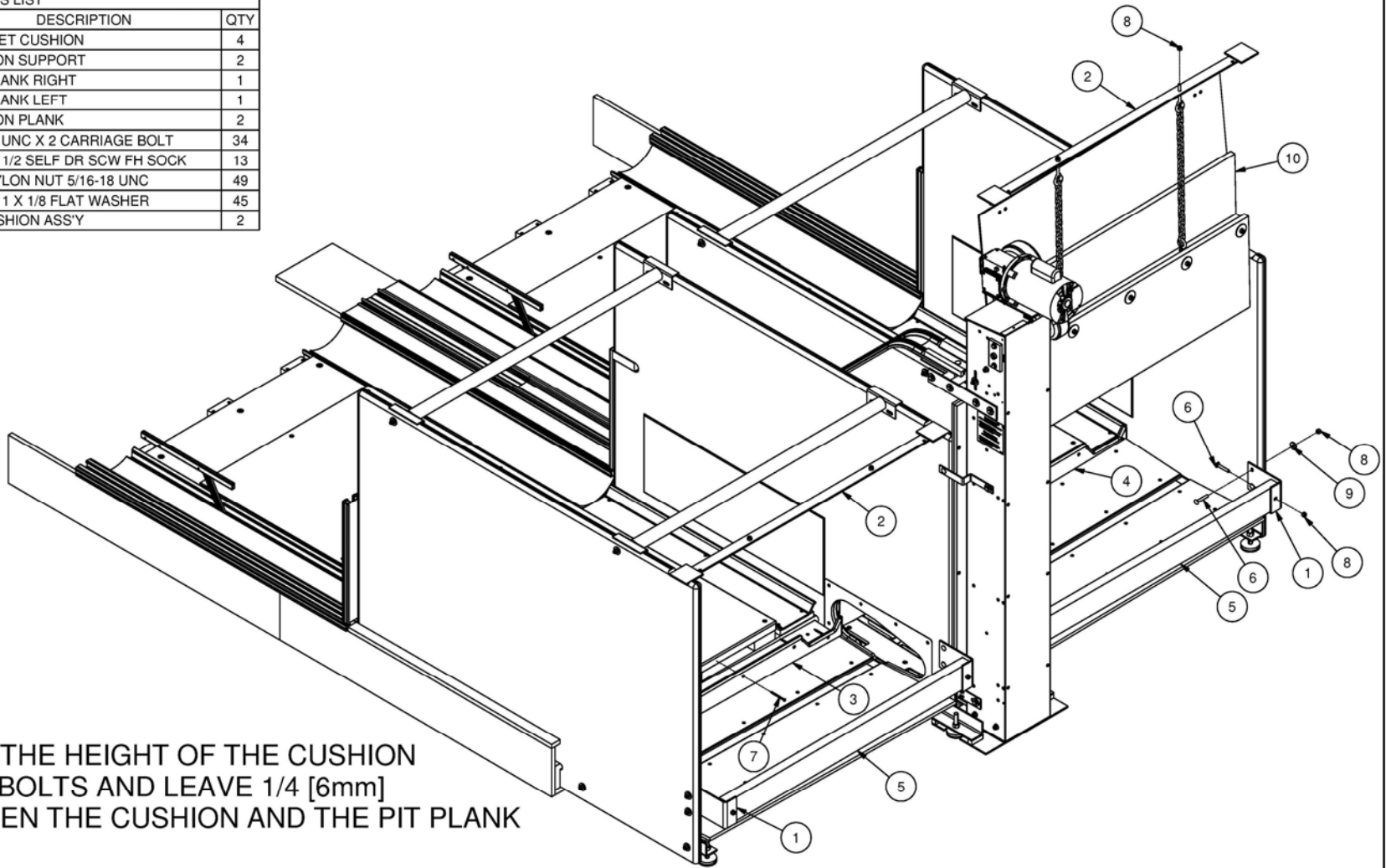


Design and specification are subject to change without notice.

	HIGHWAY 66 LANE PACKAGE LAYOUT		REV. 1
	DRAFTSMAN: R.DE BLUZE	SCALE:	PAGE 1 / 1
DATE: 16/05/2005	APPROBATION: C.S.	DRAWING NO.: IN-H66-039-009	



PARTS LIST			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	102-3900-00	BRACKET CUSHION	4
2	102-3910-00	CUSHION SUPPORT	2
3	103-3930-00	TAIL PLANK RIGHT	1
4	103-3935-00	TAIL PLANK LEFT	1
5	106-3900-00	CUSHION PLANK	2
6	7012-003118-200	5/16-18 UNC X 2 CARRIAGE BOLT	34
7	7026-311000-250	#10 X 2 1/2 SELF DR SCW FH SOCK	13
8	7036-003118-000	HEX NYLON NUT 5/16-18 UNC	49
9	7050-034100-012	11/32 X 1 X 1/8 FLAT WASHER	45
10	SB-0540-75	PIT CUSHION ASS'Y	2



NOTE: ADJUST THE HEIGHT OF THE CUSHION WITH THE EYEBOLTS AND LEAVE 1/4 [6mm] SPACE BETWEEN THE CUSHION AND THE PIT PLANK

Design and specification are subject to change without notice.



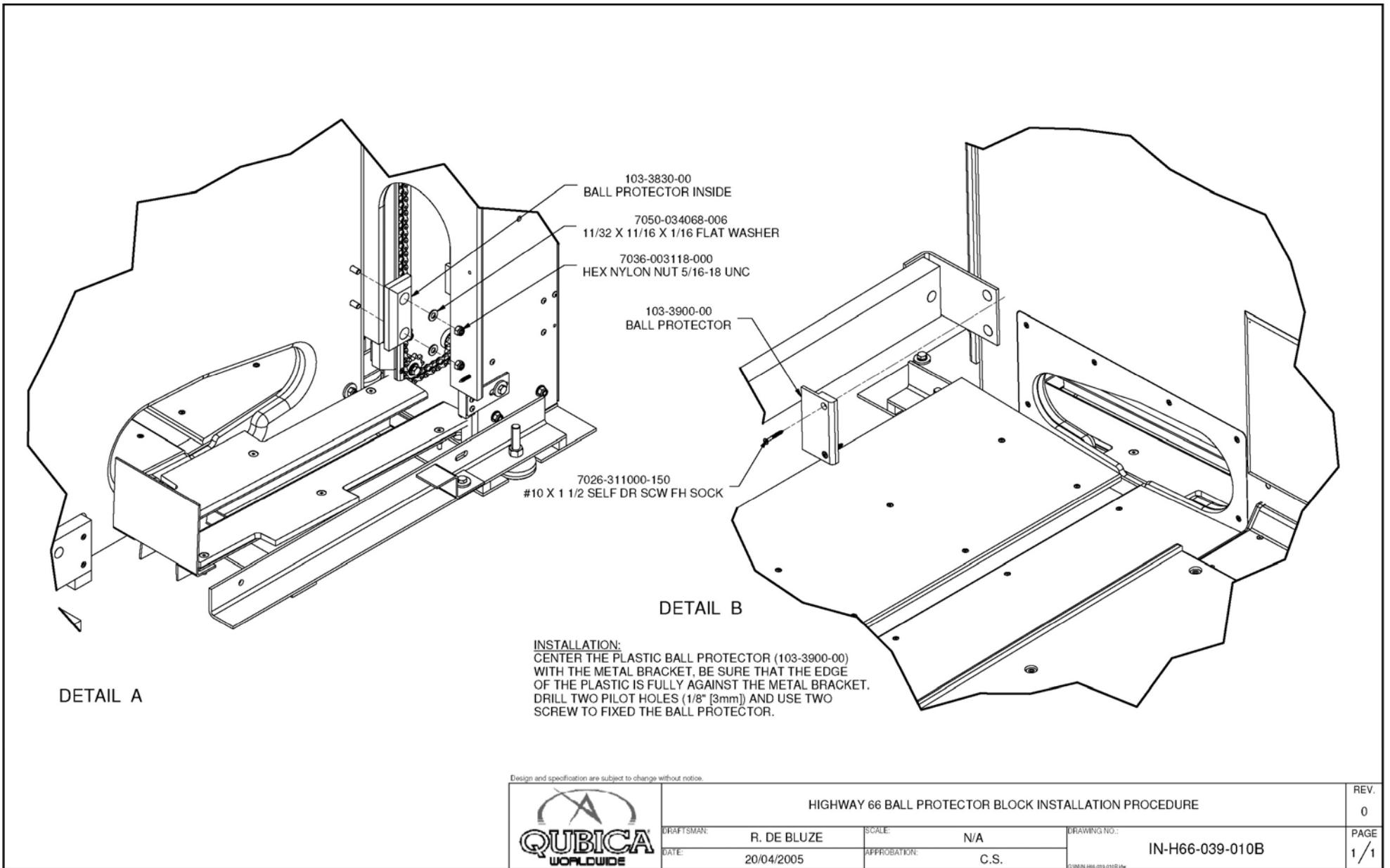
HIGHWAY 66 CUSHION AND TAIL PLANK INSTALLATION

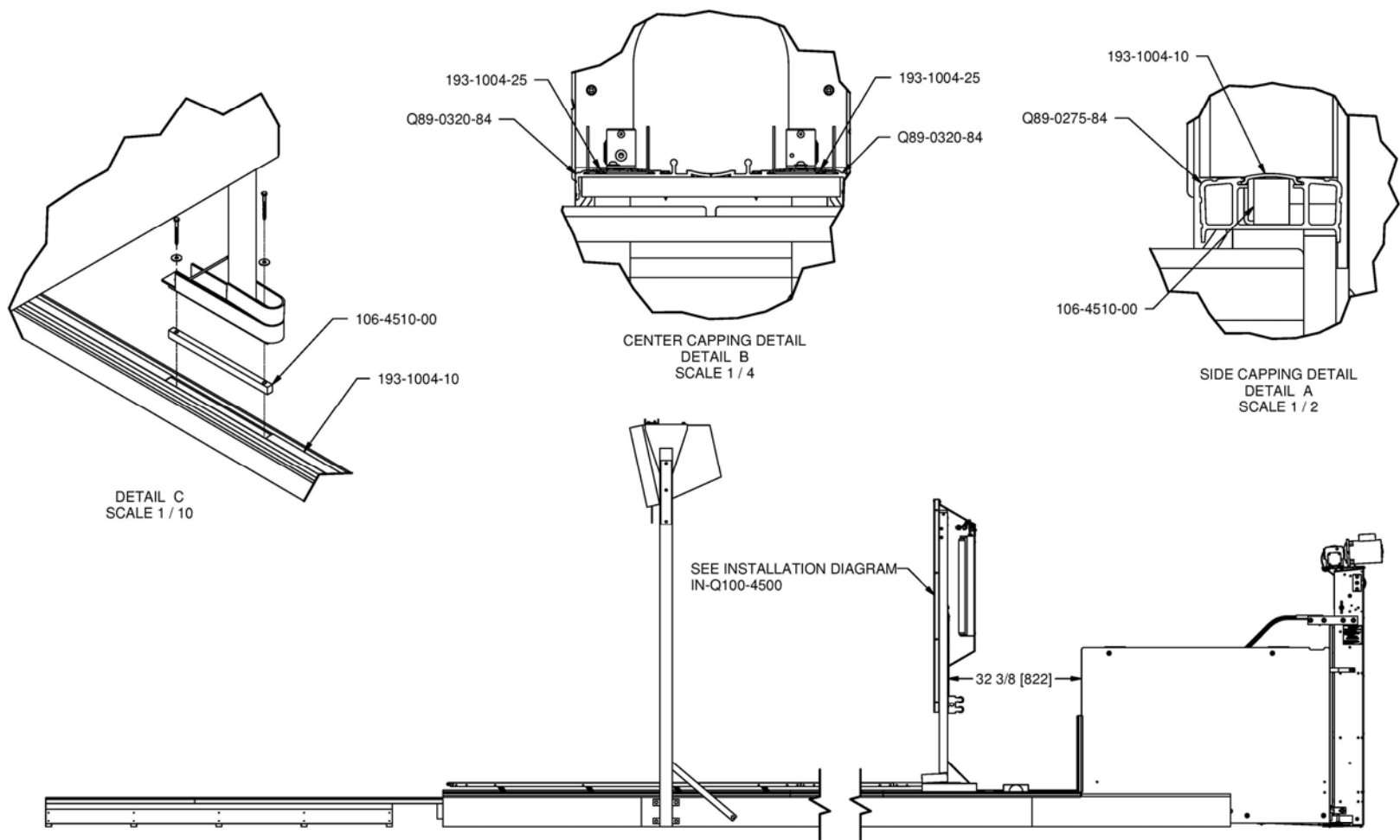
DRAFTSMAN:	R.DE BLUZE	SCALE:	N/A
DATE:	16/09/2004	APPROBATION:	C.S.

DRAWING NO.:	IN-H66-039-010
--------------	----------------


REV.	0
PAGE	1/1



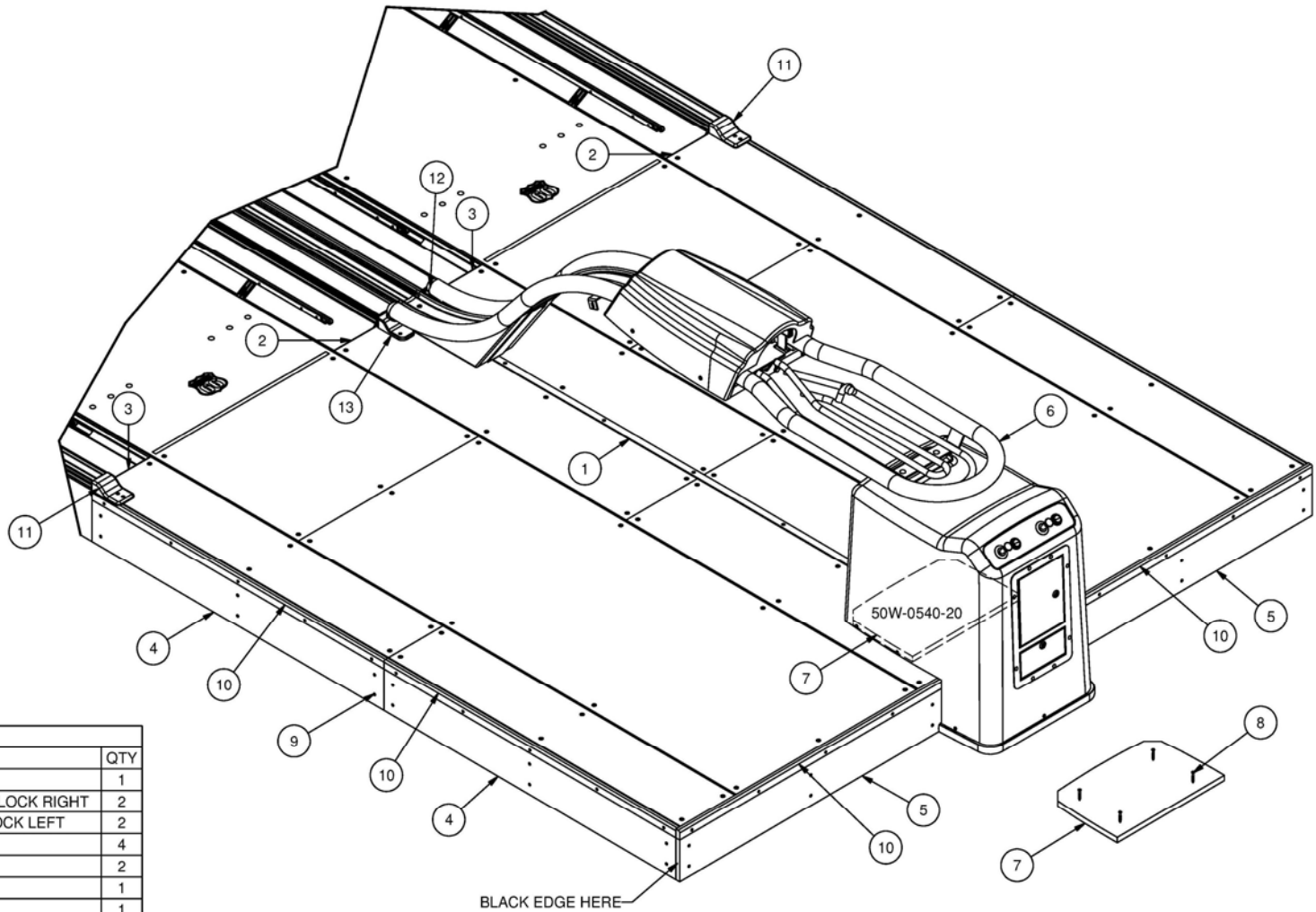




Design and specification are subject to change without notice.

	HIGHWAY 66 MASKING & CAPPING MOULDING INSTALLATION		REV. 0
	DRAFTSMAN: R.DE BLUZE	SCALE: 1:25	DRAWING NO.:
DATE: 21/09/2004	APPROBATION: C.S.	IN-H66-039-011	
			PAGE 1/1





PARTS LIST PER PAIR OF LANE

ITEM	PART NUMBER	DESCRIPTION	QTY
1	102-3090-00	H66 APPROACH MOLDING	1
2	103-3060-00	HW66 FOUL LINE ADAPTOR BLOCK RIGHT	2
3	103-3065-00	H66 FOUL LINE ADAPTOR BLOCK LEFT	2
4	106-3970-00	APPROACH SIDE PANEL	4
5	106-3975-00	FRONT APPROACH PANEL	2
6	122-3000-00	HOOD & RACK ASSY	1
7	50W-0540-20	CONSOLE POSITIONNER	1
8	7026-311000-150	#10 X 1 1/2 FLAT HEAD WOOD SC	4
9	7422-340600-162	#6 X 1 5/8 DRYWALL SCW PHOSPHATE	170
10	P-0540-04	APPROACH MOLDING	6
11	Q89-0009-1	CASTING 2 3/4	2
12	Q89-0009-2	FOUL LINE ADAPTOR RIGHT	1
13	Q89-0009-3	FOUL LINE ADAPTOR LEFT	1

Design and specification are subject to change without notice.



HIGHWAY 66 BALL RACK CONSOLE INSTALLATION

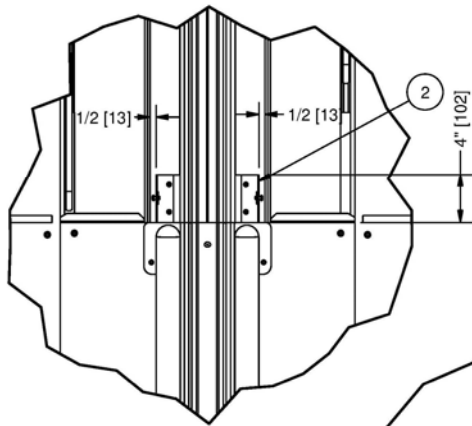
DRAFTSMAN: R.DE BLUZE
DATE: 21/09/2004

SCALE: N/A
APPROBATION: C.S.

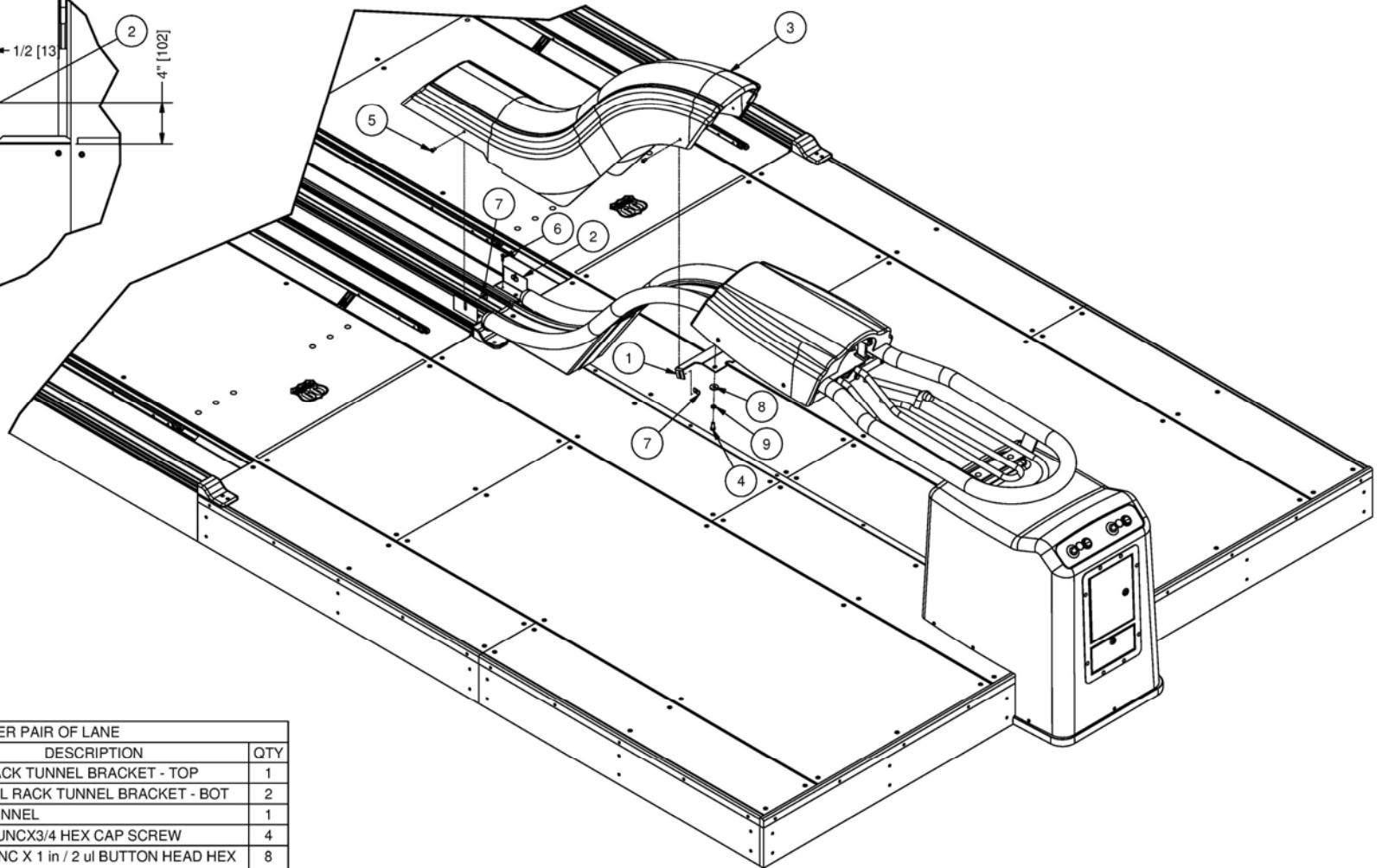
DRAWING NO.: IN-H66-039-012

REV. 0
PAGE 1/1





DETAIL A
SCALE 1 / 10
MOULDING CUTTING



PARTS LIST PER PAIR OF LANE

ITEM	PART NUMBER	DESCRIPTION	QTY
1	102-3200-00	BALL RACK TUNNEL BRACKET - TOP	1
2	102-3210-00	H66 BALL RACK TUNNEL BRACKET - BOT	2
3	103-3200-00	BALL TUNNEL	1
4	7010-003118-075	5/16-18 UNC X 3/4 HEX CAP SCREW	4
5	7018-5002520-050	1/4-20 UNC X 1 in / 2 ul BUTTON HEAD HEX SOCKET	8
6	7023-410800-100	#8 X 1 PARTICULE ROUND WASHER HEAD SCREW	4
7	7046-002520-000	1/4-20 UNC WELD NUT	8
8	7050-034100-012	11/32 X 1 X 1/8 FLAT WASHER	4
9	7060-031057-009	5/16\"/>	

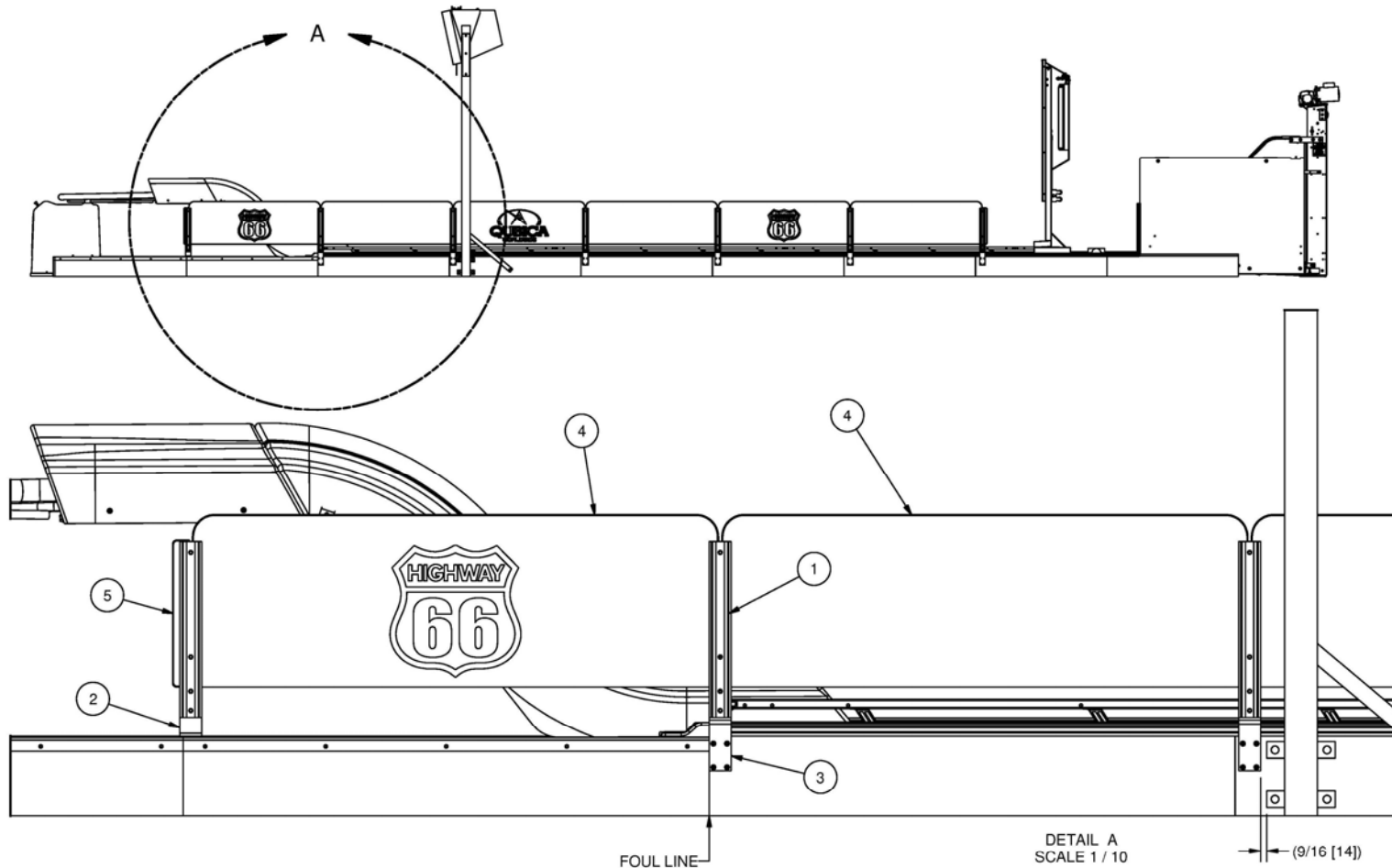
Design and specification are subject to change without notice.



HIGHWAY 66 BALL RACK TUNNEL INSTALLATION

DRAFTSMAN:	R.DE BLUZE	SCALE:	N/A	DRAWING NO.:	IN-H66-039-013	REV.	0
DATE:	29/09/2004	APPROBATION:	C.S.			PAGE	1/1





PARTS LIST Q200-1010-40, PER SIDE OF UNIT

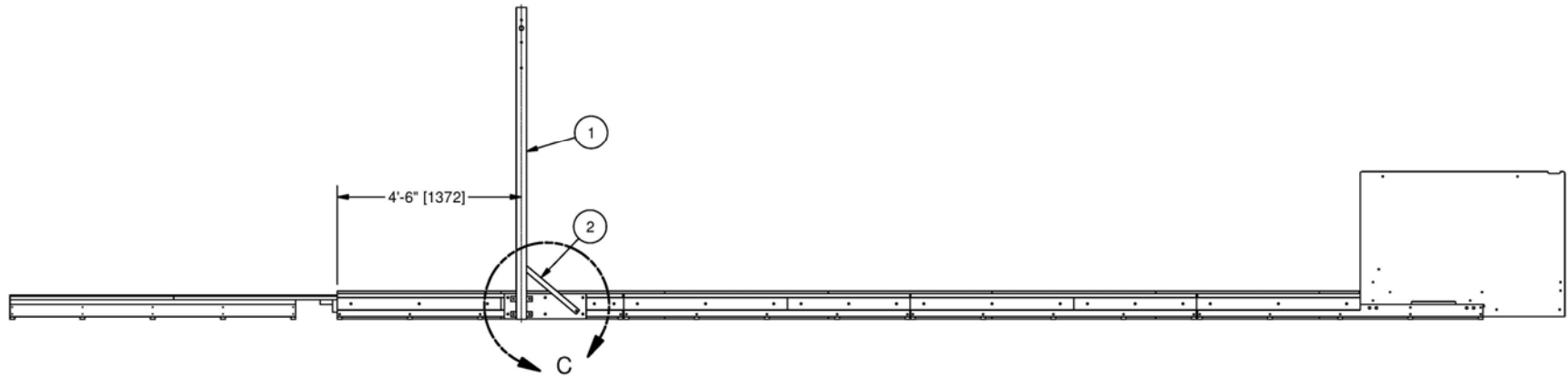
ITEM	PART NUMBER	DESCRIPTION	QTY
1	M-0540-100	SAFETY GUARD CLAMP	7
2	M-0540-110	SAFETY GUARD BRACKET (AP)	1
3	M-0540-120	SAFETY GUARD BRACKET (LANE)	6
4	P-0540-100	SAFETY GUARD GLASS	6
5	P-0540-110	SAFETY GUARD SPACER	2

Design and specification are subject to change without notice.

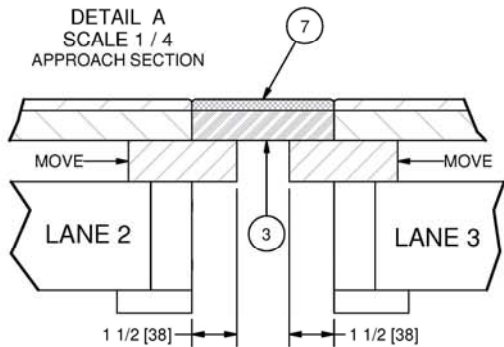


OPTION: HIGHWAY 66 LATERAL SAFETY GUARD INSTALLATION			REV. 0
DRAFTSMAN: R.DE BLUZE	SCALE: 1:40	DRAWING NO.:	PAGE 1/1
DATE: 29/09/2004	APPROBATION: C.S.	IN-H66-039-014	

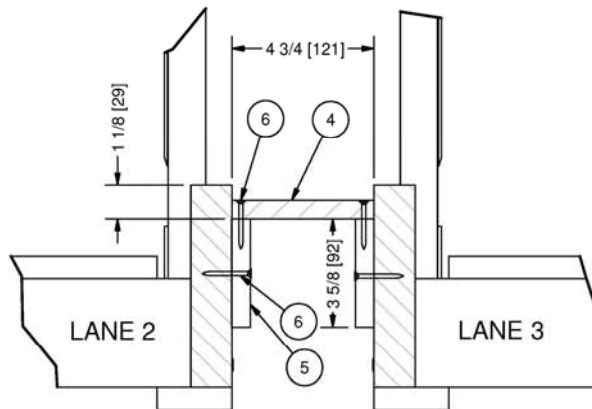




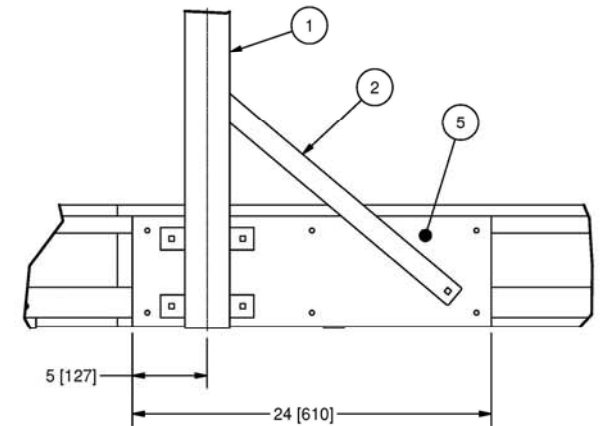
DETAIL A
SCALE 1 / 4
APPROACH SECTION



DETAIL B
SCALE 1 / 4
LANE SECTION



DETAIL C
SCALE 1 / 8
SIDE VIEW



PARTS LIST

ITEM	PART NUMBER	DESCRIPTION	QTY
1	102-3100-01	MONITOR SUPPORT POST	3
2	102-3160-01	OVERHEAD BRACE	3
3	106-3300-00	APPROACH UNION PANEL	2
4	106-3320-00	UNION FINITION PANEL	6
5	106-3980-00	LANE SIDE PANEL - CUT	14
6	7422-340600-162	#6 X 1 5/8 DRYWALL SCW PHOSPHATE	170
7	Q94-1652-4	H66 WOOD SIDE FILLER PANEL	2
7	Q94-1752-4	H66 HIGHWAY LANE UNION FILLER	2

Design and specification are subject to change without notice.



HIGHWAY 66 MULTIPLE UNIT, UNION INSTALLATION PROCEDURE

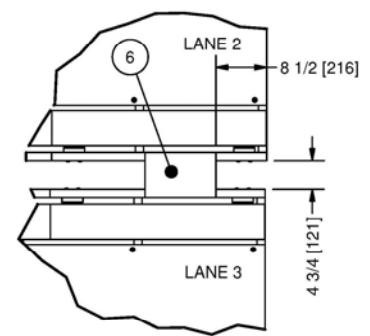
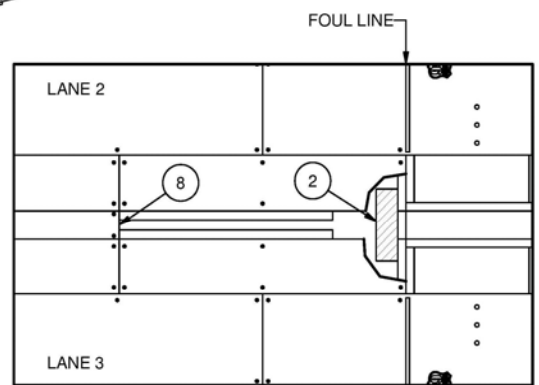
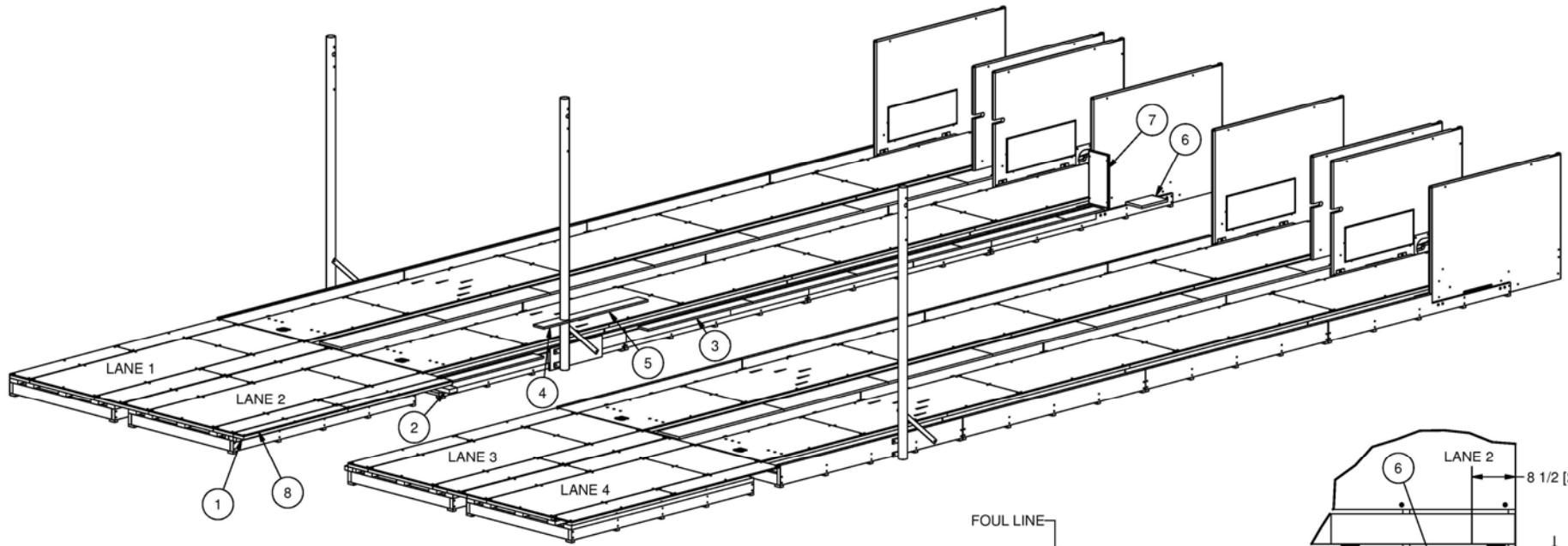
DRAFTSMAN: R.DE BLUZE
DATE: 30/09/2004
SCALE: 1:40
APPROBATION: C.S.

DRAWING NO.: IN-H66-039-025

REV. 0

PAGE 1/1





DETAIL A
SCALE 1 / 20
PIT FRAME UNION PLANK

DETAIL B
SCALE 1 / 20
APPROACH UNION PANEL SUPPORT

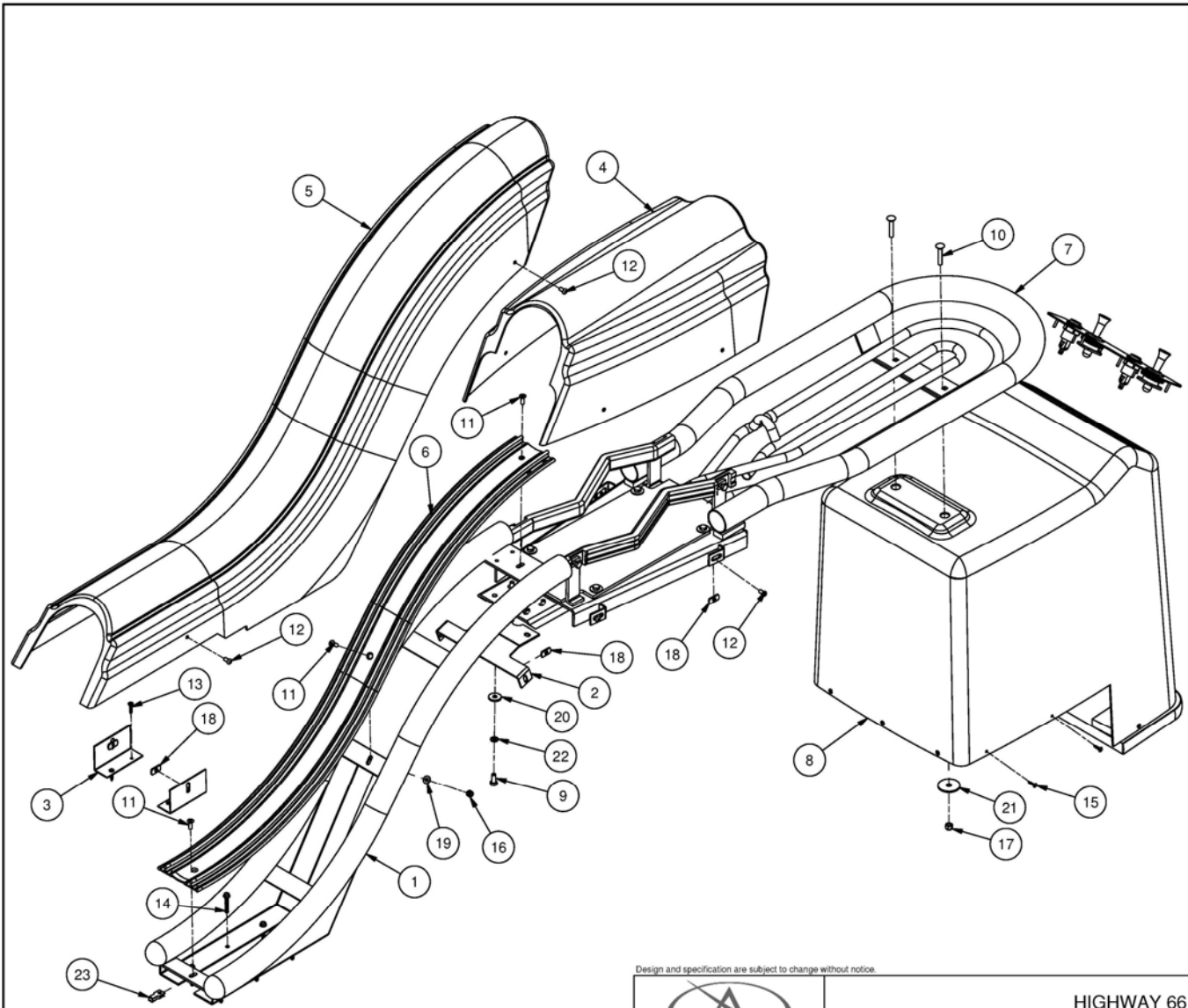
PARTS LIST PER UNION KIT			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	106-3300-00	APPROACH UNION PANEL	2
2	106-3310-00	APPROACH UNION PANEL SUPPORT	1
3	106-3320-00	UNION FINITION PANEL	6
4	106-3330-00	MONITOR UNION FILLER FRONT	1
5	106-3335-00	MONITOR UNION FILLER BACK	1
6	106-3340-00	PIT UNION PLANK (7 1/2)	1
7	106-3350-00	FRONT KICKBACK UNION PANEL	1
8	Q94-1652-4	H66 WOOD SIDE FILLER PANEL	2
8	Q94-1752-4	H66 HIGHWAY LANE UNION FILLER	2

Design and specification are subject to change without notice.



HIGHWAY 66 MULTIPLE UNIT, UNION KIT INSTALLATION PROCEDURE				REV. 0
DRAFTSMAN: R.DE BLUZE	SCALE: N/A	DRAWING NO.:	IN-H66-039-026	PAGE 1/1
DATE: 30/09/2004	APPROBATION: C.S.			



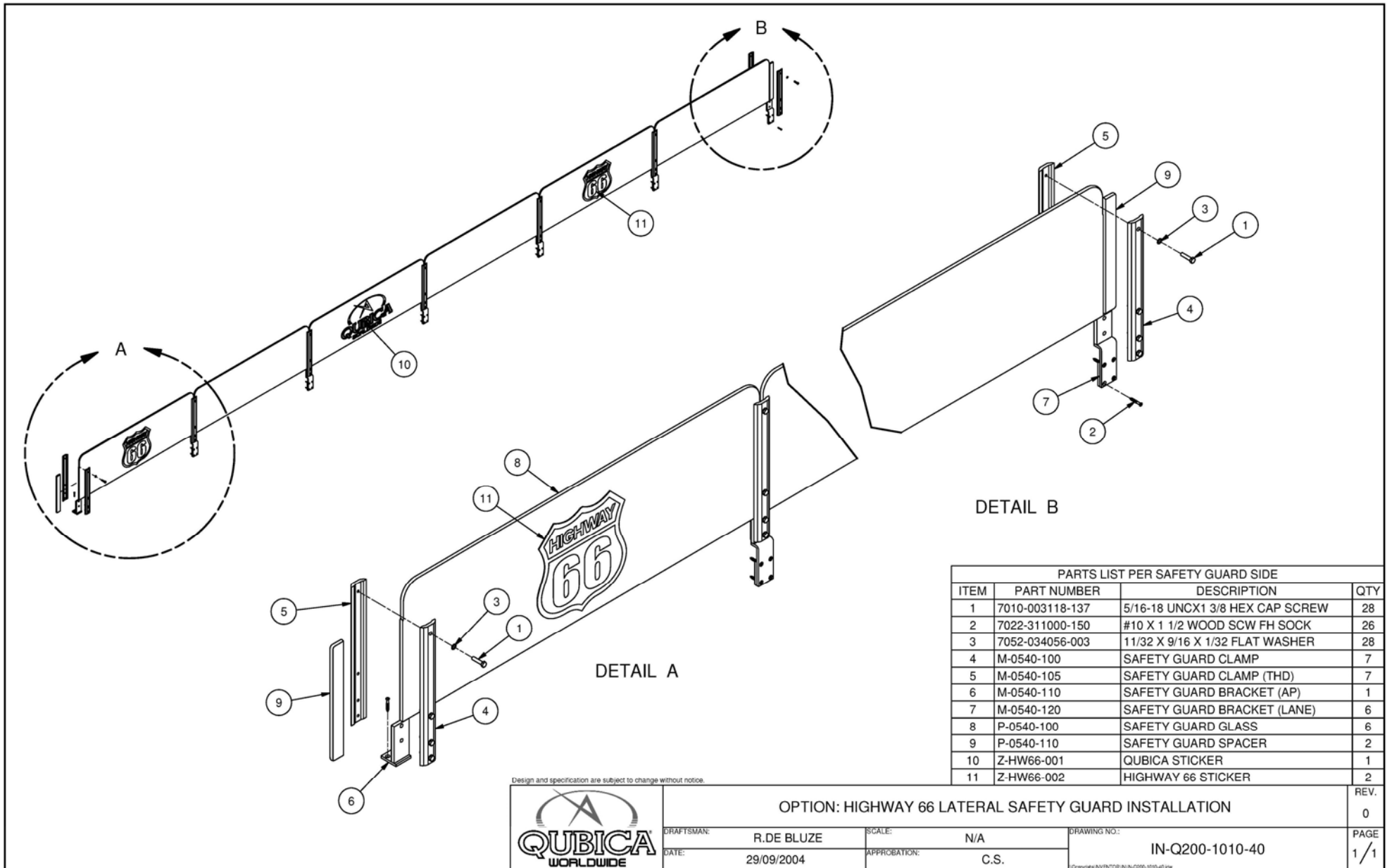


BALL RACK PARTS LIST			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	102-3020-00	BALL RACK DROP ASS'Y	1
2	102-3200-00	BALL RACK TUNNEL BRACKET - TOP	1
3	102-3210-00	H66 BALL RACK TUNNEL BRACKET - BOT	2
4	103-3010-00	BALL RACK COVER	1
5	103-3200-00	BALL TUNNEL	1
6	108-3020-00	DROP TRACK	1
7	122-3000-00	BALL RACK	1
8	133-3000-00	HOOD ASS'Y	1
8	133-3005-00	HOOD ASS'Y - UNCUT	1
8	133-3006-00	HOOD ASS'Y - SIDE & FRONT CUT	1
9	7010-003118-075	5/16-18 UNC X 3/4 HEX CAP SCREW	4
10	7012-003118-175	5/16-18 UNC X 1 3/4 CARRIAGE BOLT	2
11	7018-302520-075	1/4-20 UNC X 0.75 FLAT SOCKET HEAD MA. SCREW	3
12	7018-5002520-050	1/4-20 UNC X 1 in / 2 ul BUTTON HEAD HEX SOCKET	8
13	7023-410800-100	#8 X 1 PARTICULE ROUND WASHER HEAD SCREW	4
14	7024-201400-175	#14-20 X 1 3/4 TAP SCW HEX WASHER	6
15	7024-710800-075	#8 X 3/4 TAP SCW PH SOCK	7
16	7036-002520-000	HEX NYLON NUT 1/4-20 UNC	2
17	7036-003118-000	HEX NYLON NUT 5/16-18 UNC	8
18	7046-002520-000	1/4-20 UNC WELD NUT	8
19	7050-028062-006	9/32 X 5/8 X 1/16 FLAT WASHER	2
20	7050-034100-012	11/32 X 1 X 1/8 FLAT WASHER	4
21	7050-040175-012	13/32 X 1 3/4 X 1/8 FLAT WASHER	2
22	7060-031057-009	5/16" LOCK WASHER	8
23	7080-300000-110	SPRING NUT 1/4-20UNC	1

Design and specification are subject to change without notice

	HIGHWAY 66 BALL RACK INSTALLATION		REV.
	DRAFTSMAN: R. DE BLUZE	SCALE: N/A	1
DATE: 24/09/2004	APPROBATION: C.S.	DRAWING NO.: IN-H66-122-3000	PAGE 1/1





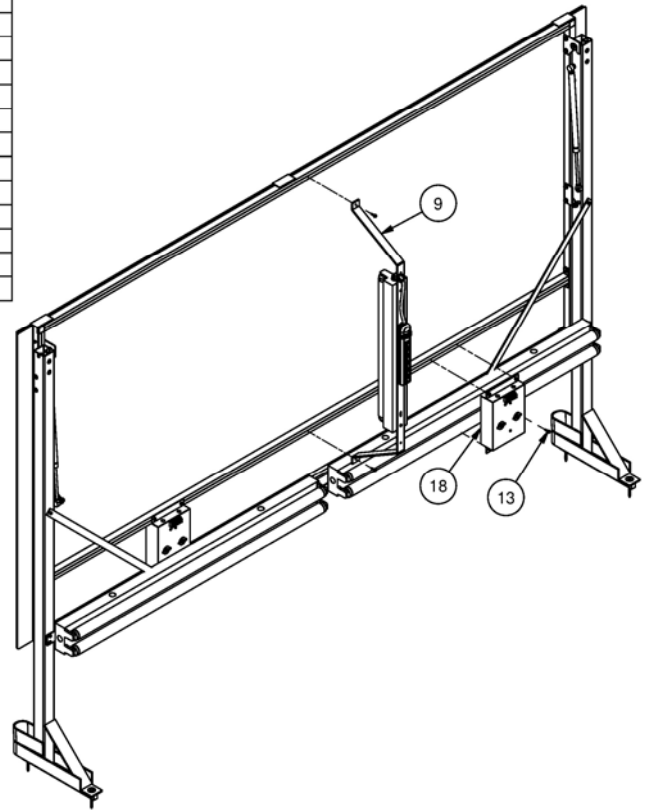
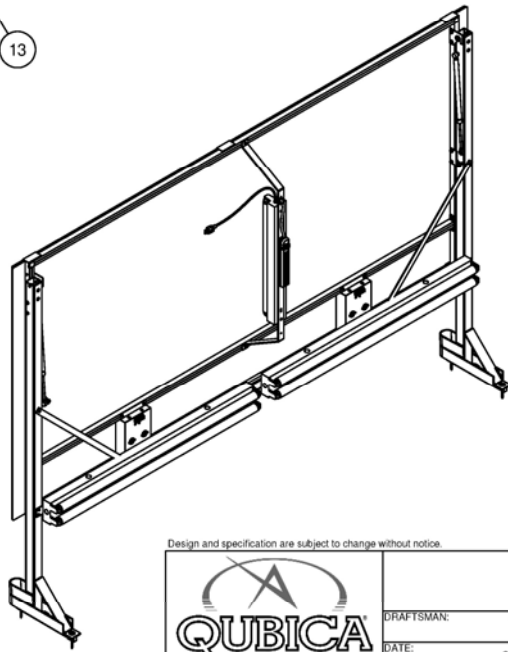
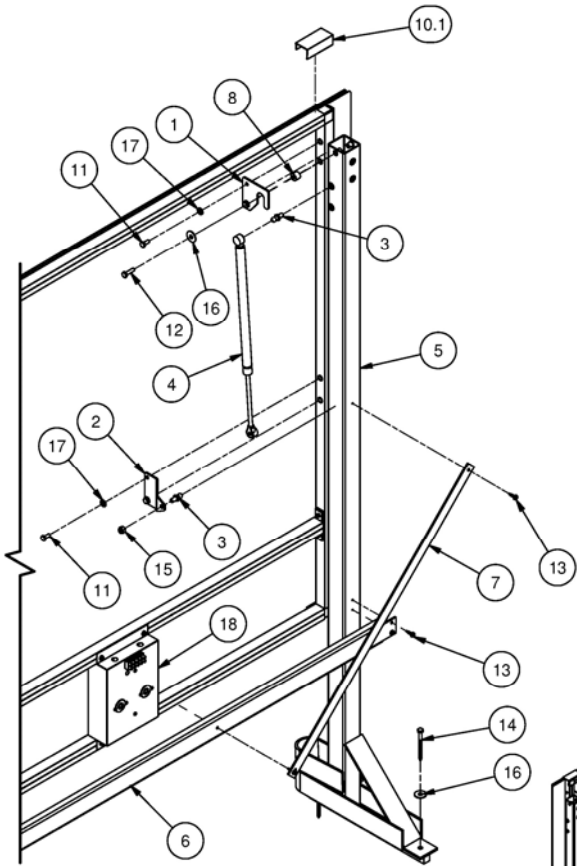
OPTION: HIGHWAY 66 LATERAL SAFETY GUARD INSTALLATION

DRAFTSMAN: R.DE BLUZE
 DATE: 29/09/2004
 SCALE: N/A
 APPROBATION: C.S.

DRAWING NO.: IN-Q200-1010-40
 REV. 0
 PAGE 1/1



Q100-4500 PARTS LIST			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	102-4010-00	MASKING HOOK CLAMP	2
2	102-4020-00	MASKING SHOCK BRACKET	2
3	102-4030-00	BALL STUD	4
4	102-4040-00	GAS SHOCK	2
5	102-4050-00	MASKING FOOT	2
6	102-4500-00	H66 MASKING UNION BRACE	1
7	102-4510-00	H66 MASKING FLAT BRACE	2
8	103-4030-00	BUSHING	2
9	122-4600-115	MASKING LIGHTNING KIT 115V-HIGHWAY 66	1
9	122-4600-220	MASKING LIGHTNING KIT 220V-HIGHWAY 66	1
10	188-4500-00	H66 MASKING UNIT FRAME ASS'Y	1
10.1	103-4040-00	GRAPHIC CLAMP	3
10.2	103-4050-00	DUAL LOCK VELCRO	10
11	7010-002520-062	1/4-20 UNC X 5/8 HEX CAP SCREW	8
12	7010-002520-100	1/4-20 UNC X 1 HEX CAP SCREW	2
13	7027-201016-075	#10-16 X 3/4 TECK SCW HEX WASHER	16
14	7028-002500-300	1/4 X 3 LAG SCREW	4
15	7036-003118-000	HEX NYLON NUT 5/16-18 UNC	2
16	7050-034100-006	11/32 X 1 X 1/16 FLAT WASHER	6
17	7060-031057-009	5/16" LOCK WASHER	8
18	Q100-4150	ONE/TWO BALL LIGHT ASSY	2



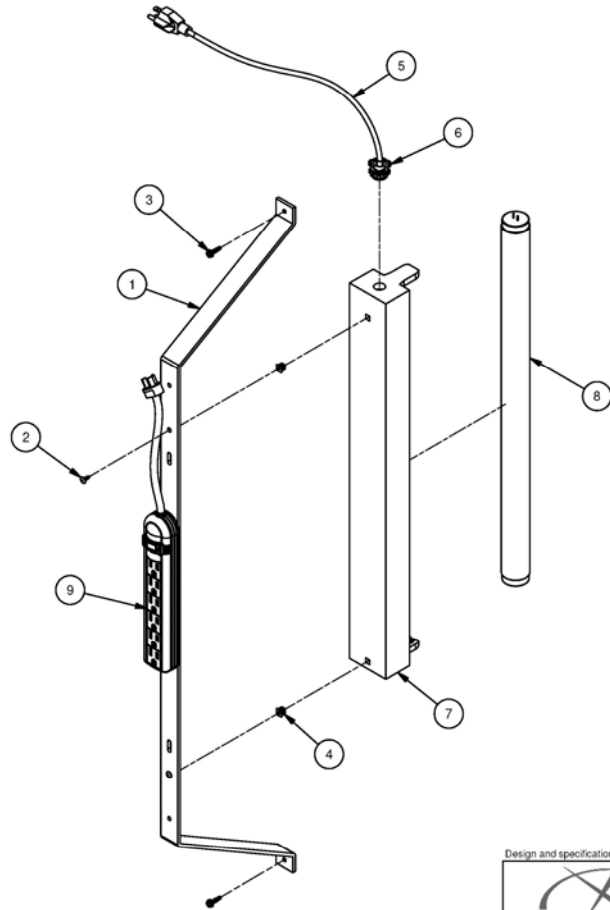
Design and specification are subject to change without notice.



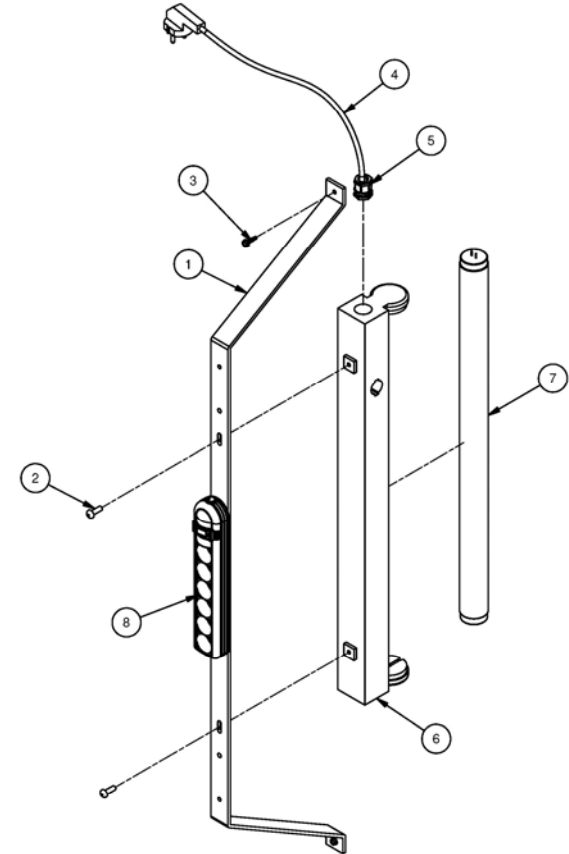
HIGHWAY 66 MASKING UNIT COMPLETE INSTALLATION				REV. 1
DRAFTSMAN: R. DE BLUZE	SCALE: N/A	DRAWING NO.:	IN-H66-Q100-4500	PAGE 1/1
DATE: 06/10/2003	APPROBATION: C.S.			



122-4600-115 PARTS LIST 115V KIT			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	102-4110-00	FLUORESCENT BRACKET	1
2	7024-710800-050	#8 X 1/2 TAP SCW PH SOCK	2
3	7027-201016-075	#10-16 X 3/4 TECK SCW HEX WASHER	2
4	7080-800000-240	NYLON EXPANSION NUT 5/16-10	2
5	E-020-183-6-110	CORD 110V 6'	1
6	E-3302M	CONNECTEUR A LOOMEX	1
7	E-F24	FIXTURE 24"	1
8	E-F24T	20W FLUORESCENT LIGHT 24"	1
9	E-PB-4A-115	POWER BAR 4 OUTLETS 115V	1



122-4600-220 PARTS LIST 220V KIT			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	102-4110-00	FLUORESCENT BRACKET	1
2	7016-412520-075	1/4-20 UNCX3/4 MA SC RH SO	2
3	7027-201016-075	#10-16 X 3/4 TECK SCW HEX WASHER	2
4	E-020-183-8-220	CORD 110V 6'	1
5	E-565	PLASTIC WIRE CONNECTOR	1
6	E-F24T8	FIXTURE 24" 1 TUBE 50HZ 220V	1
7	E-F24TT8	18W FLUORESCENT LIGHT 24" T8	1
8	E-PB-4A-220	POWER BAR 4 OUTLETS 220V	1



Design and specification are subject to change without notice.

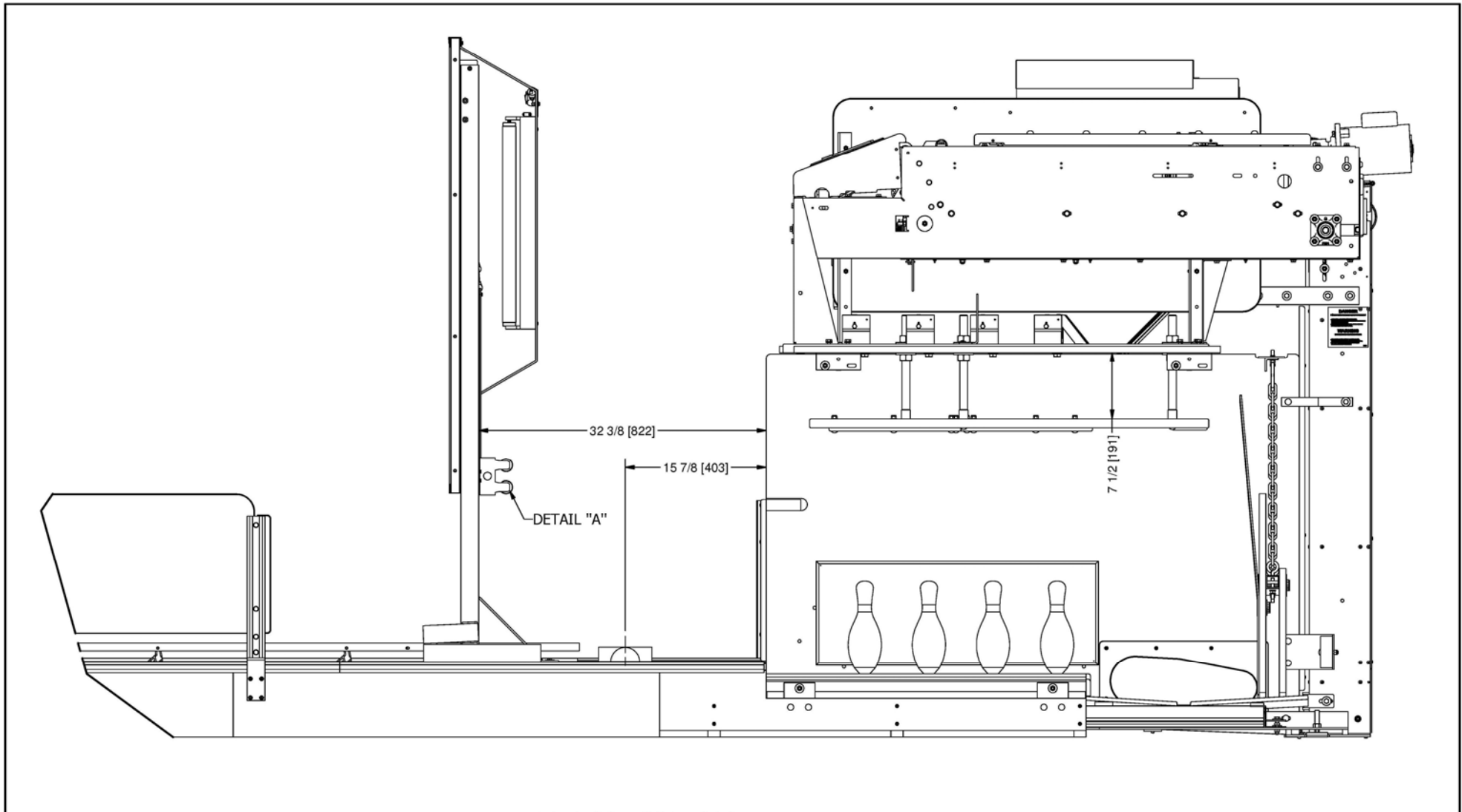


HIGHWAY 66 MASKING UNIT LIGHTNING KIT INSTALLATION

DRAFTSMAN:	Y. BOUCHARD	SCALE:	N/A
DATE:	09/06/2003	APPROBATION:	C.S.

DRAWING NO.:	IN-H66-122-4600
REV.	1
PAGE	1/1





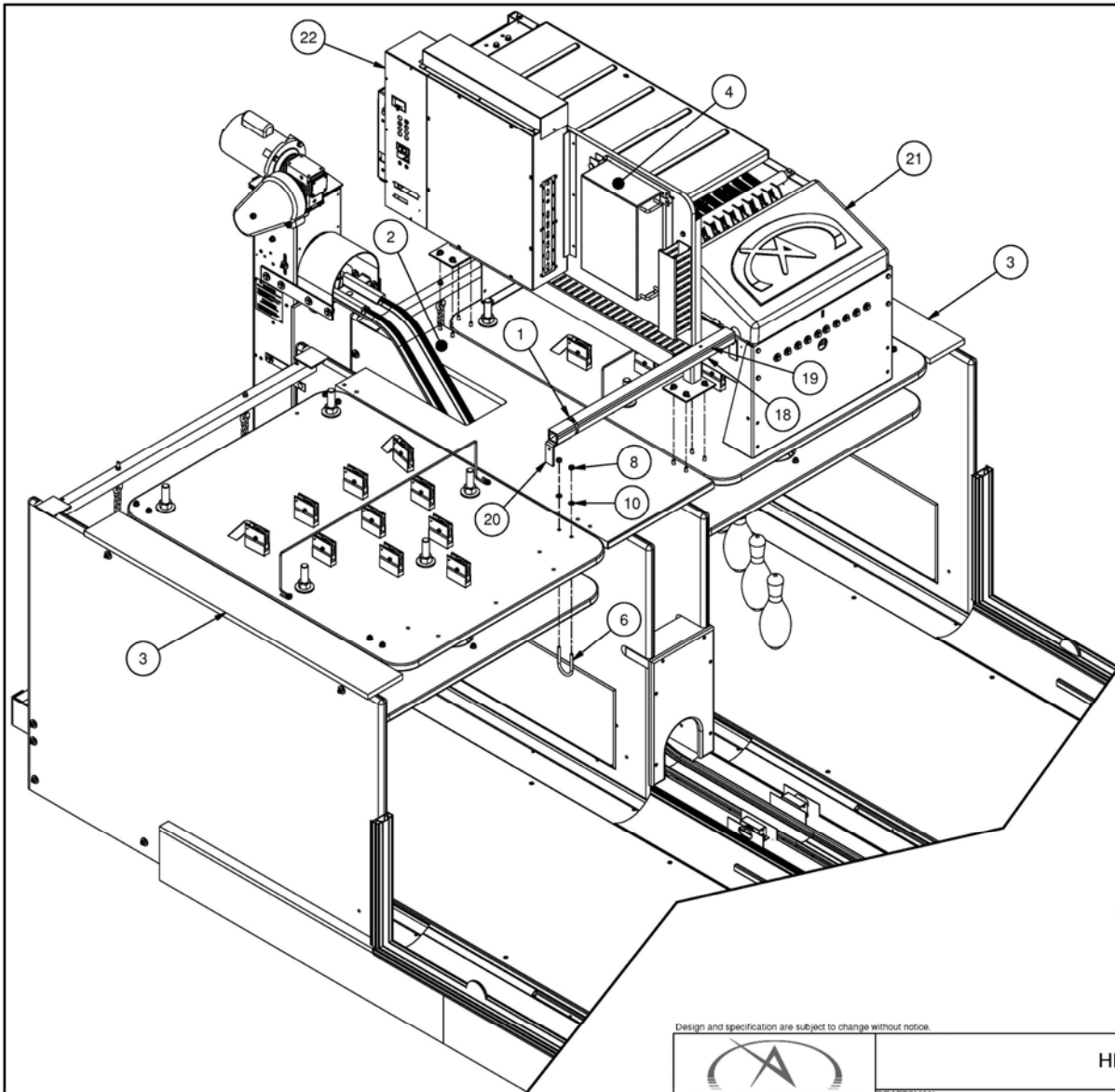
Design and specification are subject to change without notice.



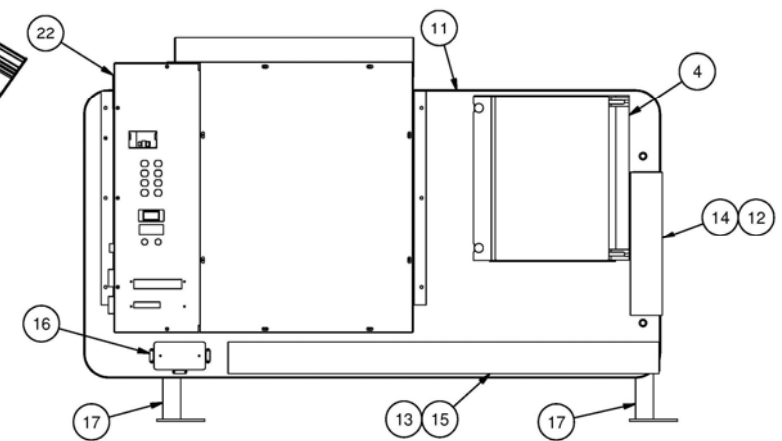
HIGHWAY 66 PINSETTER SIDE VIEW ASSEMBLY			REV. 0
DRAFTSMAN: R. DE BLUZE	SCALE: 1:10	DRAWING NO.:	PAGE 1/1
DATE: 04/10/2004	APPROBATION:	IN-H66-MEB03-001	

Copyright © 2004 QUBICA WORLDWIDE





PARTS LIST			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	302-4620-00	HOSE COLLAR 2"[50mm]	1
2	50W-0540-13-1	TOP SPACER KICKBACK	1
3	50W-0540-13-2	HALF BOARDWALK	2
4	511-0023-00	QAMS VIDEO CONTROLLER	1
5	7010-002520-150	1/4-20 UNC X 1 1/2 HEX CAP SCREW	4
6	7030-003118-325	5/16-18 x 3 1/4 U BOLT	10
7	7036-002520-000	HEX NYLON NUT 1/4-20 UNC	4
8	7038-003118-000	5/16-18 UNC HEX KEEP NUT	20
9	7050-028062-006	9/32 X 5/8 X 1/16 FLAT WASHER	4
10	7050-034068-006	11/32 X 11/16 X 1/16 FLAT WASHER	20
11	9106134	MELAMINE PANEL	1
12	E-1633	WIRING DUCT 12in [304.8mm] LONG	1
13	E-1633	WIRING DUCT 36in [914.4mm] LONG	1
14	E-1634	WIRING DUCT COVER 12in [304.8mm]	1
15	E-1634	WIRING DUCT COVER 36in [914.4mm]	1
16	E-2020	ELECTRIC JUNCTION BOX	1
17	M-0374	POWER BOX MOUNTING FOOT	2
18	M-0391-03	CROSS BAR BOTTOM	1
19	M-0391-04	CROSS BAR TOP	1
20	M-0392	ANGLE BRACKET	2
21	ME-B03	TMS PINSETTER	2
22	SB-9802200-230	POWER BOX	1

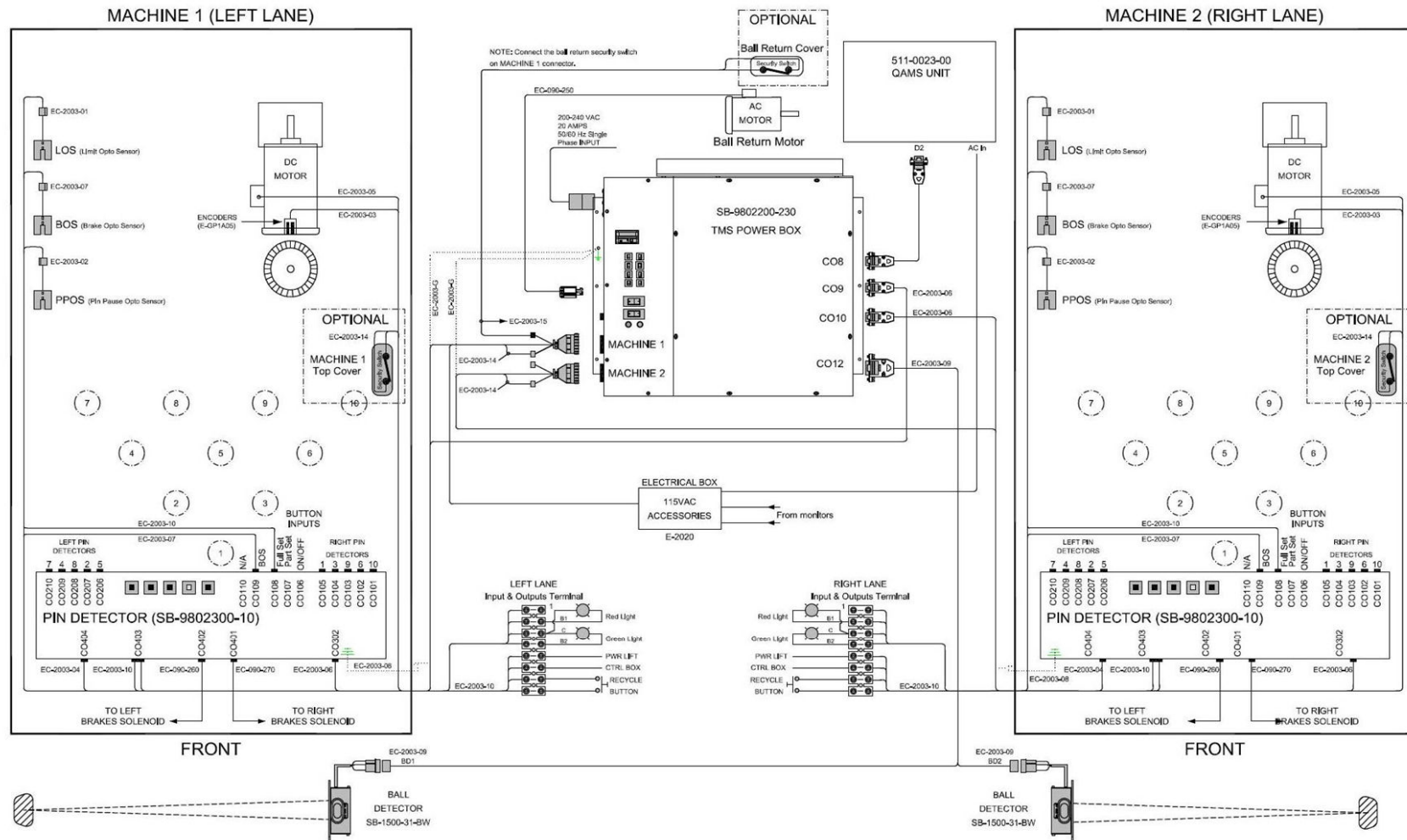


Design and specification are subject to change without notice.

	HIGHWAY 66, ME-B03 PINSETTER INSTALLATION		REV. 0
	DRAFTSMAN: R. DE BLUZE	SCALE: N/A	DRAWING NO.: IN-H66-MEB03-002
DATE: 05/10/2004	APPROBATION:		PAGE 1/1







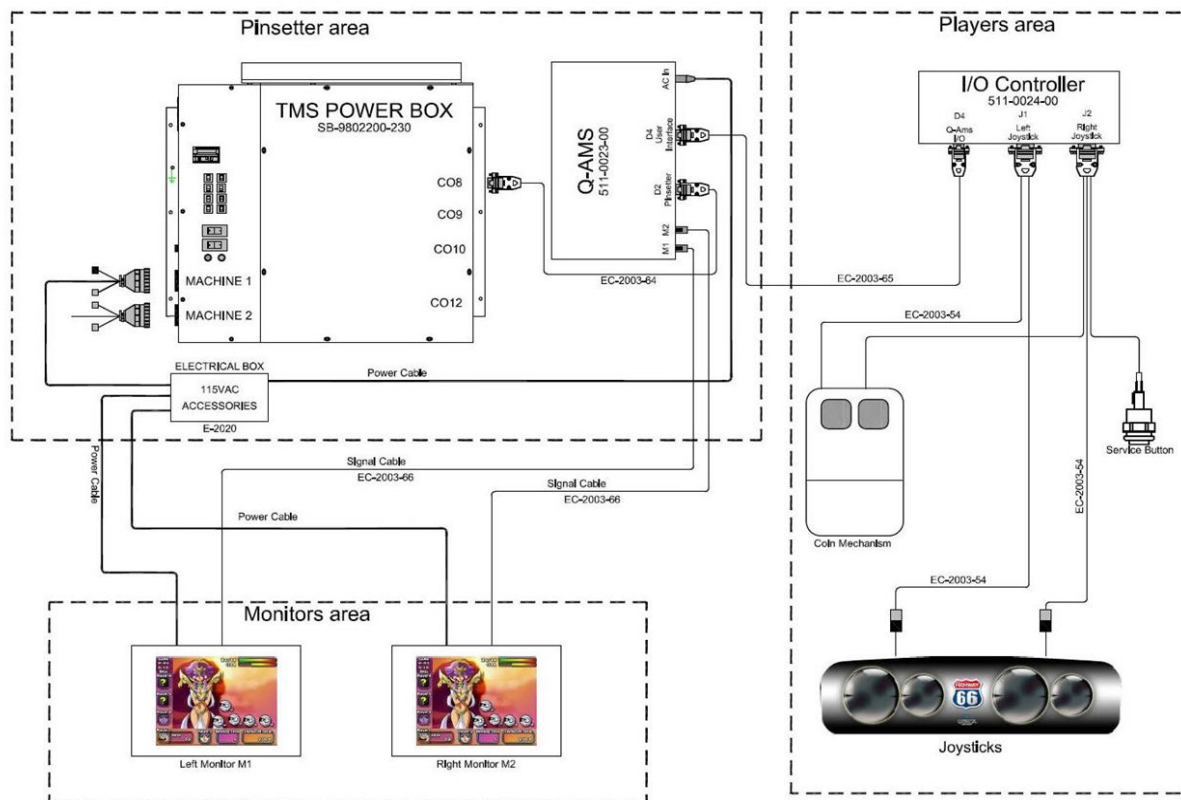
IMPORTANT NOTICE
 This equipment must be effectively grounded according to appliance codes.

Design and specification are subject to change without notice.



HIGHWAY 66 GENERAL WIRING CONNECTION			REVISION 0
DRAFTSMAN: R. CARRIÈRE/R. DE BLUZE	SCALE: N/A	DRAWING NO.:	PAGE
DATE: 08/10/2003	APPROBATION: C.S.	IN-ME-B03-003	D-30





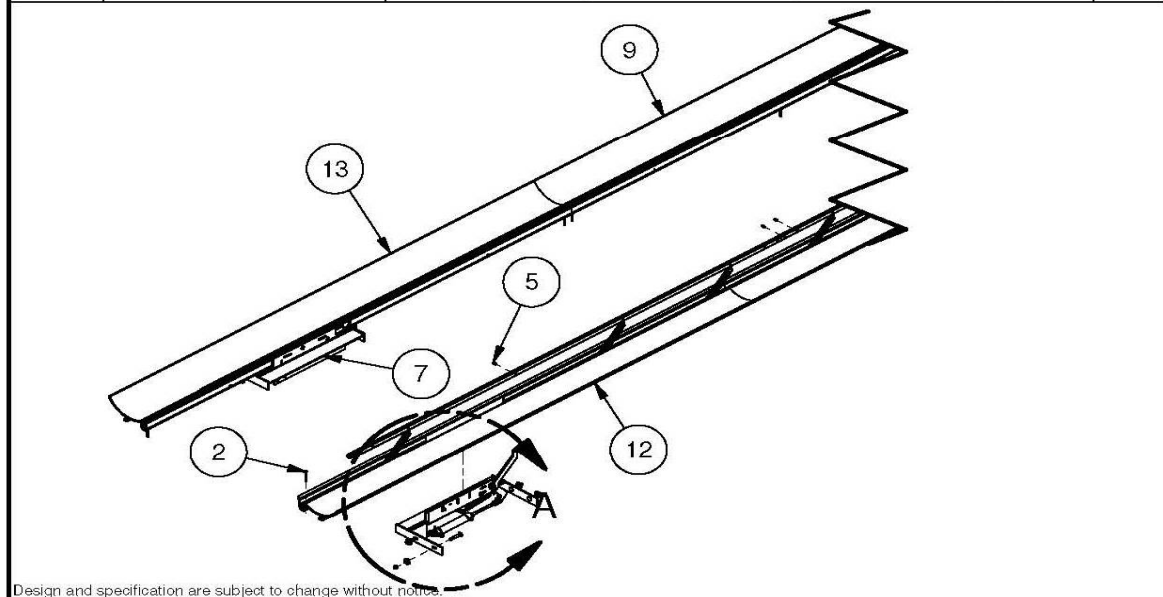
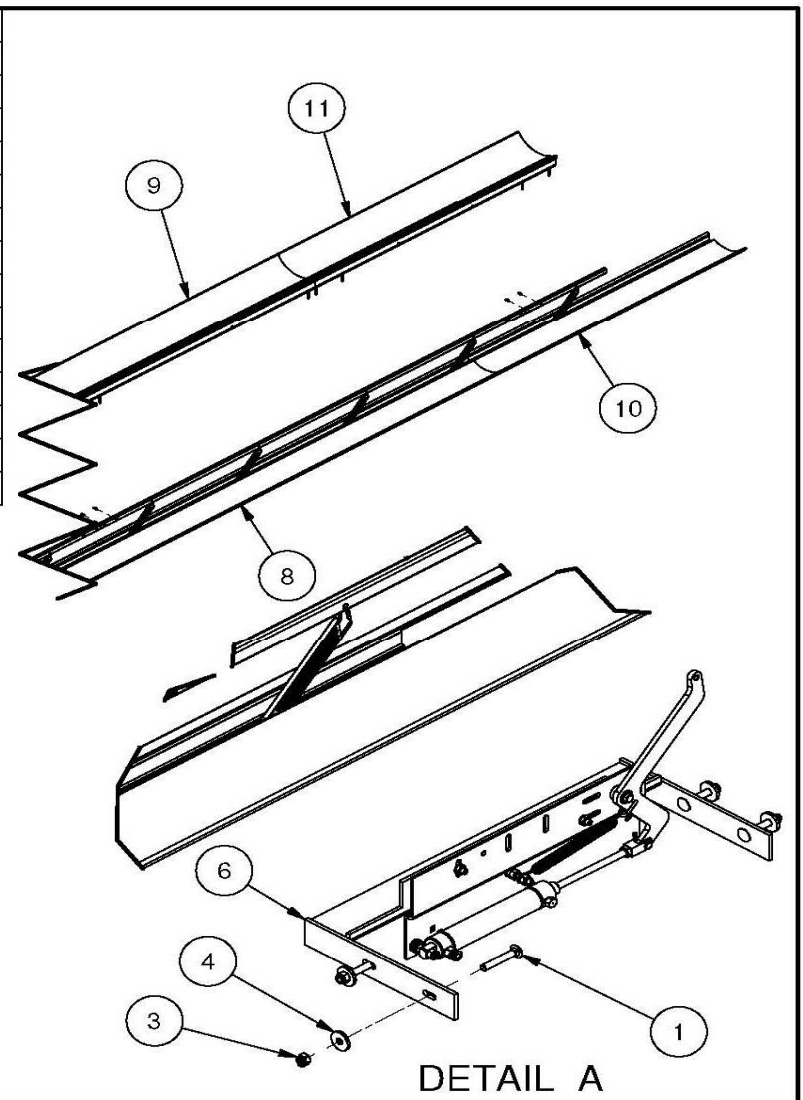
Design and specification are subject to change without notice.




HIGHWAY 66, SCORING WIRING CONNECTION				REVISION 0
DRAFTSMAN: DATE:	RÉGIS DE BLUZE 08/10/2003	SCALE: APPROBATION:	N/A C.S.	DRAWING NO: IN-ME-B03-004
				PAGE D-31



PARTS LIST			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	7012-003118-200	5/16-18 UNC X 2 CARRIAGE BOLT	8
2	7022-310800-200	#8 X 2 WOOD SCW FH SOCK	26
3	7036-003118-000	HEX NYLON NUT 5/16-18 UNC	8
4	7050-034100-012	11/32 X 1 X 1/8 FLAT WASHER	8
5	P-0009-69	Q-BUMP PIN	13
6	SB-0009-10-4	H66 GUTTER & AUTO. BUMPER ASSY. RIGHT - START	1
7	SB-0009-10-7	H66 GUTTER & AUTO. BUMPER ASSY. LEFT - START	1
8	SB-0009-45-4	H66 GUTTER & BUMPER ASS'Y RIGHT - COMMON	2
9	SB-0009-45-7	H66 GUTTER & BUMPER ASS'Y LEFT - COMMON	2
10	SB-0009-46-4	H66 GUTTER & BUMPER ASS'Y RIGHT - SHORT	1
11	SB-0009-46-7	H66 GUTTER & BUMPER ASS'Y LEFT - SHORT	1
12	SB-0009-47-4	H66 GUTTER & AUTO. BUMPER ASSY. RIGHT - START	1
13	SB-0009-47-7	H66 GUTTER & AUTO. BUMPER ASSY. LEFT - START	1

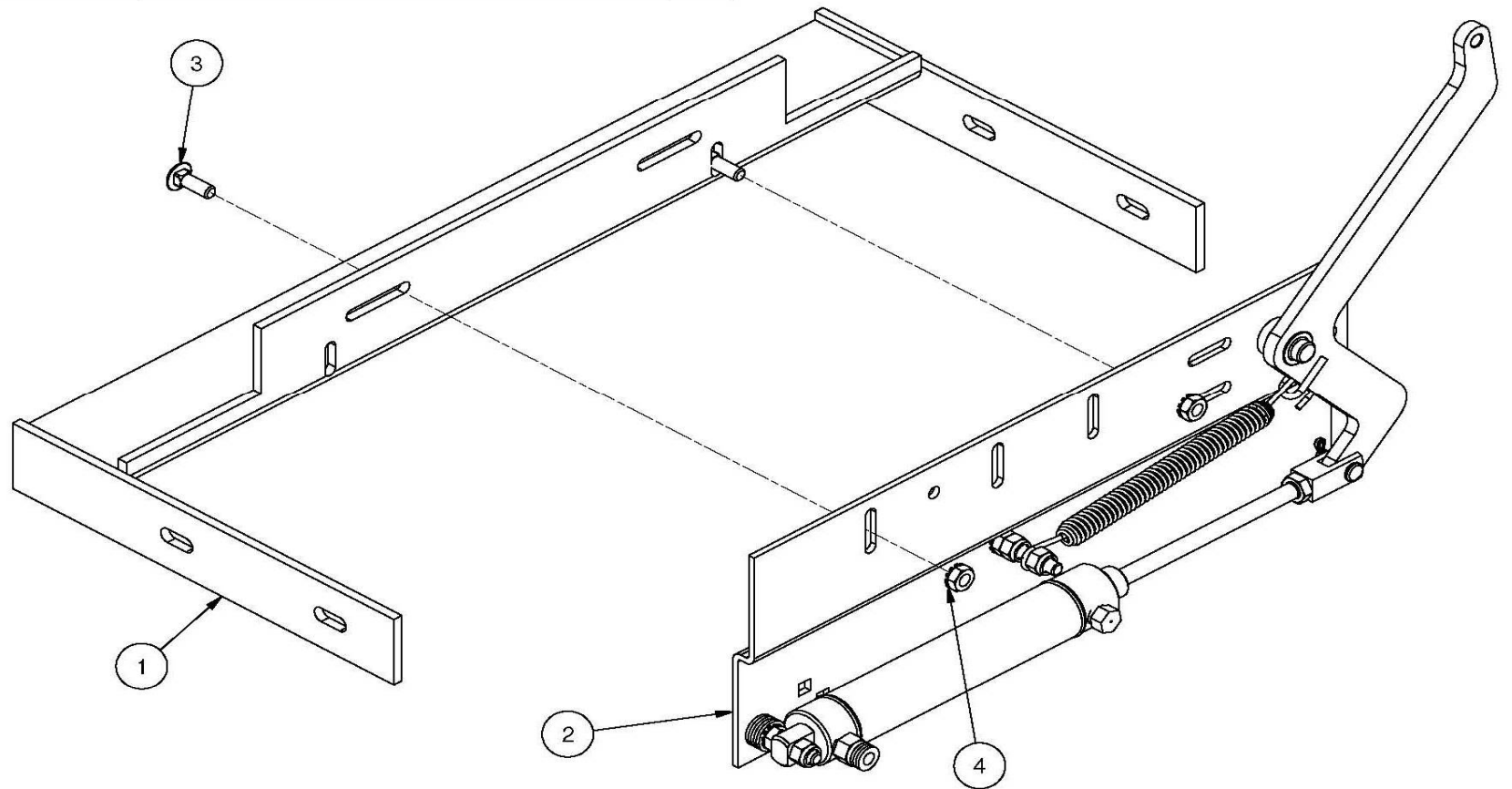


Design and specification are subject to change without notice.

	HW66 GUTTER & AUTOMATIC BUMPER BALL PARTS-39 FEET - ONE LANE		REV. 0
	DRAFTSMAN: Y. BOUCHARD	SCALE: N/A	DRAWING NO.:
DATE: 30/09/2004	APPROBATION: C.S.	Q86-0115-630-39-10	
<small>W:\ssdata\INVENTOR\Q86-0115-630-39-10.dwg</small>			PAGE 1/1



PARTS LIST			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	M-0009-10	BUMPER PISTON BRACKET	1
2	SB-0009-06-7	AUTOMATIC BUMPER CYLINDER ASS'Y LEFT	1
3	7012-002520-075	1/4-20 UNC X 3/4 CARRIAGE BOLT	2
4	7038-002520-000	1/4-20 UNC HEX KEEP NUT	2

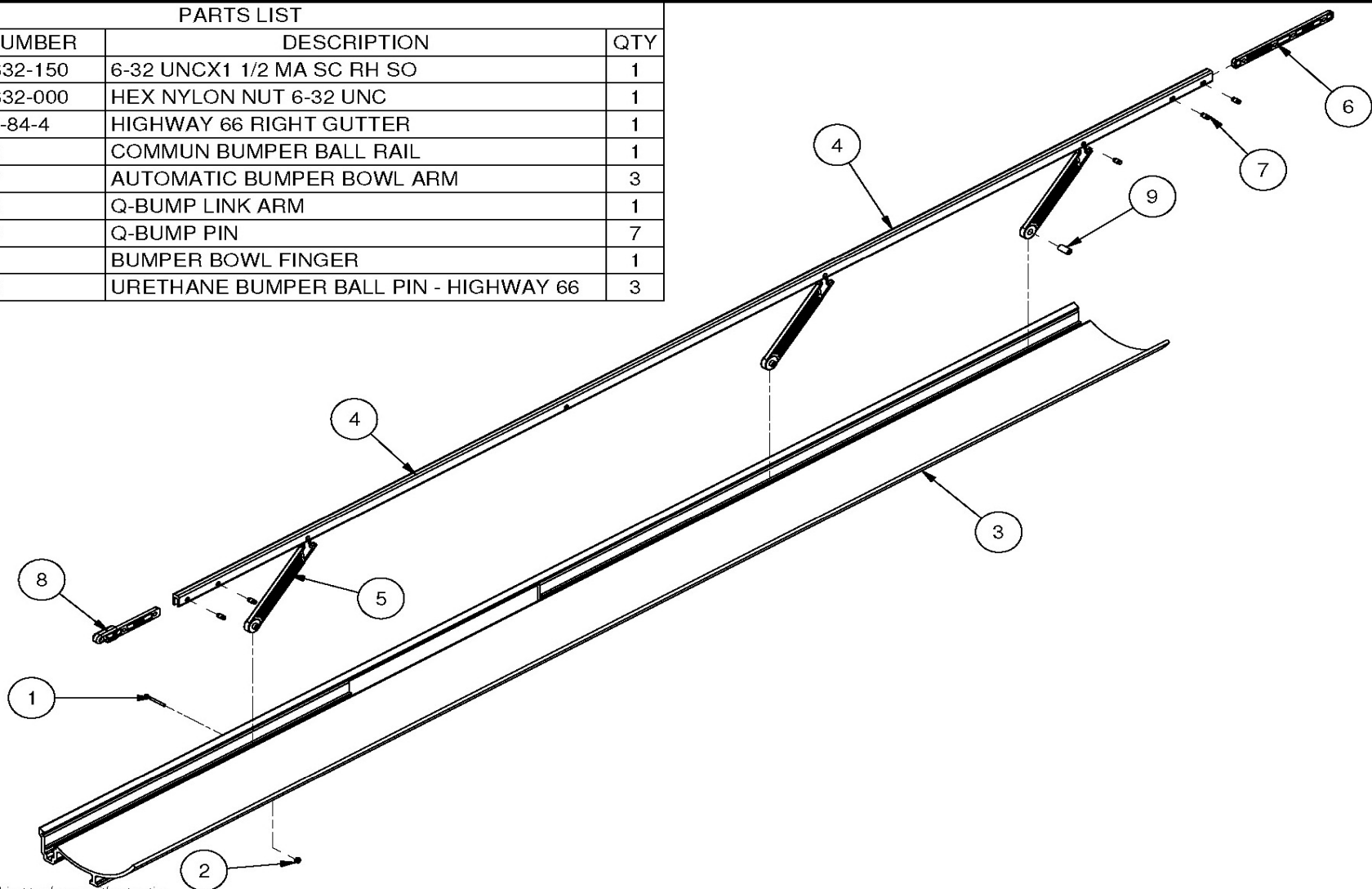


Design and specification are subject to change without notice.

	H66 GUTTER & AUTO. BUMP. ASSY. RIGHT - START			REV. 0
	DRAFTSMAN: Y. BOUCHARD	SCALE: N/A	DRAWING NO.: SB-0009-10-4	PAGE 1/1
	DATE: 01/10/2004	APPROBATION: C.S.		



PARTS LIST			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	7016-410632-150	6-32 UNCX1 1/2 MA SC RH SO	1
2	7036-000632-000	HEX NYLON NUT 6-32 UNC	1
3	P-0009-40-84-4	HIGHWAY 66 RIGHT GUTTER	1
4	P-0009-62	COMMUN BUMPER BALL RAIL	1
5	P-0009-67	AUTOMATIC BUMPER BOWL ARM	3
6	P-0009-68	Q-BUMP LINK ARM	1
7	P-0009-69	Q-BUMP PIN	7
8	P-0009-71	BUMPER BOWL FINGER	1
9	P-0009-76	URETHANE BUMPER BALL PIN - HIGHWAY 66	3



Design and specification are subject to change without notice.



H66 GUTTER & AUTO. BUMPER ASSY. RIGHT - START

DRAFTSMAN: Y. BOUCHARD
 DATE: 16/05/2005

SCALE: N/A
 APPROBATION: C.S.

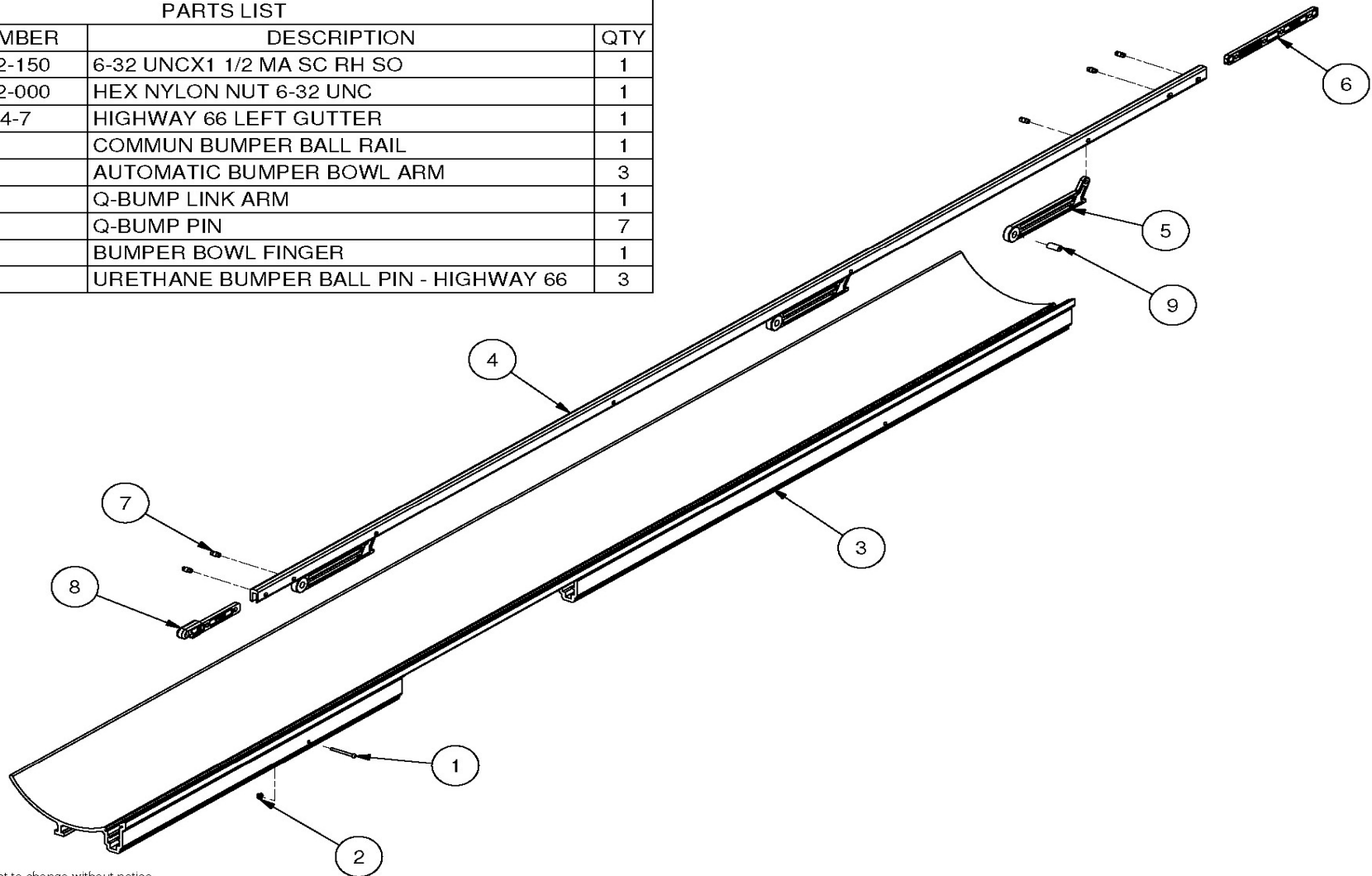
DRAWING NO.: SB-0009-47-4

Q4SBSB.0009.47.4.dwg

REV. 1
 PAGE 1/1



PARTS LIST			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	7016-410632-150	6-32 UNCX1 1/2 MA SC RH SO	1
2	7036-000632-000	HEX NYLON NUT 6-32 UNC	1
3	P-0009-40-84-7	HIGHWAY 66 LEFT GUTTER	1
4	P-0009-62	COMMUN BUMPER BALL RAIL	1
5	P-0009-67	AUTOMATIC BUMPER BOWL ARM	3
6	P-0009-68	Q-BUMP LINK ARM	1
7	P-0009-69	Q-BUMP PIN	7
8	P-0009-71	BUMPER BOWL FINGER	1
9	P-0009-76	URETHANE BUMPER BALL PIN - HIGHWAY 66	3



Design and specification are subject to change without notice.



H66 GUTTER & AUTO. BUMPER ASSY. LEFT - START

DRAFTSMAN: Y. BOUCHARD
 DATE: 16/05/2005

SCALE: N/A
 APPROBATION: C.S.

DRAWING NO.: SB-0009-47-7

CS/SB/SB-0009-47-7.dwg

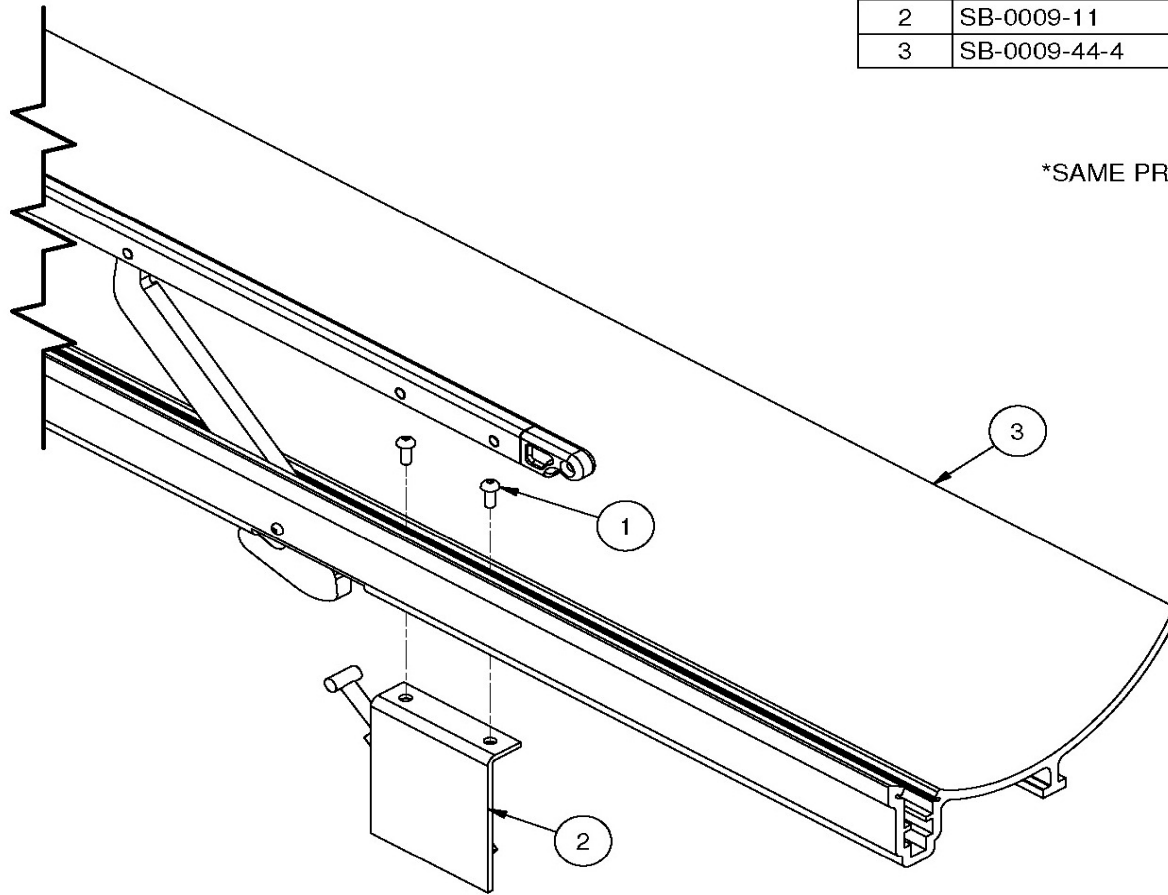
REV.
1

PAGE
1/1



PARTS LIST			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	7016-411032-050	10-32 UNFX1/2 MA SC RH SO	2
2	SB-0009-11	BUMPER BALL LOCK	1
3	SB-0009-44-4	HIGHWAY 66 BUMPER BALL START [RIGHT]	1

*SAME PROCEDURE FOR SB-0009-44-7 LEFT ASS'Y



Design and specification are subject to change without notice.



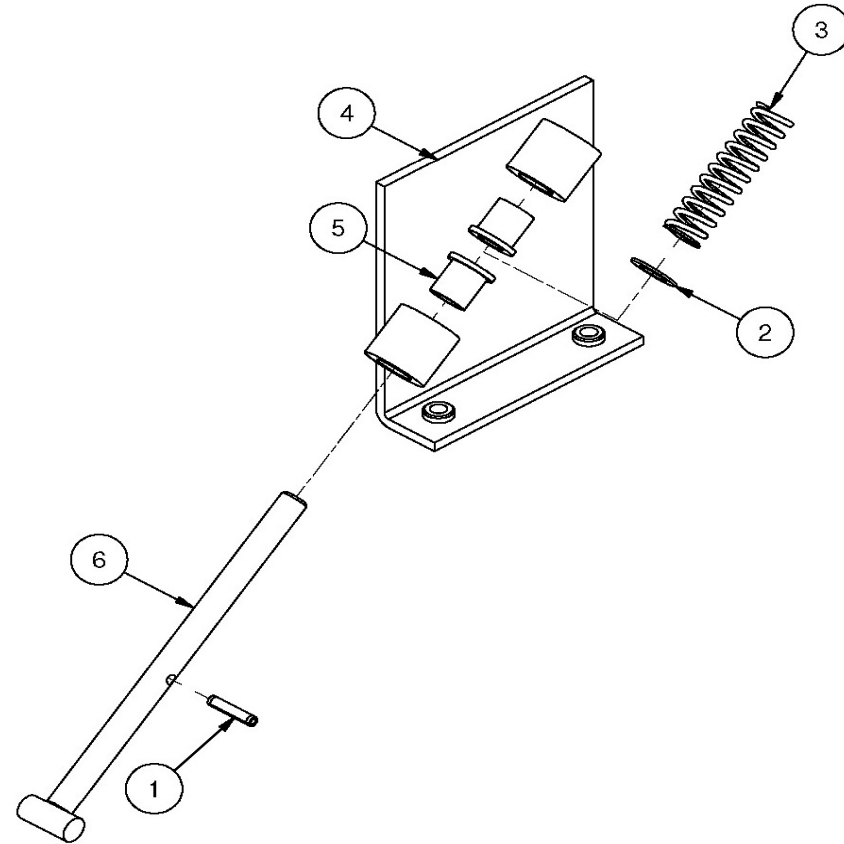
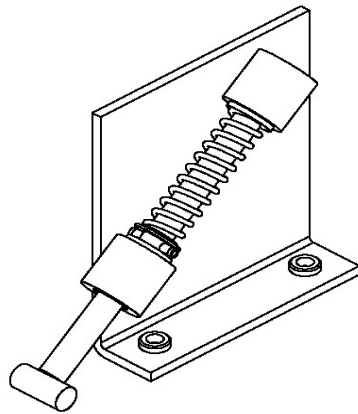
HIGHWAY 66 BUMPERBOWL LOCK INSTALLATION

DRAFTSMAN:	R. DE BLUZE	SCALE:		DRAWING NO.:	IN-SB-0009-11	REV.	0
DATE:	10/03/2005	APPROBATION:	C.S.			PAGE	1/1

\\03srdstat\INVENTOR\MINI\IN-SB-0009-11.dwg



PARTS LIST			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	7006-001200-062	SPRING PIN 1/8 X 0.625	1
2	7052-034056-003	11/32 X 9/16 X 1/32 FLAT WASHER	1
3	9105042	COMPRESSION SPRING	1
4	M-0009-11	BRACKET	1
5	M-0009-12	FLANGE BEARING	2
6	M-0009-13	T-LOCK SHAFT	1



Design and specification are subject to change without notice.



BUMPER BALL LOCK

DRAFTSMAN: Y. BOUCHARD
 DATE: 12/04/2005

SCALE: N/A
 APPROBATION: C.S.

DRAWING NO.: SB-0009-11

\\0csprod01\INVENTOR\SP\SR-0009-11.dwg

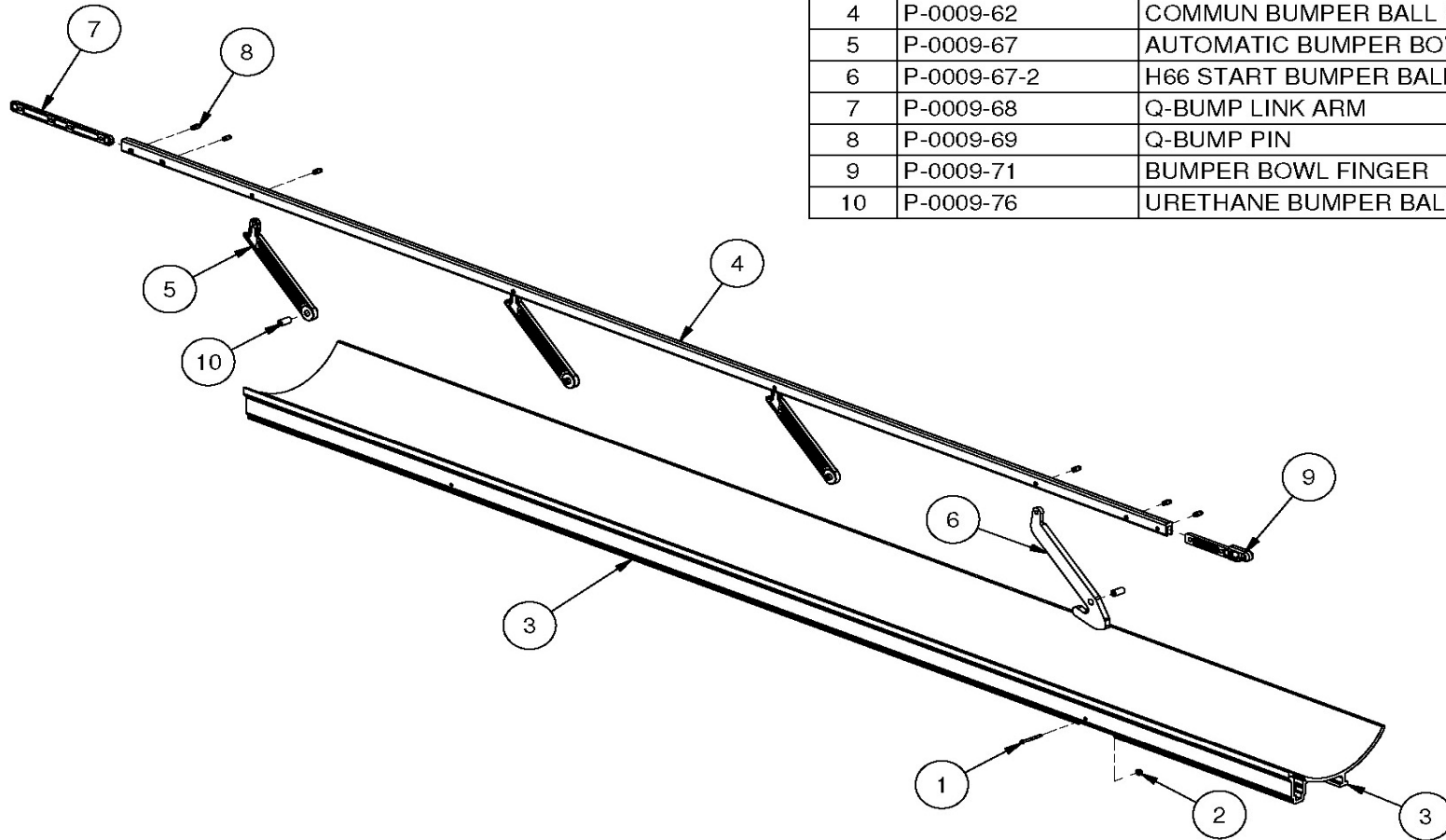
REV.
1

PAGE
1/1



PARTS LIST

ITEM	PART NUMBER	DESCRIPTION	QTY
1	7016-410632-150	6-32 UNCX1 1/2 MA SC RH SO	1
2	7036-000632-000	HEX NYLON NUT 6-32 UNC	1
3	P-0009-40-83-4	HIGHWAY 66 START GUTTER RIGHT	1
4	P-0009-62	COMMUN BUMPER BALL RAIL	1
5	P-0009-67	AUTOMATIC BUMPER BOWL ARM	3
6	P-0009-67-2	H66 START BUMPER BALL ARM	1
7	P-0009-68	Q-BUMP LINK ARM	1
8	P-0009-69	Q-BUMP PIN	8
9	P-0009-71	BUMPER BOWL FINGER	1
10	P-0009-76	URETHANE BUMPER BALL PIN - HIGHWAY 66	4



Design and specification are subject to change without notice.



HIGHWAY 66 BUMPER BALL START [RIGHT]

DRAFTSMAN: Y. BOUCHARD
 DATE: 10/12/2004

SCALE: N/A
 APPROBATION: C.S.

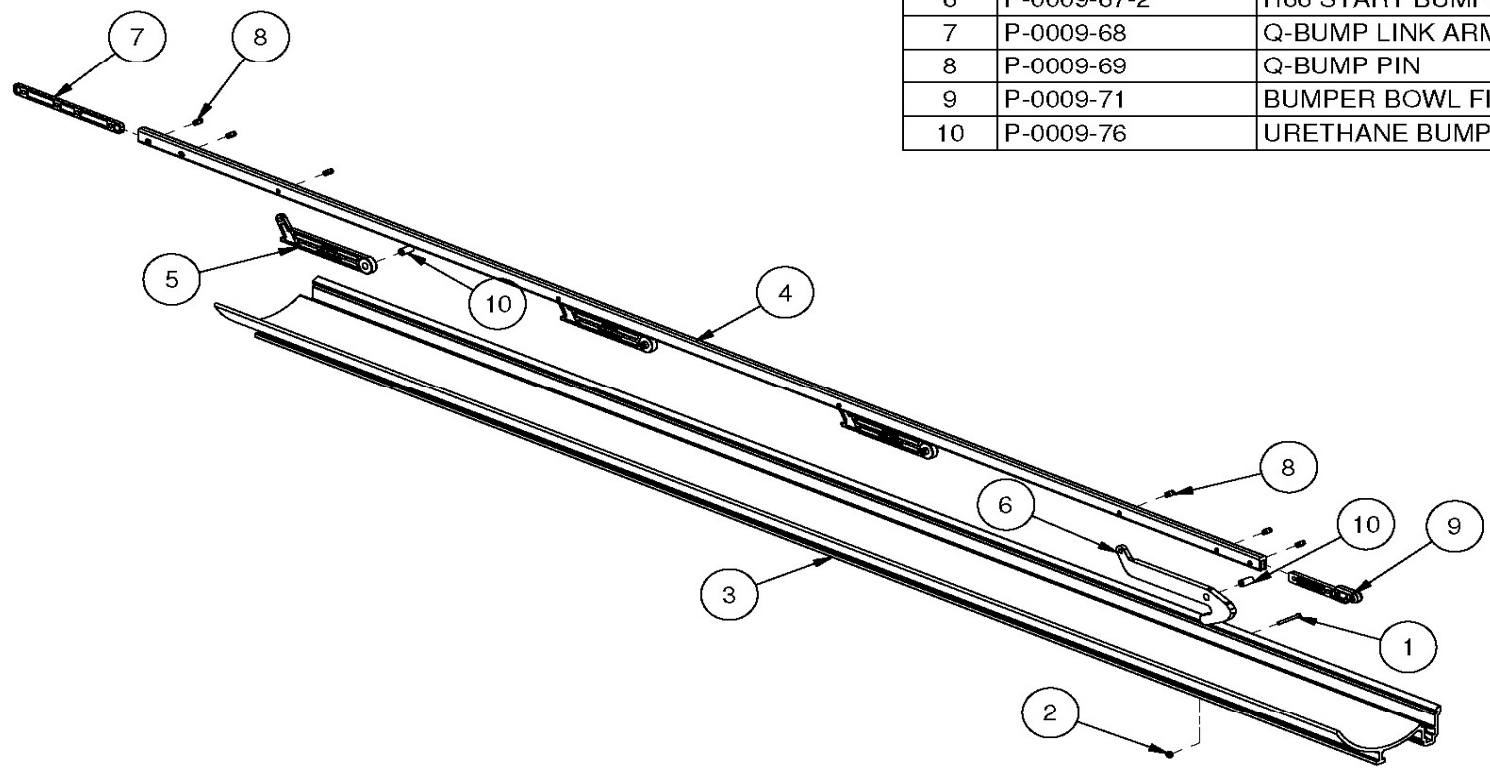
DRAWING NO.: SB-0009-44-4

REV. 1
 PAGE 1/1

\\Qcspdata\INVENTOR\SBSP\0009-44-4.dwg



PARTS LIST			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	7016-410632-150	6-32 UNC X 1 1/2 MA SC RH SO	1
2	7036-000632-000	HEX NYLON NUT 6-32 UNC	1
3	P-0009-40-83-7	HIGHWAY 66 START GUTTER LEFT	1
4	P-0009-62	COMMUN BUMPER BALL RAIL	1
5	P-0009-67	AUTOMATIC BUMPER BOWL ARM	3
6	P-0009-67-2	H66 START BUMPER BALL ARM	1
7	P-0009-68	Q-BUMP LINK ARM	1
8	P-0009-69	Q-BUMP PIN	8
9	P-0009-71	BUMPER BOWL FINGER	1
10	P-0009-76	URETHANE BUMPER BALL PIN - HIGHWAY 66	4



Design and specification are subject to change without notice.

HIGHWAY 66 BUMPER BALL START [LEFT]



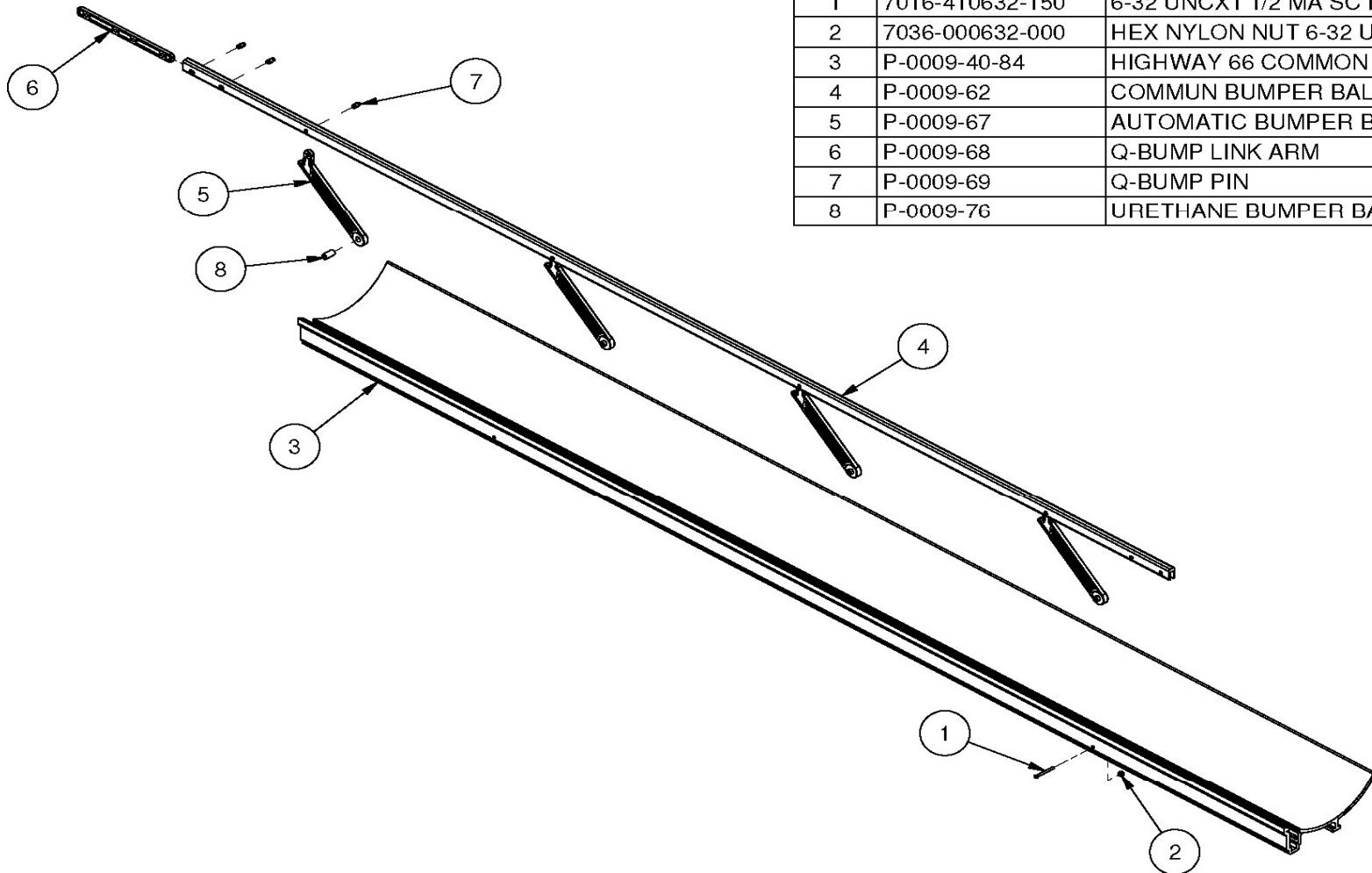
DRAFTSMAN: R. DE BLUZE
 DATE: 04/03/2005

SCALE: N/A
 APPROBATION: C.S.

DRAWING NO.: SB-0009-44-7

REV. 1
 PAGE 1/1





PARTS LIST			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	7016-410632-150	6-32 UNCX1 1/2 MA SC RH SO	1
2	7036-000632-000	HEX NYLON NUT 6-32 UNC	1
3	P-0009-40-84	HIGHWAY 66 COMMON GUTTER	1
4	P-0009-62	COMMUN BUMPER BALL RAIL	1
5	P-0009-67	AUTOMATIC BUMPER BOWL ARM	4
6	P-0009-68	Q-BUMP LINK ARM	1
7	P-0009-69	Q-BUMP PIN	6
8	P-0009-76	URETHANE BUMPER BALL PIN - HIGHWAY 66	4

Design and specification are subject to change without notice.

HIGHWAY 66 BUMPER BUMPER COMMON [RIGHT]



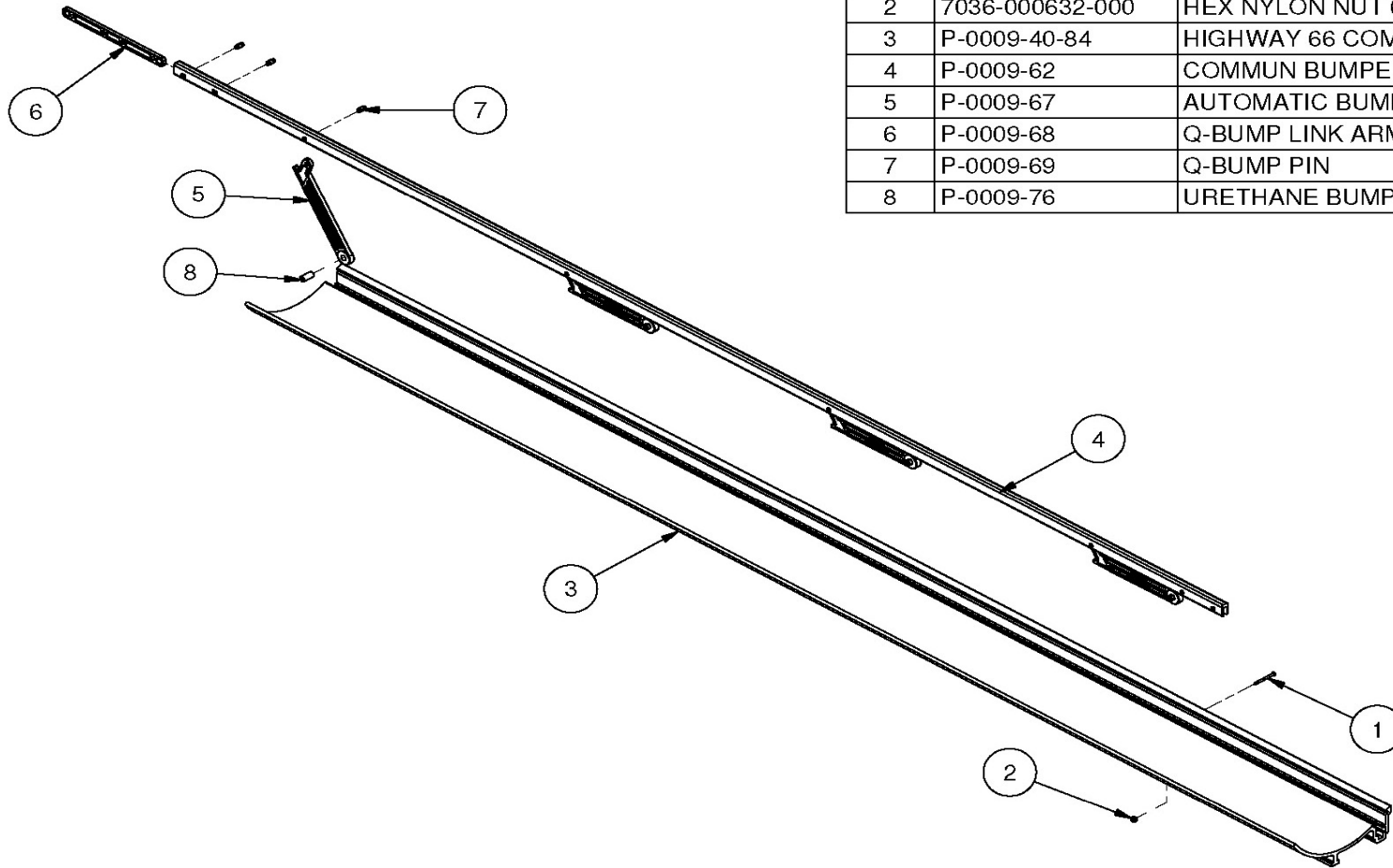
DRAFTSMAN: R. DE BLUZE
 DATE: 18/10/2004

SCALE: N/A
 APPROBATION: C.S.

DRAWING NO.: SB-0009-45-4

REV. 1
 PAGE 1/1





PARTS LIST			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	7016-410632-150	6-32 UNCX1 1/2 MA SC RH SO	1
2	7036-000632-000	HEX NYLON NUT 6-32 UNC	1
3	P-0009-40-84	HIGHWAY 66 COMMON GUTTER	1
4	P-0009-62	COMMUN BUMPER BALL RAIL	1
5	P-0009-67	AUTOMATIC BUMPER BOWL ARM	4
6	P-0009-68	Q-BUMP LINK ARM	1
7	P-0009-69	Q-BUMP PIN	6
8	P-0009-76	URETHANE BUMPER BALL PIN - HIGHWAY 66	4

Design and specification are subject to change without notice.



HIGHWAY 66 BUMPER BALL COMMON [LEFT]

DRAFTSMAN: R. DE BLUZE
 DATE: 18/10/2004

SCALE: N/A
 APPROBATION: C.S.

DRAWING NO.: SB-0009-45-7

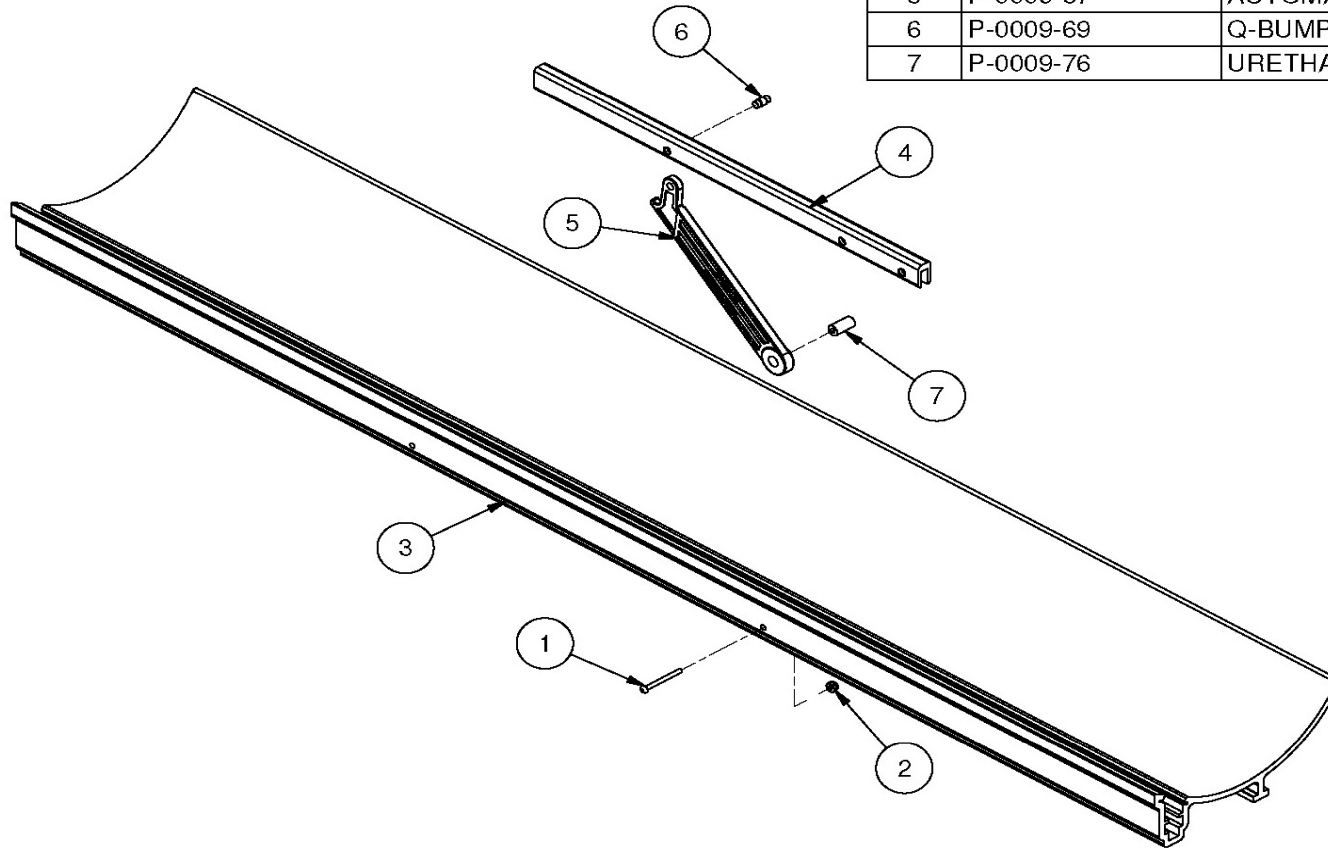
REV.
1

PAGE
1/1

G:\SB\SB-0009-45-7.dwg



PARTS LIST			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	7016-410632-150	6-32 UNCX1 1/2 MA SC RH SO	1
2	7036-000632-000	HEX NYLON NUT 6-32 UNC	1
3	P-0009-40-48	HIGHWAY 66 END GUTTER	1
4	P-0009-62-16	COMMUN BUMPER BALL RAIL	1
5	P-0009-67	AUTOMATIC BUMPER BOWL ARM	1
6	P-0009-69	Q-BUMP PIN	1
7	P-0009-76	URETHANE BUMPER BALL PIN - HIGHWAY 66	1



Design and specification are subject to change without notice.



HIGHWAY 66 BUMPER BALL LAST [RIGHT]

DRAFTSMAN: R. DE BLUZE
 DATE: 18/10/2004

SCALE: N/A
 APPROBATION: C.S.

DRAWING NO.: SB-0009-46-4

REV. 1
 PAGE 1/1



Gutter installation Pictures

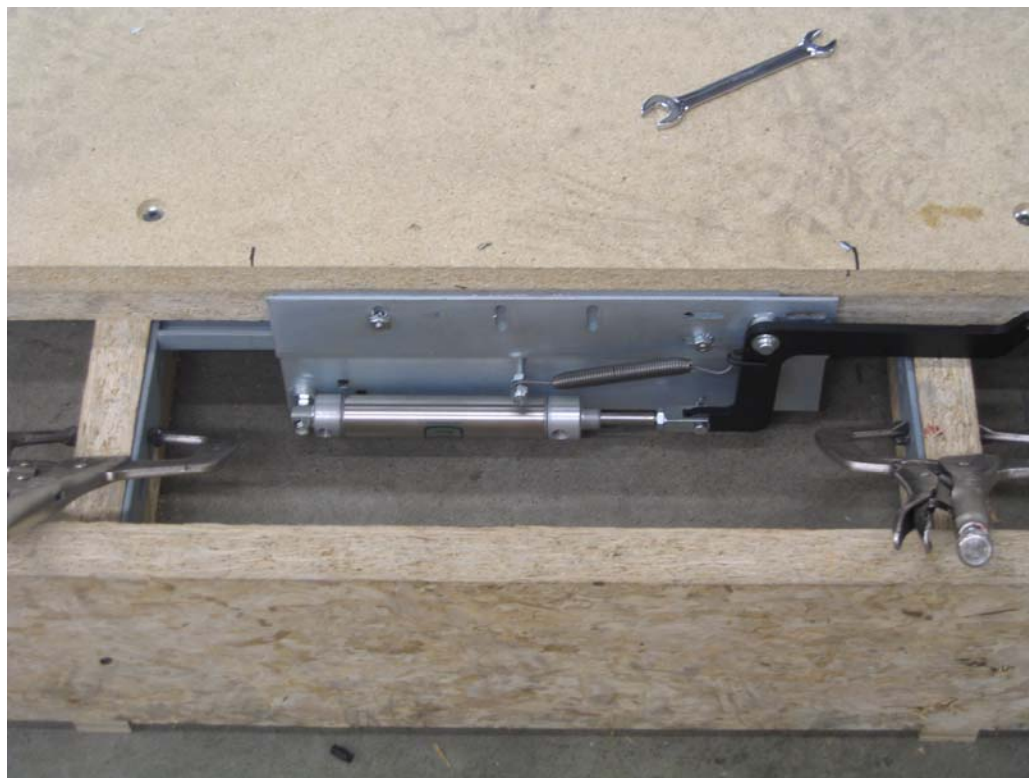


Picture 1



Picture 2



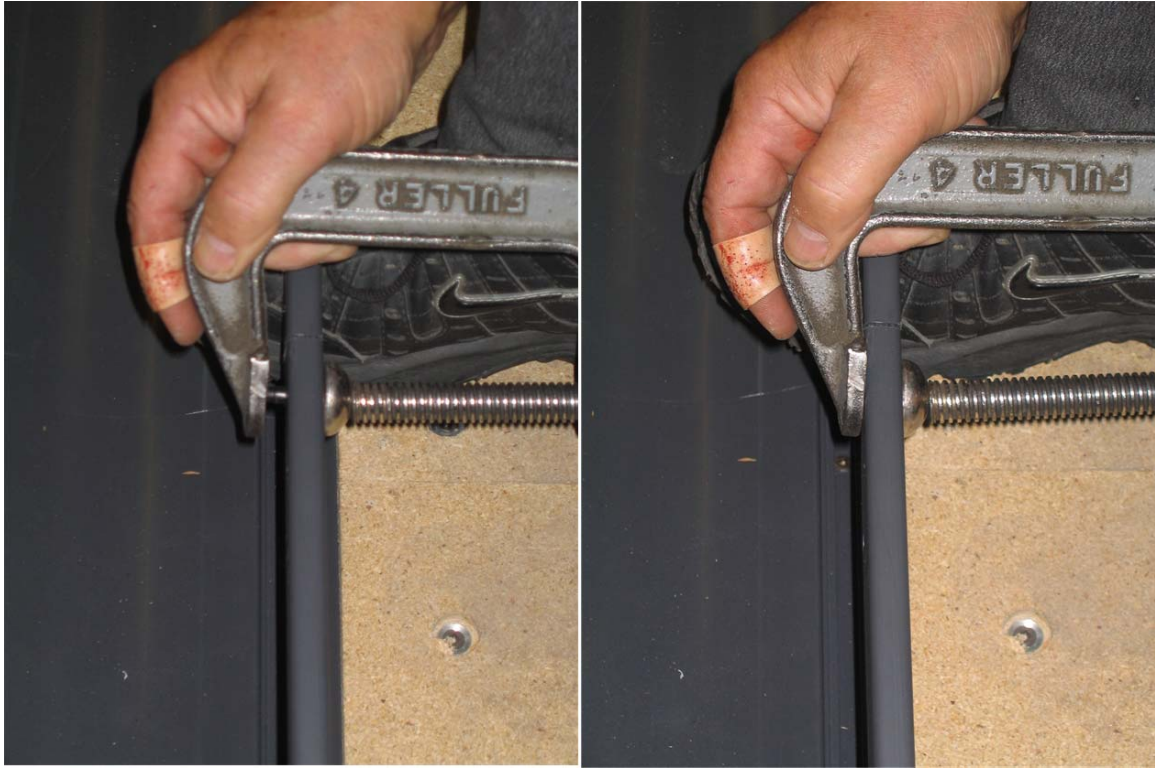


Picture 3



Picture 4





Picture 5



Picture 6



Picture 7



Picture 8





Picture 9





Picture 10





Picture 11



Picture 12





Picture 13



