

Club Durability

Operation Manual

Automated Design Corp
140 S. Pinnacle Drive
Romeoville, IL 60446 U.S.A
Phone: + 1-630-783-1150
Fax: + 1-630-783-1159

ADC Technical Documentation	Title: Club Durability Operation Manual	Page 1 of 48
Rev: 1.4	Author: ADC	Date: May 2024

Table of Contents

INTRODUCTION..... 3

TCP/IP SETTINGS..... 3

LAUNCHING THE INTERFACE..... 3

SAFETY PRECAUTIONS..... 4

INSTALLATION 4

REQUIREMENTS FOR GROUND CONNECTION 4

ELECTRICAL REQUIREMENTS..... 4

SYSTEM STARTUP 5

SYSTEM LAYOUT 6

COMMON HEADER..... 6

AUTO CONTROL - SEQUENCING 7

MANUAL CONTROL..... 9

RUNNING A CLUB TEST CYCLE 11

RUNNING A CLUB HEAD COR TEST CYCLE..... 11

Understanding and Setting the Brake & Backpressure 13

BILL OF MATERIALS..... 16

MECHANICAL..... 16

ELECTRICAL 26

SPARE PARTS LIST 44

MAINTENANCE 45

Weekly 45

Monthly..... 45

Yearly..... 46

TROUBLESHOOTING GUIDE 47

MACHINE SHUT DOWN 47

CONTACT ADC 48

LIMITED WARRANTY 48

ADC Technical Documentation	Title: Club Durability Operation Manual	Page 2 of 48
Rev: 1.4	Author: ADC	Date: May 2024

INTRODUCTION

Thank you for your purchase of the Club Durability machine. Every effort has been made to ensure that your new Club Durability is a high-quality, easy to use precision instrument. This Operation Manual contains instructions for using your Club Durability interface program.

Before continuing with any physical installation, carefully inspect the machine to determine if any damage has occurred to the cabinet and remove any packing and all documentation included with the system. If any damage is discovered, discontinue installation and notify Automated Design Corp immediately. Contact information for ADC can be found at the end of this manual.

Communication to the Club Durability system is established through the Ethernet port located on the side of the main control panel. The port is clearly marked and is located just above the power outlet for the computer.

TCP/IP SETTINGS

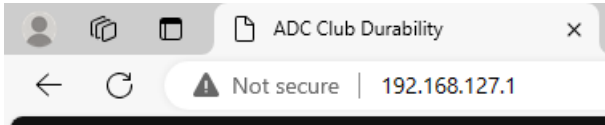
TCP/IP defines how your computer communicates with other computers. To make it easier to manage TCP/IP settings, we recommend using the automated Dynamic Host Configuration Protocol (DHCP). DHCP automatically assigns Internet Protocol (IP) addresses to the computers on your network, if your network supports it. To enable DHCP or change other TCP/IP settings, follow these steps:

- 1) Open Network Connections by clicking the **Start** button, and then clicking the **Control Panel**. In the search box, type **adapter**, and then under Network and Sharing Center, click **View network connections**.
- 2) Right-click the connection that you want to change, and then click **Properties**.
- 3) Click the Networking tab. Under **This connection uses the following items**, click **Internet Protocol Version 4 (TCP/IPv4)** and then click properties.
- 4) To specify IPv4 IP address settings:
 - To get IP settings automatically using DHCP, click **Obtain IP address automatically**, and then click **OK**.
- 5) To specify DNS server address settings:
 - To get a DNS server address automatically using DHCP, click **Obtain DNS server address automatically**, and then click **OK**.

LAUNCHING THE INTERFACE

- 1) Establish communication to the Club Durability system by connecting an ethernet cable from the computer to the ethernet port on the side of the main control panel.
- 2) Launch a Chrome based browser on the computer. Such as Microsoft Edge or Google Chrome. Internet Explorer is not supported by Chrome and is no longer supported by Microsoft.
- 3) In the browser address bar, type **192.168.127.1** and press **Enter**.
- 4) A page should then load with the Club Durability Interface.

ADC Technical Documentation	Title: Club Durability Operation Manual	Page 3 of 48
Rev: 1.4	Author: ADC	Date: May 2024



SAFETY PRECAUTIONS

While every effort has been made to make the Club Durability System as safe as possible, one should always operate the system with caution. Adhering to the following safety guidelines should minimize the risks of injury:

READ ALL MANUALS BEFORE ATTEMPTING TO OPERATE THE SYSTEM!

- Always operate the system with all guards in place and chamber access doors shut, if any.
- The control panels should be closed and locked while the system is in operation.
- Disconnect all electrical and pneumatic power to the system while performing any maintenance.
- Avoid dusty, humidity and temperature extremes. Do not place the system in any area where it may become wet.
- Be mindful of any additional regulations or safety procedures your facility may have.

INSTALLATION

The system is designed to be installed into a temperature controlled, laboratory environment. Excessive temperatures or humidity will affect the results of the system. This system requires connection to electrical power for operation, and should be leveled before use.

REQUIREMENTS FOR GROUND CONNECTION

For proper safety and operation, this system must be properly grounded. Have a qualified electrician check your wall outlet to ensure that the plug is grounded properly. This system must always be plugged to its own outlet which is adequately grounded.

ELECTRICAL REQUIREMENTS

The electrical current should only be 100 - 120 V, 60 Hz, A.C and fused at 15 or 20 A. This provides the best performance and prevents an overload which could cause a fire from the overheating of the cables. It is recommended that a separate circuit be used for this system, as well as a receptacle that cannot be disconnected with a switch. Do not use an extension cable. Connect the power cable to any standard 120 VAC outlet.

ADC Technical Documentation	Title: Club Durability Operation Manual	Page 4 of 48
Rev: 1.4	Author: ADC	Date: May 2024

SYSTEM STARTUP

The following procedure should be performed each time the system is operated. It is important that the startup procedure is performed in the order presented below, or some features of the system may not function.

1. Check the system and surrounding area to be sure all cables, air hoses, and safety switches are connected properly.
2. Make sure that all pneumatic and electrical power has been connected to the system.
3. Ensure that the main air regulator is set to 80-PSI minimum. (Shown in Figure 1).








Figure 1

Main Air Supply Regulator

4. Be sure that the E-STOP pushbutton located on the control panel is pulled out.
5. Make sure that the control power light is illuminated white.



-  - Initiates an immediate stop and reset on all subsystems.
-  - Open the manual control menu.
-  - Reset Data.
-  - Stop Auto.
-  - Start Auto

ADC Technical Documentation	Title: Club Durability Operation Manual	Page 5 of 48
Rev: 1.4	Author: ADC	Date: May 2024

SYSTEM LAYOUT



COMMON HEADER

CONTROL POWER – Will indicate if the (MCR) is on or off. The red background color indicates the Master Control Relay has been triggered and the machine has stopped functionally momentarily. This feature can be triggered by the E-Stop pendant or if the chamber door is open. To return power back to the machine, close the chamber door and twist the E-Stop pendant to release it.

MAIN AIR OK – Will appear red if pneumatic power is not provided. Green if pneumatic power is provided.

AXIS FAULT – Will indicate if there was an error in the motors.

BALLS LOADED – Will indicate if balls are at the breech ready to be loaded.

BALL IN ELEVATOR – Will indicate if a ball is in the elevator.

BALL IN CHAMBER – Will indicate if a ball is in the chamber.

INBOUND SPEED – Measures the projectile in feet per second (f/s)

REBOUND SPEED - Measures the projectile in feet per second (f/s)

STEP COUNT – The count within the sequence. ([Current Count] of [Sequence Count]).

TOTAL HITS – Indicates the number of shots fired thus far within this cycle

CLUB POSITION – The allowed position of the club after impact with the projectile.

X POSITION – Shows the current x-limit position.

Y POSITION – Shows the current y-limit position.

CLUB READY – Will indicate if the club is ready for testing.

CLUB FAULT – Will indicate if there is a fault with the club position and disable operation of the machine.

PANIC - Initiates an immediate stop and reset on all subsystems.

MACHINE STATUS – Indicates the Machine Status.

MACHINE ALARM – Indicates the Machine Alarm.

ADC Technical Documentation	Title: Club Durability Operation Manual	Page 6 of 48
Rev: 1.4	Author: ADC	Date: May 2024

Test Configuration
Sequence Files
Settings

Sequence ID

Loop Routine

Shot Delay

Sequence Editor

X	Y	Hits	PSI	Stop		
0.00	0.00	1	20.0	No		
6.35	-6.35	1	21.0	No		
-6.35	6.35	1	22.0	No		

+

Disable Wait For Exit
Disable
Enable

Override Club Control
Disable
Enable

Override Wait for Data
Disable
Enable

AUTO CONTROL - SEQUENCING

SEQUENCE ID - Enter a name for the sequence.

LOOP ROUTINE - Enter a number for the number of times the sequence is run.

SHOT DELAY - Minimum time between shots.



- Clears the current sequence.



- Open a saved sequence.



- Save the current sequence to **Sequence Files**.



- Copy the current sequence to a new sequence with a different Sequence ID.



- Send the current sequence to the machine.



- Read the sequence from the machine.

ADC Technical Documentation	Title: Club Durability Operation Manual	Page 7 of 48
Rev: 1.4	Author: ADC	Date: May 2024

Test Configuration **Sequence Files** Settings

Upload, download and manage sequence files.

File Listing [/sequences]

Name	Actions
startup_single_location.json	

Sequencing - File Management

- Download the sequence json file to the computer.

- Delete the sequence from the system.

Test Configuration **Sequence Files** **Settings**

> Device

∨ Club Control

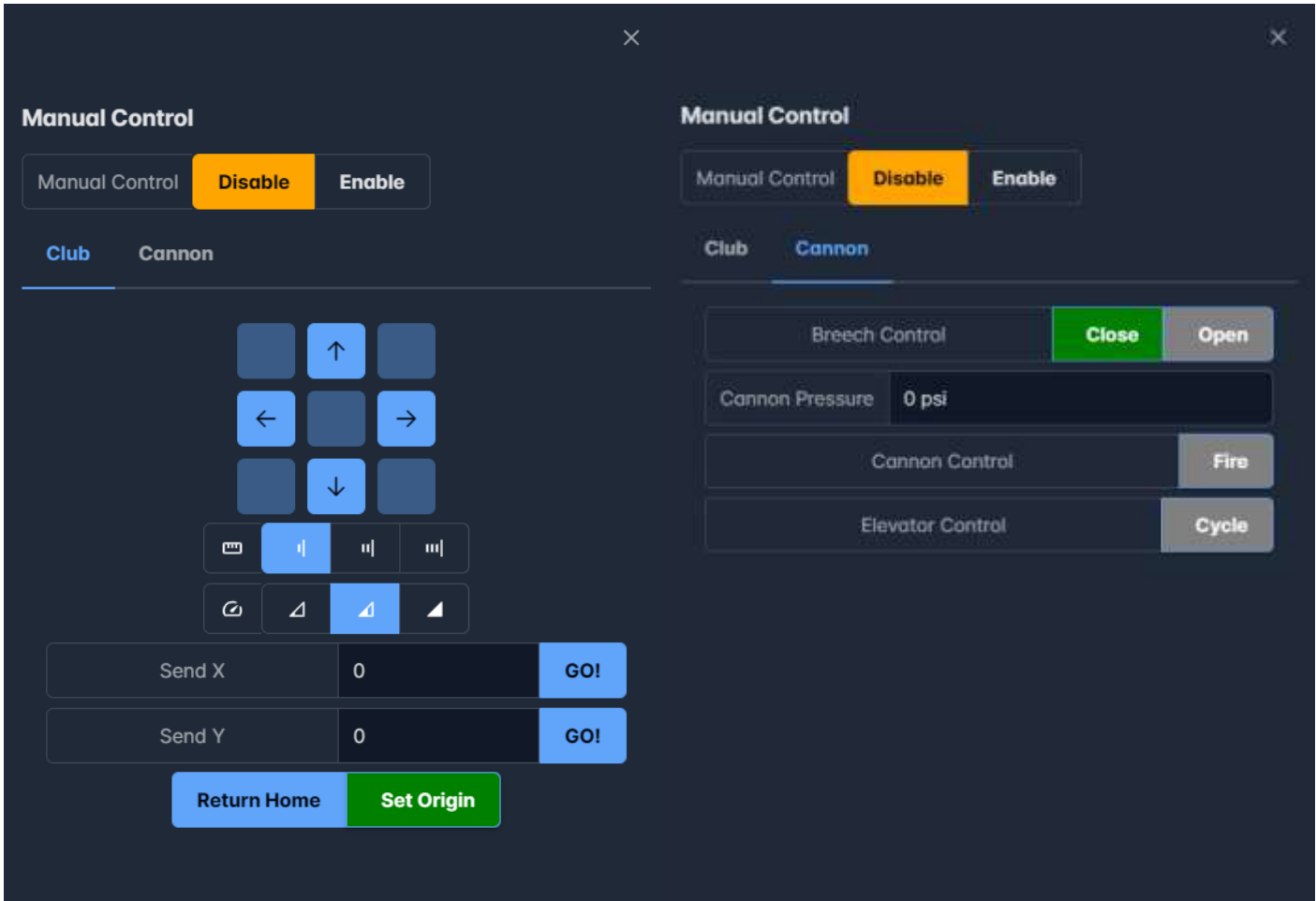
Brake Position: 520

Backpressure Position: 800

BRAKE POSITION - The club position in which the brake activates.

BACKPRESSURE POSITION - The club position in which the backpressure activates.

ADC Technical Documentation	Title: Club Durability Operation Manual	Page 8 of 48
Rev: 1.4	Author: ADC	Date: May 2024



MANUAL CONTROL

ENABLE MANUAL - Allows the user to operate the machine in Manual Mode.

BREECH OPEN - Opens the breech to load a ball into the cannon.

BREECH CLOSED - Closes the breech, if open.

CANNON PRESSURE - Enter a pressure in PSI to transmit pressure.

FIRE CANNON - This will fire the cannon.

ELEVATOR - Elevator cycles automatically even in manual mode to prevent ball jams in the inner chamber rail.

GAUGE - Activates the gauge.

JOG UP - Moves the y-limit position up.

JOG DOWN - Moves the y-limit position down.

JOG RIGHT - Moves the x-limit position towards the slide.

JOG LEFT - Moves the x-limit position away from the slide.

RETURN TO HOME - Returns X & Y positions to zero.

SET ORIGIN - Sets the current position of the club as the origin.

SEND Y- User input for the Y target position.

SEND X - User input for the X target position.

JOG LONG - Increases the distance of the Jog.

JOG MEDIUM - Standard distance of the Jog.

JOG SHORT - Decreases the distance of the Jog.

ADC Technical Documentation	Title: Club Durability Operation Manual	Page 9 of 48
Rev: 1.4	Author: ADC	Date: May 2024

Status
Data
Data Files

Test ID

📄

Hit Index	Step Number	Step Shot	X Position	Y Position	Inbound Speed	Rebound Speed	Velocity Ratio	Error Code	Timestamp
No available options									
<< < > >>									
Total Data Collected: 0 rows									

- TEST ID – Enter a name for the data file.
- HIT INDEX – Total number of hits.
- STEP NUMBER – Step of the sequence.
- X POSITION – Club position along the X axis.
- Y POSITION – Club position along the Y axis.
- INBOUND SPEED – Measures the projectile in feet per second (f/s).
- REBOUND SPEED – Measures the projectile in feet per second (f/s).
- VELOCITY RATIO – Measures the ratio of inbound to rebound speed.

- Save the data to **Data Files**.

Note: This screen will only show the data of the most recent 100 shots, all of the data will be present once the file is downloaded.

ADC Technical Documentation	Title: Club Durability Operation Manual	Page 10 of 48
Rev: 1.4	Author: ADC	Date: May 2024

RUNNING A CLUB TEST CYCLE

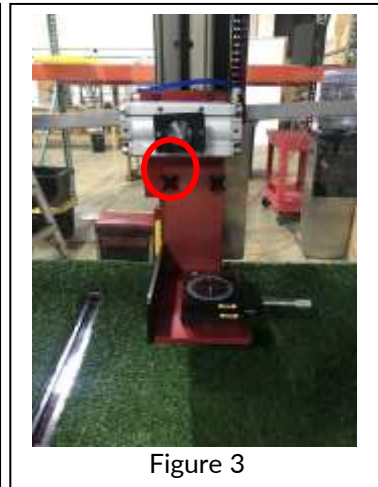
This section describes the sequence of operation to be performed for running a rolling cycle. Before you proceed further, make sure to carefully read and follow the guidelines given under the section *Safety Precautions*.

1. Plug in the power outlet.
2. Make sure the E-Stop is pulled out.
3. Press Start Power.
4. Navigate to the Manual Control page. Enable manual functions by pressing the Enable Manual button. It should illuminate green.
5. Set the X & Y position of the club to your liking. Then press Set Origin to set those positions equal to 0.
6. Disable Manual functions by pressing Disable Manual button. This should illuminate red.
7. Navigate back to the Main Page.
8. Select the Test Configuration tab. Open an existing sequence or use the editor to make a new sequence.
9. When you are satisfied with the sequence displayed in the editor, click the Download button to send the sequence to the system.
10. Press Run Auto Cycle button to start the test sequence. The Run Auto Cycle button should illuminate green.
11. The Club Durability performs the sequence and stops after completion. The data will be added to the data table.
NOTE: Because the columns of the data table are dynamically generated by the sequence, sometimes the first row of the Data Table does not appear. Simply click the Sequence tab button, then the Data tab button and your data will be present in the table.

RUNNING A CLUB HEAD COR TEST CYCLE

NOTE: Not every system is equipped with this feature.

1. Remove and replace the stabilizer (Figure 1) with the tooling set (Figure 3). A ½” wrench will be needed to remove the stabilizer shown in Figure 2.



2. Extend the back tarp to lay beneath the tooling set. The tarp will have a set up shown in Figure 4 while the stabilizer is connected. The tarp will have a set up shown in Figure 5 while the tooling set is connected.

ADC Technical Documentation	Title: Club Durability Operation Manual	Page 11 of 48
Rev: 1.4	Author: ADC	Date: May 2024



Figure 4

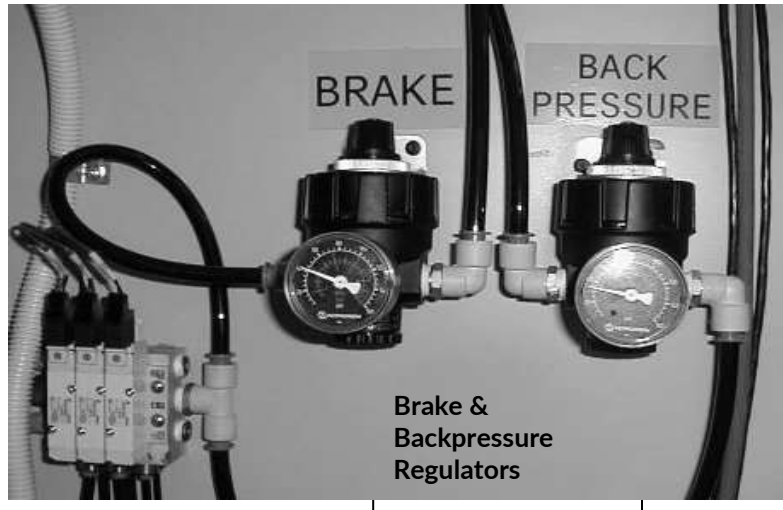


Figure 5

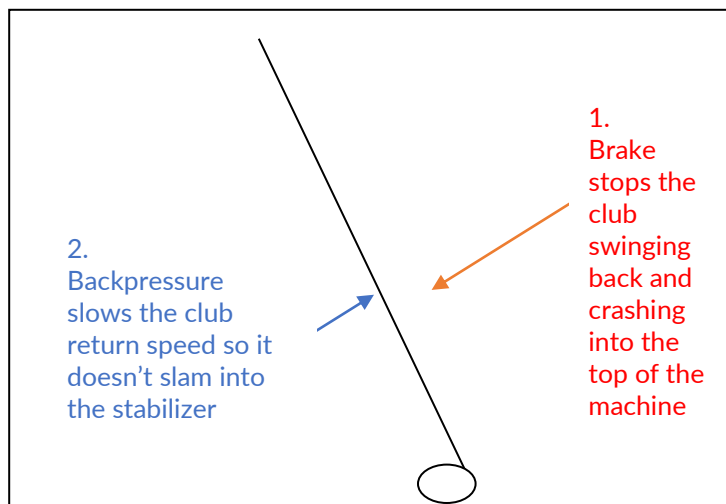
3. Navigate to the Tooling page. Enable manual functions by pressing the enable manual button. It should illuminate green.
4. Set the X & Y position to hit the center of the club. Then press Set Origin to set those positions equal to 0.
5. Disable manual functions by pressing Disable Manual button. This should illuminate red.
6. Press the Run Tooling Cycle button. The data will be added to the data table and the cycle will end.
7. Reset the tooling set to start cycle over.

ADC Technical Documentation	Title: Club Durability Operation Manual	Page 12 of 48
Rev: 1.4	Author: ADC	Date: May 2024

Understanding and Setting the Brake & Backpressure



The Backpressure is used to control the return speed of the club to the stabilizer. When a ball strikes the club, the Brake is applied to stop the club's backward motion. To avoid slamming the club into the stabilizer on the return direction, BACKPRESSURE is applied in the opposite direction, slowing the return of the club. As shown below, BACKPRESSURE is applied in the opposite direction of the Brake Pressure.



The Brake pressure may vary with the mass of the club being tested. Heavier and longer clubs will require more Brake pressure than lighter, shorter clubs. As you can see from the above figure, the Backpressure directly affects the strength of the brake. Backpressure should be initially set to 3 PSI below the brake setting; if unsure, a good starting point for the brake is 20PSI.

The amount of Backpressure required is affected by the speed at which the club recoils. For slower speeds, less backpressure may be required, as the club will not be recoiling with as much velocity. For higher speeds, you may wish to decrease the Backpressure, as more brake will be required to control the club.

ADC Technical Documentation	Title: Club Durability Operation Manual	Page 13 of 48
Rev: 1.4	Author: ADC	Date: May 2024

It may help to understand the fundamentals of how the club is controlled. The following is the basic configuration of the Club Control Function:

- The brake system is not active when the club is in the forward position.
- The club is in the forward position when impacted by the ball.
- The brake activates after the forward limit switch is off, about 10 degrees.
- The backpressure activates when the rear limit switch comes on, at about 20 degrees. (Due to the backward momentum of the club, the club will actually swing up to approximately 70 degrees)
- The backpressure then works against the brake to slow the return of the club.
- The backpressure turns off once the club is in the forward position.
- The brake remains on for one second after the club returns to help stabilize the club.
- The brake turns off before the club has fired.

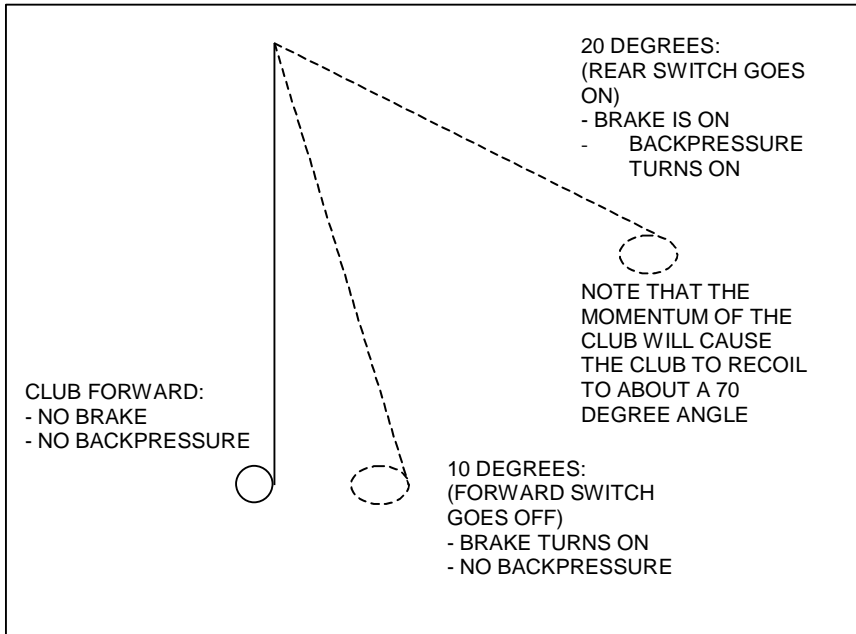
Therefore, the typical sequence of controlling the club is as follows:

PLEASE NOTE: THE FOLLOWING SEQUENCE APPLIES TO STANDARD CONTROL MODE ONLY. IN LEGACY MODE, THE BRAKE IS ALWAYS ON.

1. A ball is fired into the chamber.
2. The ball strikes the clubface.
3. The club swings backwards.
4. The FORWARD LIMIT SWITCH turns OFF.
5. The BRAKE turns ON to stop the club. The club continues to swing back.
6. The REAR LIMIT SWITCH turns ON.
7. The BACKPRESSURE turns ON and begins to work against the brake.
8. The club runs out of momentum and stops swinging backward.
9. The club begins to return forward in a smooth motion thanks to the BACKPRESSURE.
10. The FORWARD LIMIT SWITCH turns ON.
11. The BACKPRESSURE turns OFF.
12. The BRAKE holds the club steady against the stabilizer.
13. The BRAKE turns off.
14. The club hangs freely in the chamber, waiting for the next shot.

ADC Technical Documentation	Title: Club Durability Operation Manual	Page 14 of 48
Rev: 1.4	Author: ADC	Date: May 2024

The following diagram explains the above sequence graphically:



There is no scientific or “perfect” setting for the Backpressure in any given test. Simply set the Backpressure visually: fire a shot into the club and watch how far it recoils. If the club recoil is too *long*, turn Backpressure *down*. If the club recoil is too *short*, turn Backpressure *up*. It is only important to ensure the following:

1. The club should recoil past the backpressure position.
2. The club should not hit the top of the chamber.

For convenience, the Club Control functions in both Manual and Automatic mode.

For proper operation, the Brake pressure must always be higher than the Backpressure.

The regulators that control Brake and Backpressure constantly bleed a small amount of pressure. This is to avoid air being trapped in the system, which would affect the consistent operation of the brake and backpressure. The pressure bleed is normal operation and not a fault.

ADC Technical Documentation	Title: Club Durability Operation Manual	Page 15 of 48
Rev: 1.4	Author: ADC	Date: May 2024

BILL OF MATERIALS MECHANICAL

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION	MANUFACTURER	CODE
1	1	ADC-CLEBUR-A03	VALVE ASSEMBLY MOUNTED, STANDARD	ADC	
2	1	ADC-CLEBUR-A03	VALVE ASSEMBLY MOUNTED, STANDARD	ADC	
3	1	2397A05	CANNON BALL HANGER BKT	ADC	
4	1	4378A05	FLAT BAR 1/2" X 1/4" X 1/8" ALUM	ADC	
5	1	ADC-3357-CLEBUR-A07-AM	GOLF CLUB ASSEMBLY MOUNTED	ADC	
6	1	ADC-CLEBUR-A09-S	GOLF CLUB CLAMP MECHANISM	ADC	
7	1	ADC-CLEBUR-A10	STANDARD ASSEMBLY CLUB STABILIZER	ADC	
8	2	BEAM-15-R	RECEIVER UNIT ASSEMBLY	ADC	
9	2	BEAM-15-E	EMITTER UNIT ASSEMBLY	ADC	
10	1	ADC-CLEBUR-A01	CONTROL PANEL	ADC	
11	1	ADC-CLEBUR-C02	CONTROL PANEL 2	ADC	
12	1	2397D0258	BALL GASKET MTC PLATE	ADC	
13	1	2397D044	CANNON BALL HANGER BKT	ADC	
14	1	2397D045	Ball Roll Joining Hole	ADC	
15	1	3300D047	BALL ROLL LONG PEZAP	ADC	
16	1	3300D048	BALL ROLL SHORT PEZAP	ADC	
17	1	3300D049	FLAT BAR 1/2" X 1/4" X 1/8" ALUM	ADC	
18	1	3300D049	FLAT BAR 1/2" X 1/4" X 1/8" ALUM	ADC	
19	1	3300D049	FLAT BAR 1/2" X 1/4" X 1/8" ALUM	ADC	
20	1	3300D049	FLAT BAR 1/2" X 1/4" X 1/8" ALUM	ADC	
21	4	4330K031	LEVERING FOOT 5/16" X 1/8" SWIVE	COMML	
22	4	9374K44	BASE 2500W CAP	COMML	
23	1	2397D0123C	BRITTON SILEX 1/2" X 20 X 3/16" STEEL		
24	1	2397D0123C	BRITTON SILEX 1/2" X 20 X 3/16" STEEL		
25	1	2397D0123C	BRITTON SILEX 1/2" X 20 X 3/16" STEEL		
26	2	F-33-0612-C	SOC. SETSCREW 1/4" X 20 X 3/4"		
27	4	F-SH-0612-C	SECS 1/2" X 20 X 1" STEEL		

REVISIONS AND COMMENTS:
 REVISION 1: 10/15/2023 - CHANGED TO 1/2" X 1/4" X 1/8" ALUM FOR BALL ROLL LONG PEZAP.
 REVISION 2: 10/15/2023 - CHANGED TO 1/2" X 1/4" X 1/8" ALUM FOR BALL ROLL SHORT PEZAP.
 REVISION 3: 10/15/2023 - CHANGED TO 1/2" X 1/4" X 1/8" ALUM FOR FLAT BAR 1/2" X 1/4" X 1/8" ALUM.
 REVISION 4: 10/15/2023 - CHANGED TO 1/2" X 1/4" X 1/8" ALUM FOR FLAT BAR 1/2" X 1/4" X 1/8" ALUM.
 REVISION 5: 10/15/2023 - CHANGED TO 1/2" X 1/4" X 1/8" ALUM FOR FLAT BAR 1/2" X 1/4" X 1/8" ALUM.

UNITS CONVERSIONS:
 INCHES TO MILLIMETERS: 1" = 25.4MM
 MILLIMETERS TO INCHES: 1MM = 0.03937" (RND)
 FEET TO METERS: 1' = 0.3048M (RND)
 METERS TO FEET: 1M = 3.28084' (RND)

ADC
 3712 CLUB DURABILITY
 MAIN ASSEMBLY

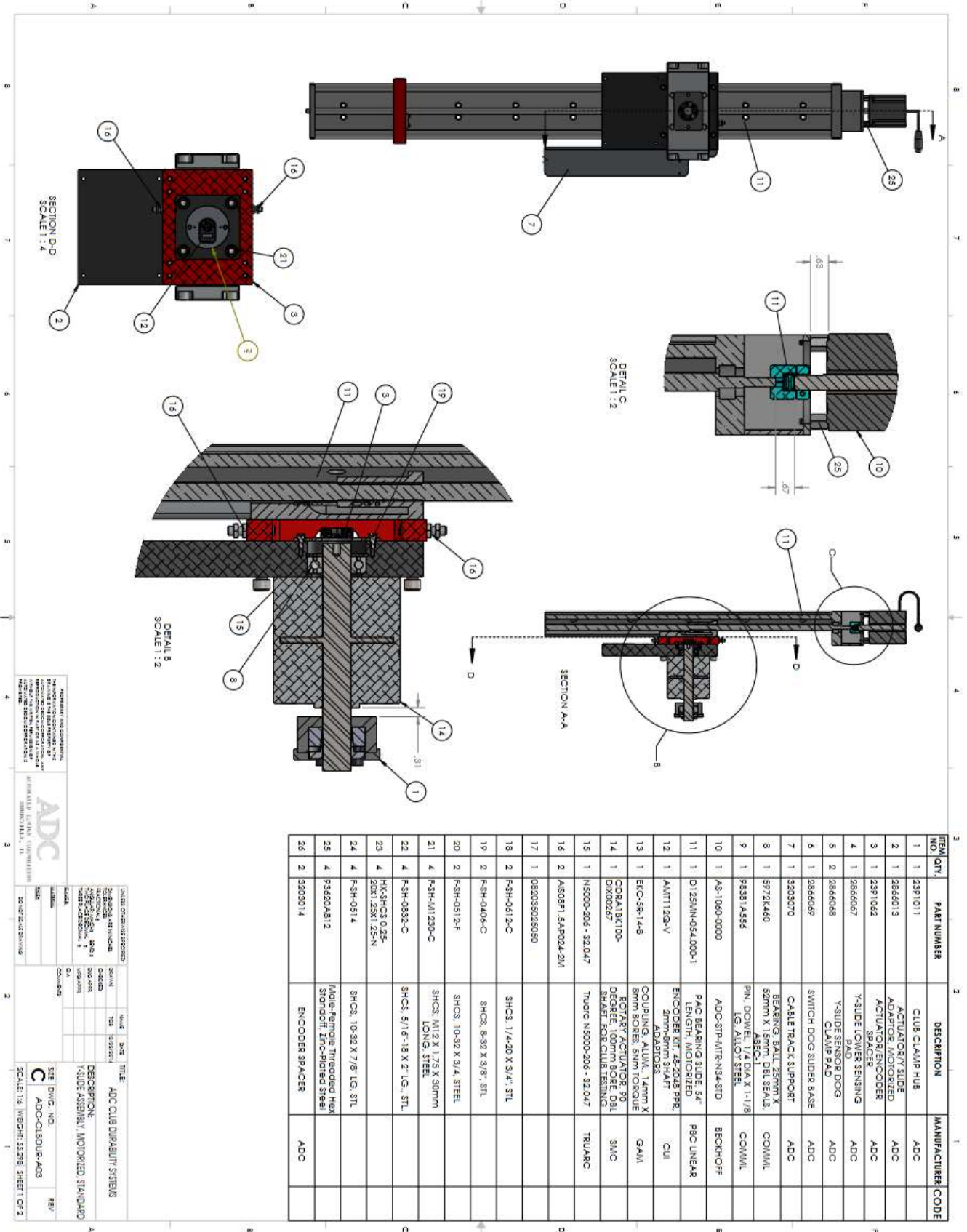
DATE: 10/15/2023
 DRAWN BY: [REDACTED]
 CHECKED BY: [REDACTED]
 APPROVED BY: [REDACTED]

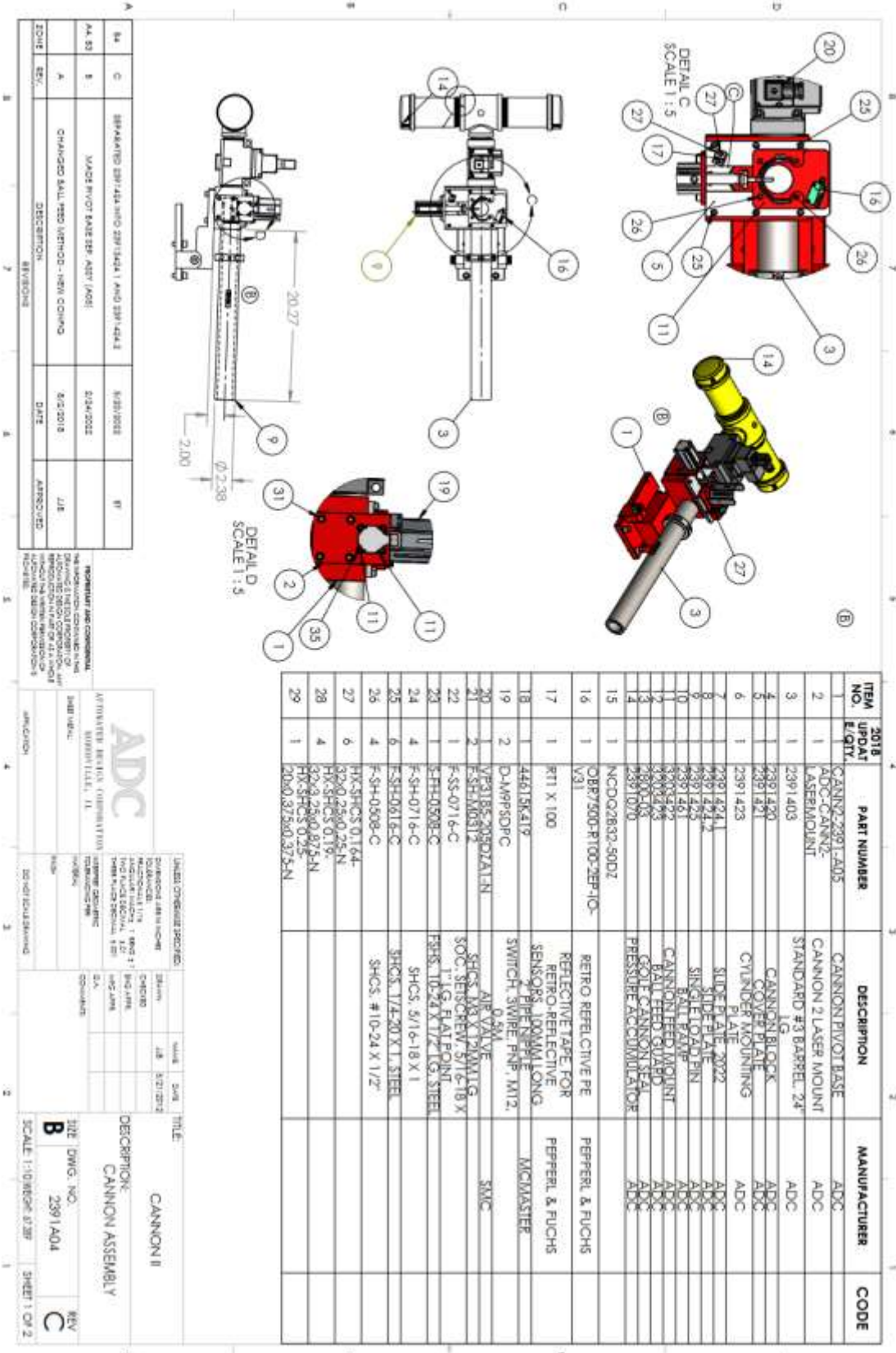
SCALE: 1:1
 SHEET 1 OF 1

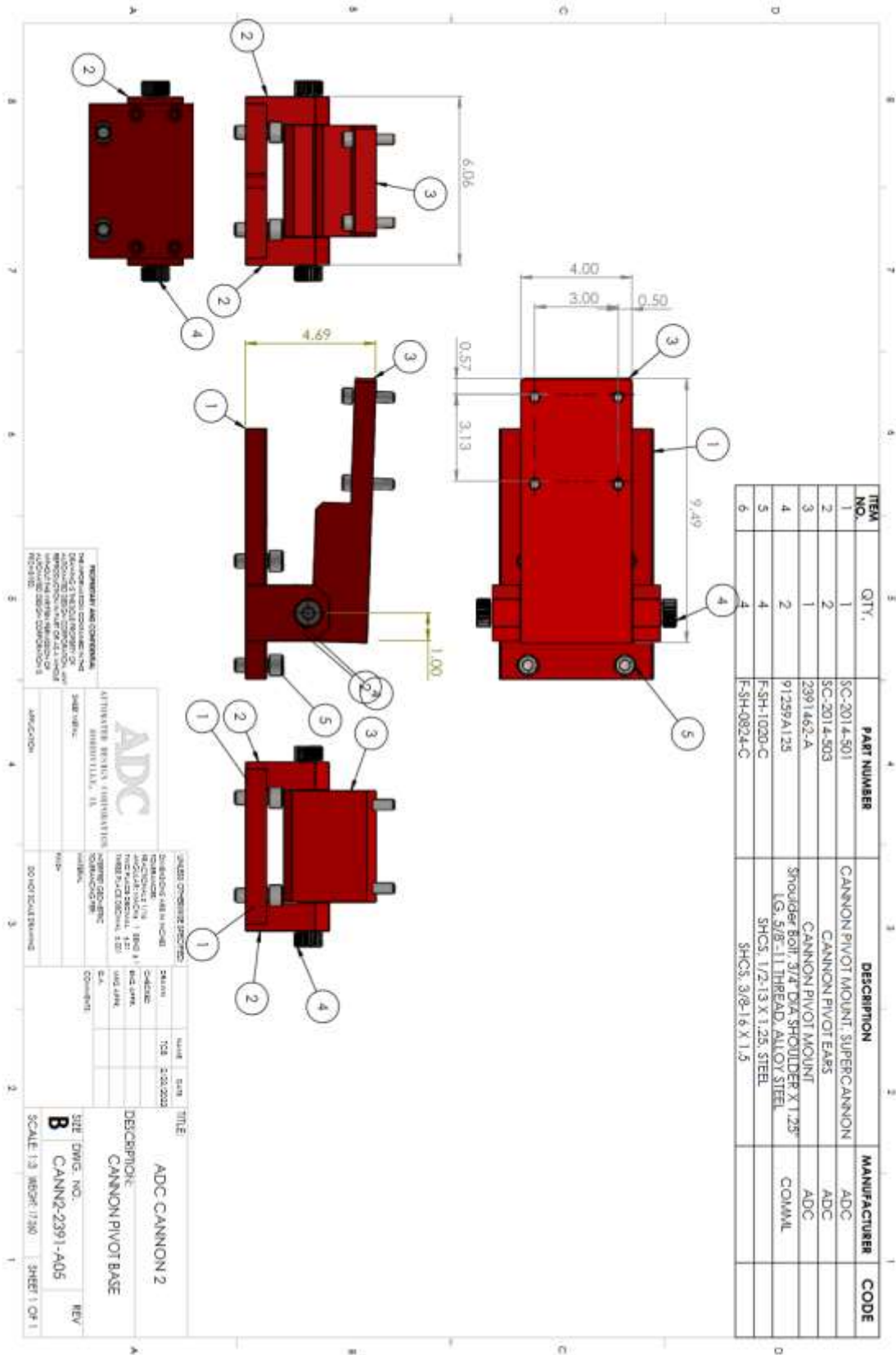
ITEM NO.	QTY.	PART NUMBER	DESCRIPTION	MANUFACTURER	CODE
1	1	3712A11	DOOR ASSEMBLY	ADC	
2	1	3712201	BASE FRAME, 2 WETER	ADC	
3	1	3712203	GUARD, CANNON END	ADC	
4	1	3712204-T	SENSOR MFG. PLATE, 2.17" SENSORS, 6" C/C TOP	ADC	
5	1	3712204-B	SENSOR MFG. PLATE, 2.17" SENSORS, 6" C/C BOT	ADC	
6	1	3712205	ELEVATOR END GUARD	ADC	
7	2	3712206	LEVAN PANEL FRONT	ADC	
8	1	3712207	LEVAN, REAR, ELEVATOR END	ADC	
9	1	3712208	LEVAN, REAR, CANNON END	ADC	
10	1	3712209	TOP PAN, SMALL	ADC	
11	1	3712210	TOP PAN	ADC	
12	2	3712211-A	DOOR MAGNET CATCH MFG BLOCK	ADC	
13	2	3712211-B	DOOR MAGNET CATCH	ADC	
14	4	3712212	TARP HANGAR SHAFT	ADC	
15	1	3712213	BOTTOM PAN, MOTORIZED, 6" SENSOR C/C	ADC	
16	1	3712214	BOTTOM PAN, SMALL	ADC	
17	1	3712215	BALL CHUTE	ADC	
18	1	3712216	COR SHEET METAL GUARD	ADC	
19	1	3712217	DOOR SWITCH FRAME MOUNTING PLATE	ADC	
20	12	643K16	CLAMP COLLAR, 1/2" DIA, 1-PC	COMM	
21	1	CPC-115006-5	SAFETY SWITCH, 2 NC, 1 NO, SWITCH SIDE	DOLD	
22	2	1846083	TARP, 2-HOLE, CUSTOM, CALLAWAY	OSC	

REQUIREMENT AND COMMENT:
 THE PRODUCT SHALL BE ASSEMBLED AND OPERATED IN ACCORDANCE WITH THE INSTRUCTIONS PROVIDED IN THE USER MANUAL AND THE INSTRUCTIONS PROVIDED IN THE INSTRUCTIONS FOR USE AND THE INSTRUCTIONS FOR MAINTENANCE AND REPAIR.

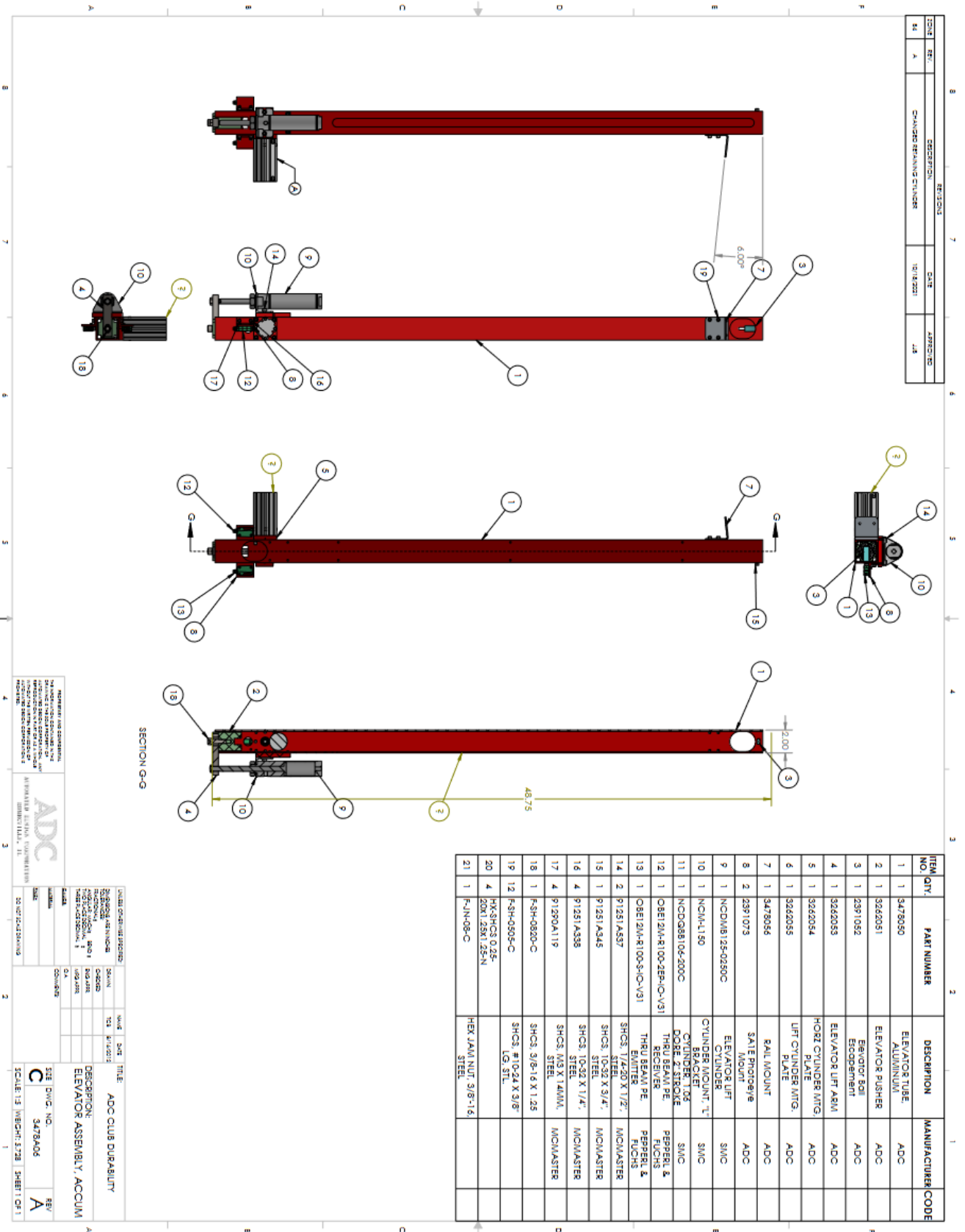
UNITED STATES PATENT OFFICE
 3712 CLUBTESTER
 3712A02
 3712A02

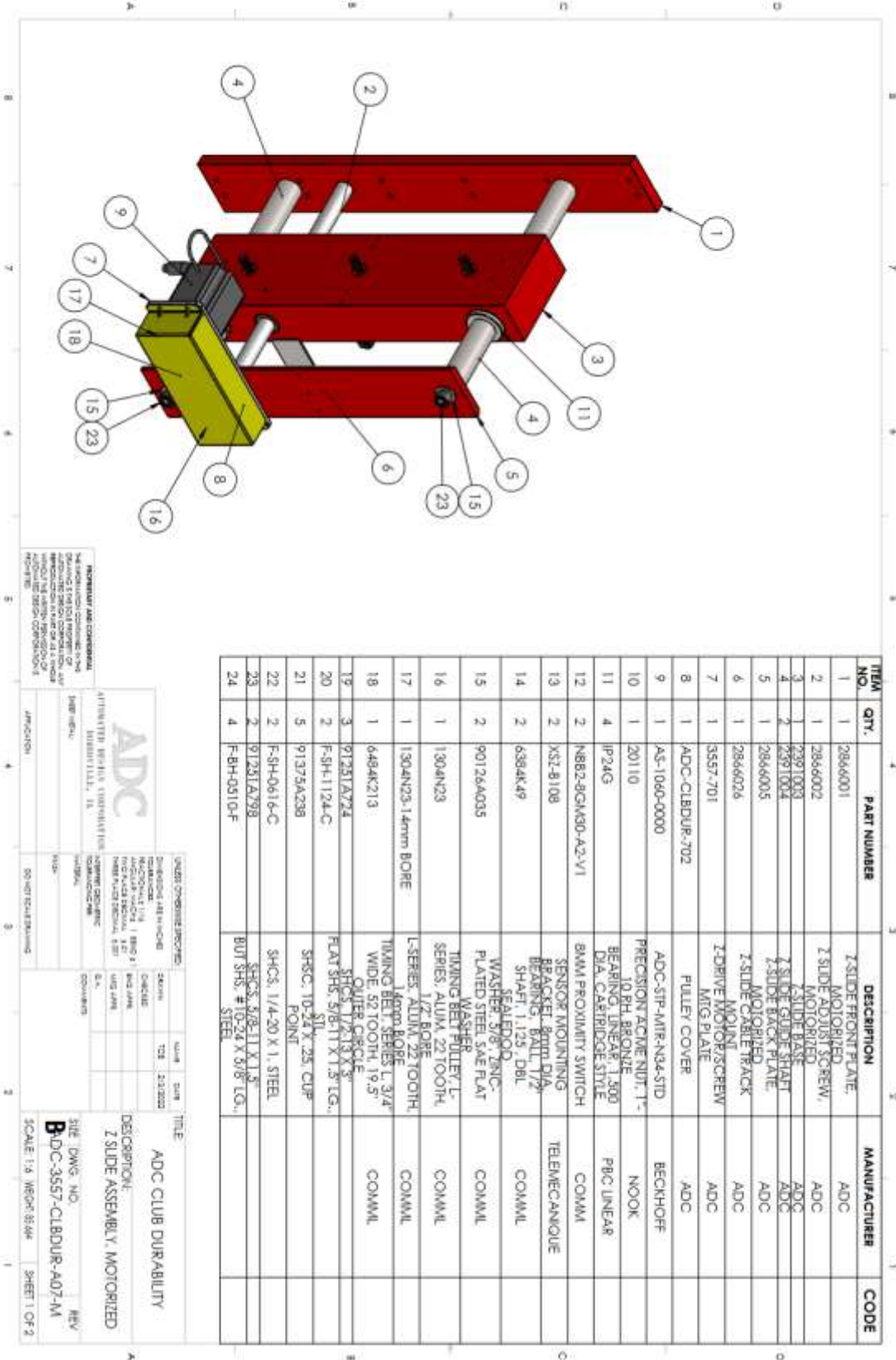


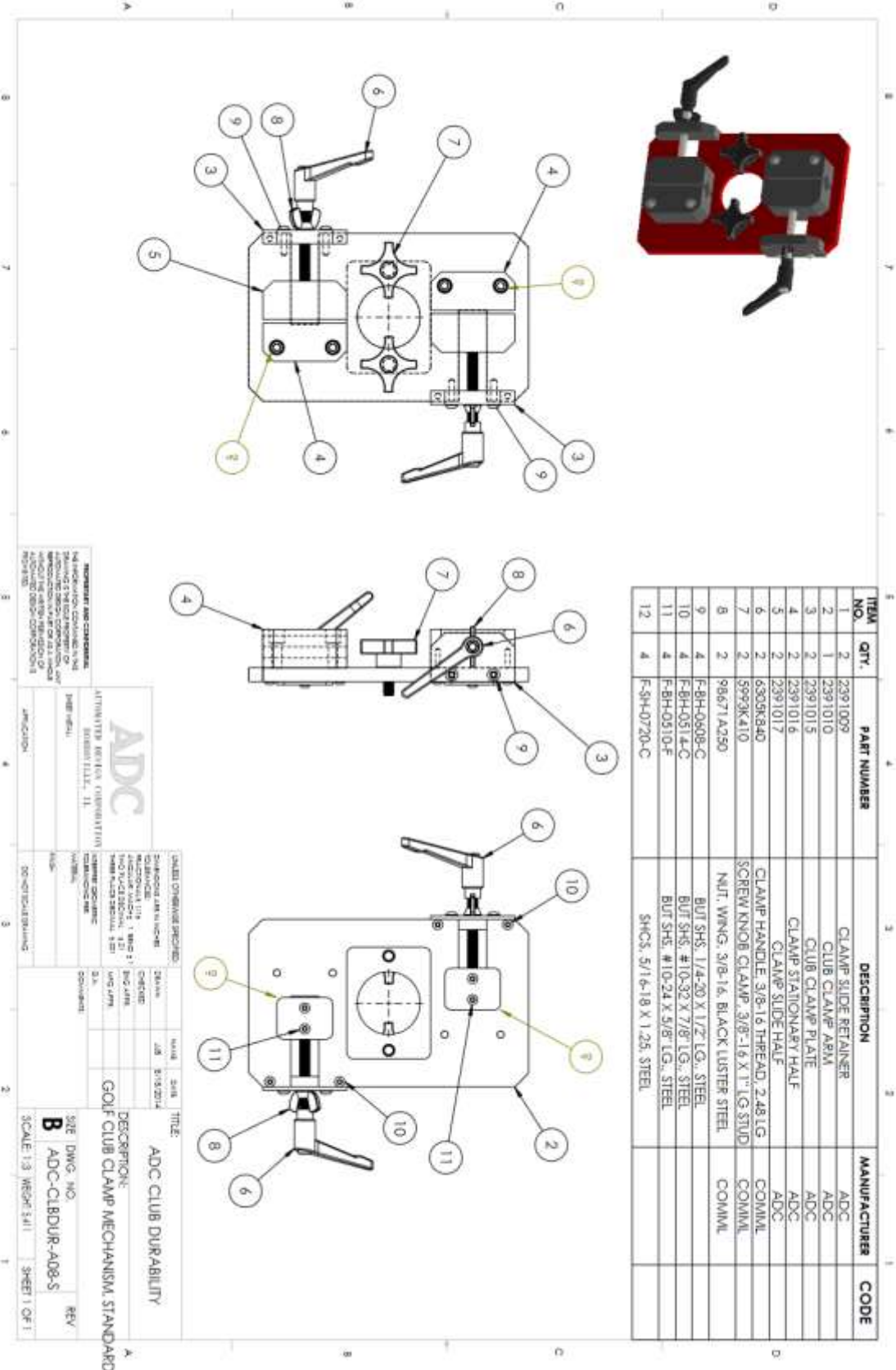




ADC Technical Documentation	Title: Club Durability Operation Manual	Page 20 of 48
Rev: 1.4	Author: ADC	Date: May 2024





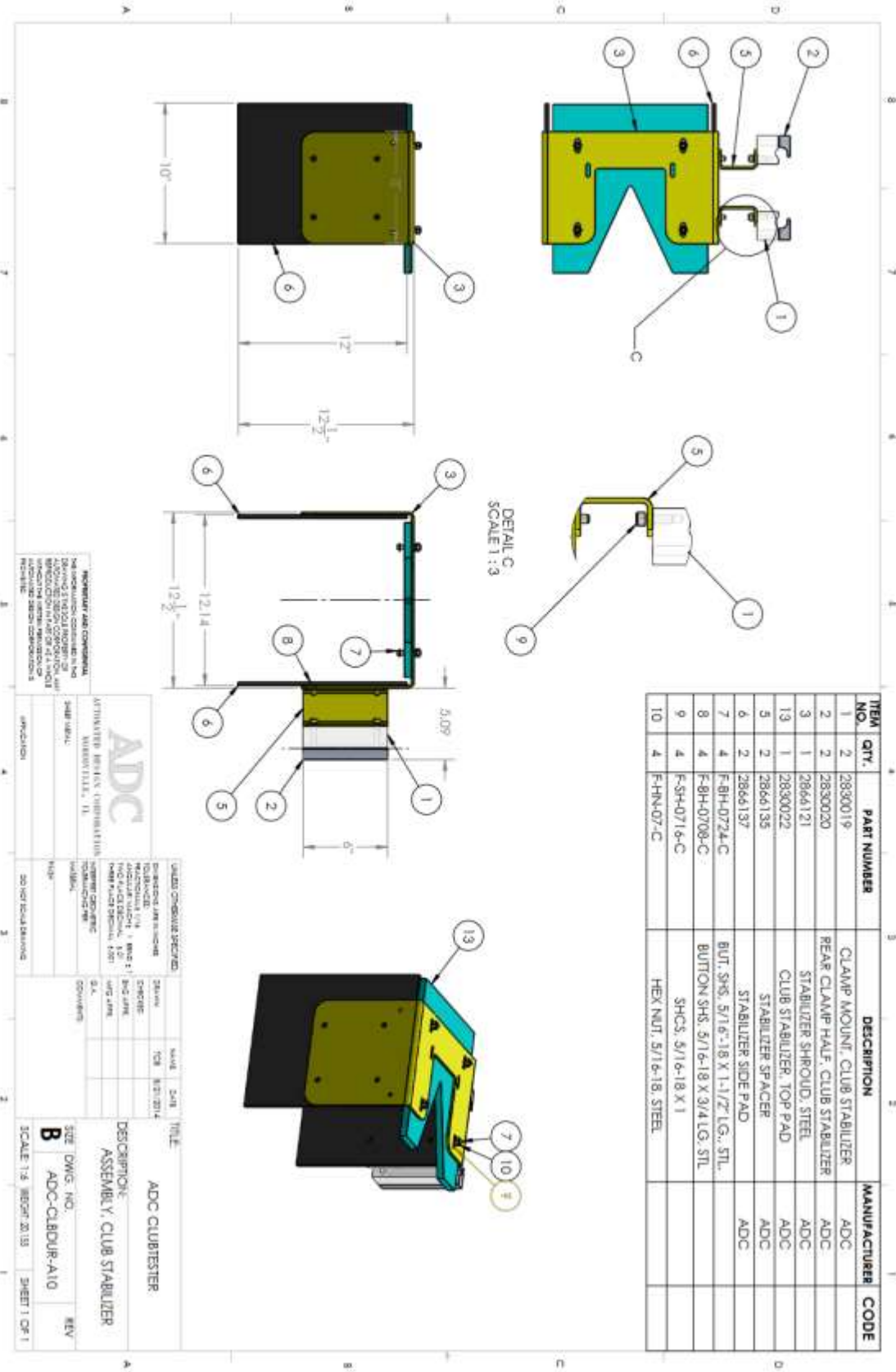


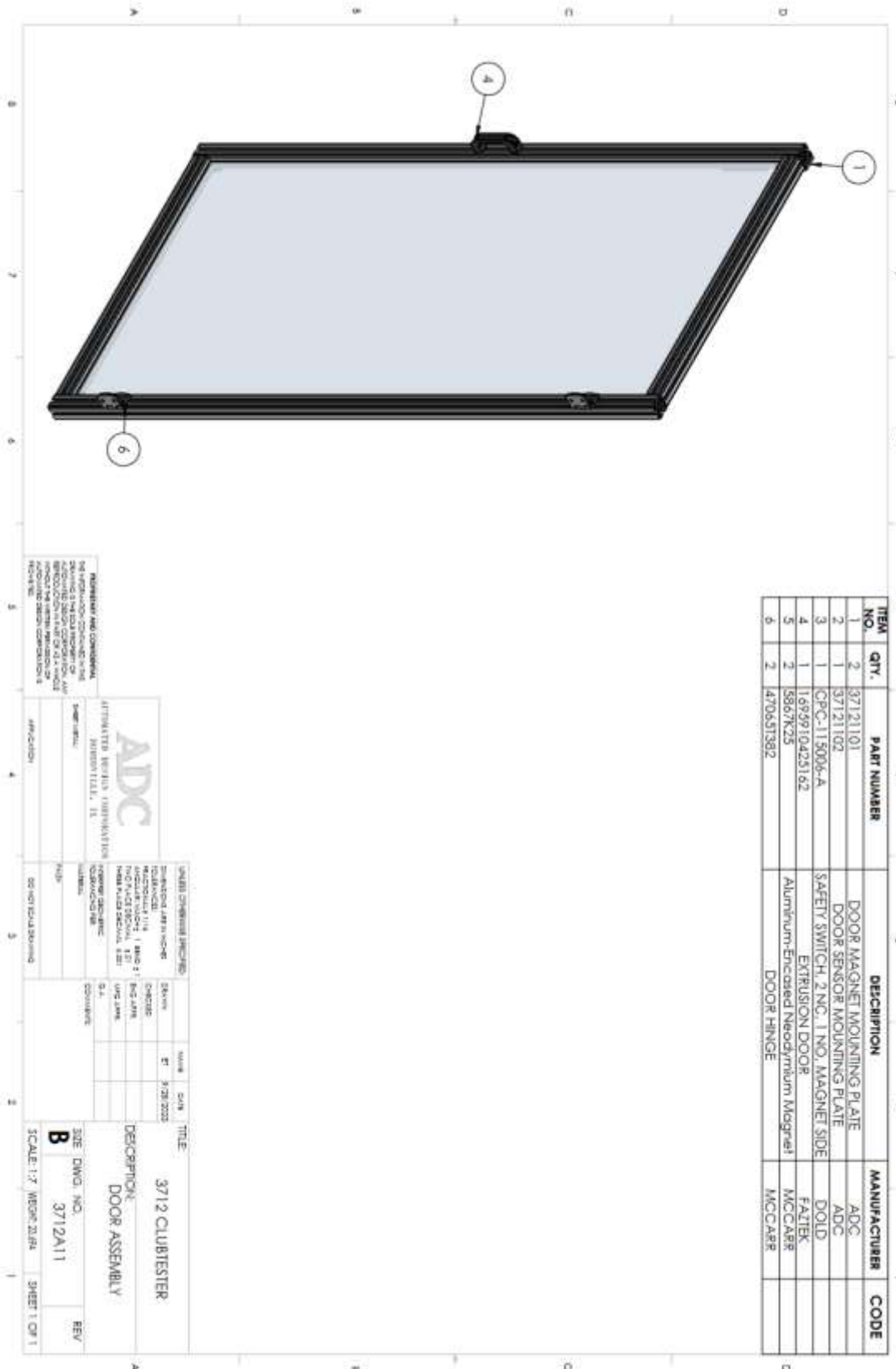
IMPORTANT AND COMPENSABLE:
 THE MANUFACTURER ASSUMES NO LIABILITY FOR THE USE OF THIS DRAWING FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT WAS DESIGNED. THE USER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FOR ANY MODIFICATION OR REVISIONS TO THIS DRAWING.

ADC
 ATTENTION: REVIEW DIMENSIONS
 REVISION FILE: 11

DATE	BY	CHKD	APP'D	DESCRIPTION
08/15/2014	JAB			ADC CLUB DURABILITY

SCALE: 1:3 WEAR SALL SHEET 1 OF 1





ITEM NO.	QTY.	PART NUMBER	DESCRIPTION	MANUFACTURER	CODE
1	2	37121101	DOOR MAGNET MOUNTING PLATE	ADC	
2	1	37121102	DOOR SENSOR MOUNTING PLATE	ADC	
3	1	CPC-115006-A	SAFETY SWITCH, 2 INCH, 11NO. MAGNET SIDE	DOLD	
4	1	1599910425162	EXTRUSION DOOR	FALTEX	
5	2	5867K25	Aluminum Enclosed Neodymium Magnet	MCCARR	
6	2	470651392	DOOR HINGE	MCCARR	

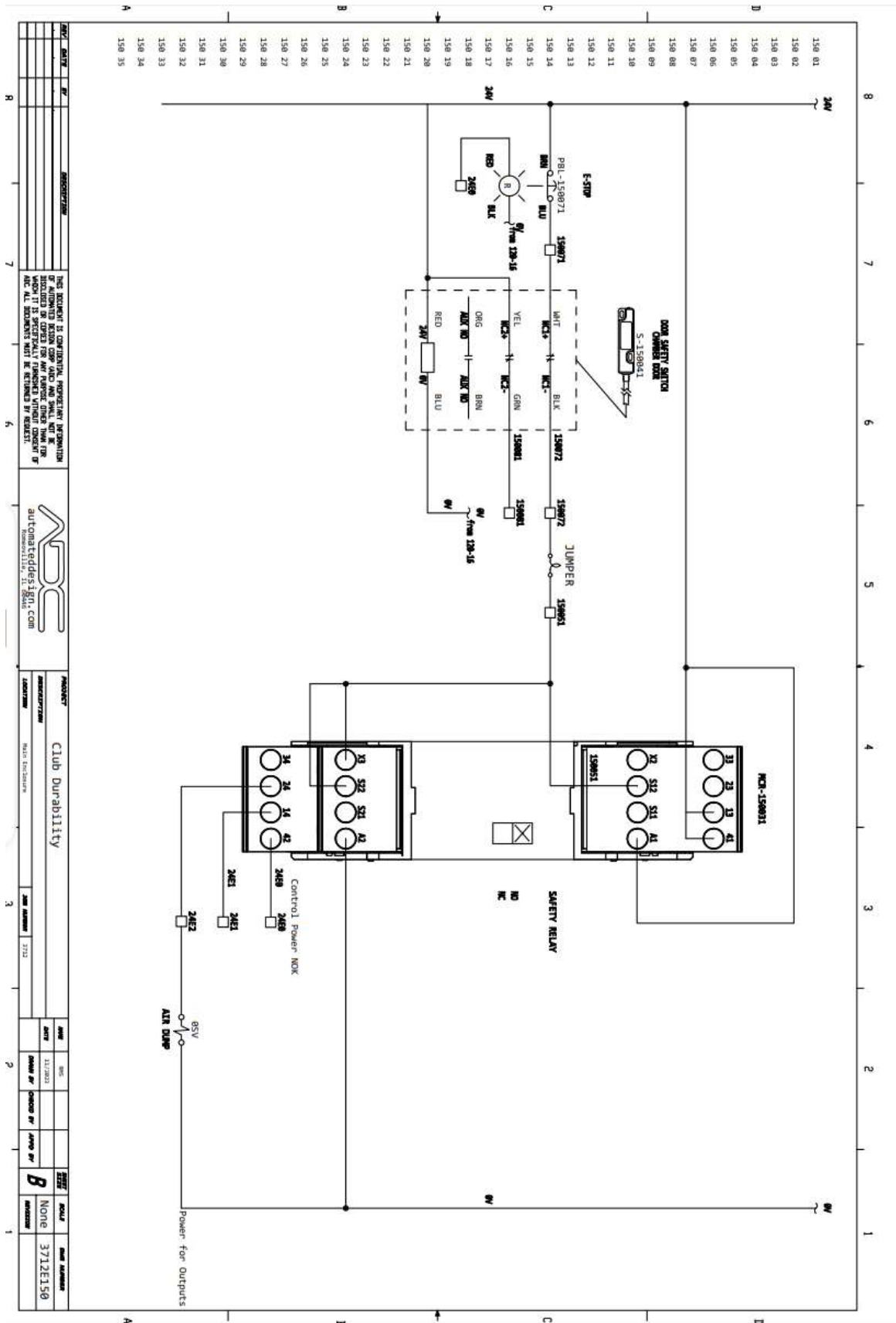
RESISTANCE AND COMPATIBILITY
 DO NOT USE WITH OTHER MATERIALS
 UNLESS SPECIFICALLY NOTED OTHERWISE
 ALL DIMENSIONS ARE IN INCHES
 UNLESS OTHERWISE SPECIFIED

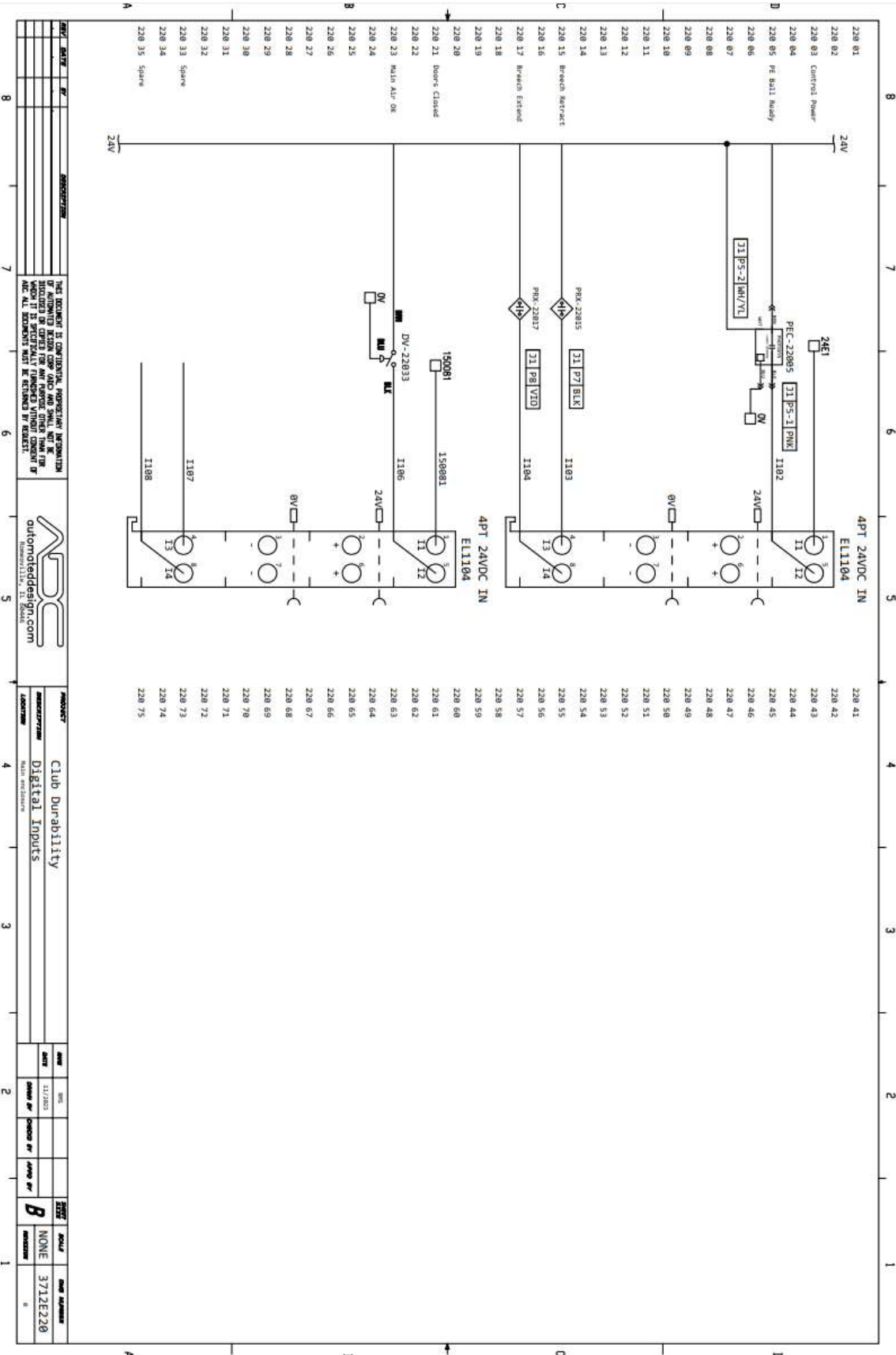
ADC
 AUTOMATED DESIGN CORPORATION
 11111 W. 111th St.
 Overland Park, MO 66213
 (816) 875-1111
 www.automateddesign.com

UNLESS OTHERWISE SPECIFIED
 DIMENSIONS ARE IN INCHES
 UNLESS OTHERWISE SPECIFIED
 FINISHES ARE AS SHOWN
 UNLESS OTHERWISE SPECIFIED
 MATERIALS SHALL BE AS SHOWN
 UNLESS OTHERWISE SPECIFIED
 ALL DIMENSIONS ARE IN INCHES
 UNLESS OTHERWISE SPECIFIED

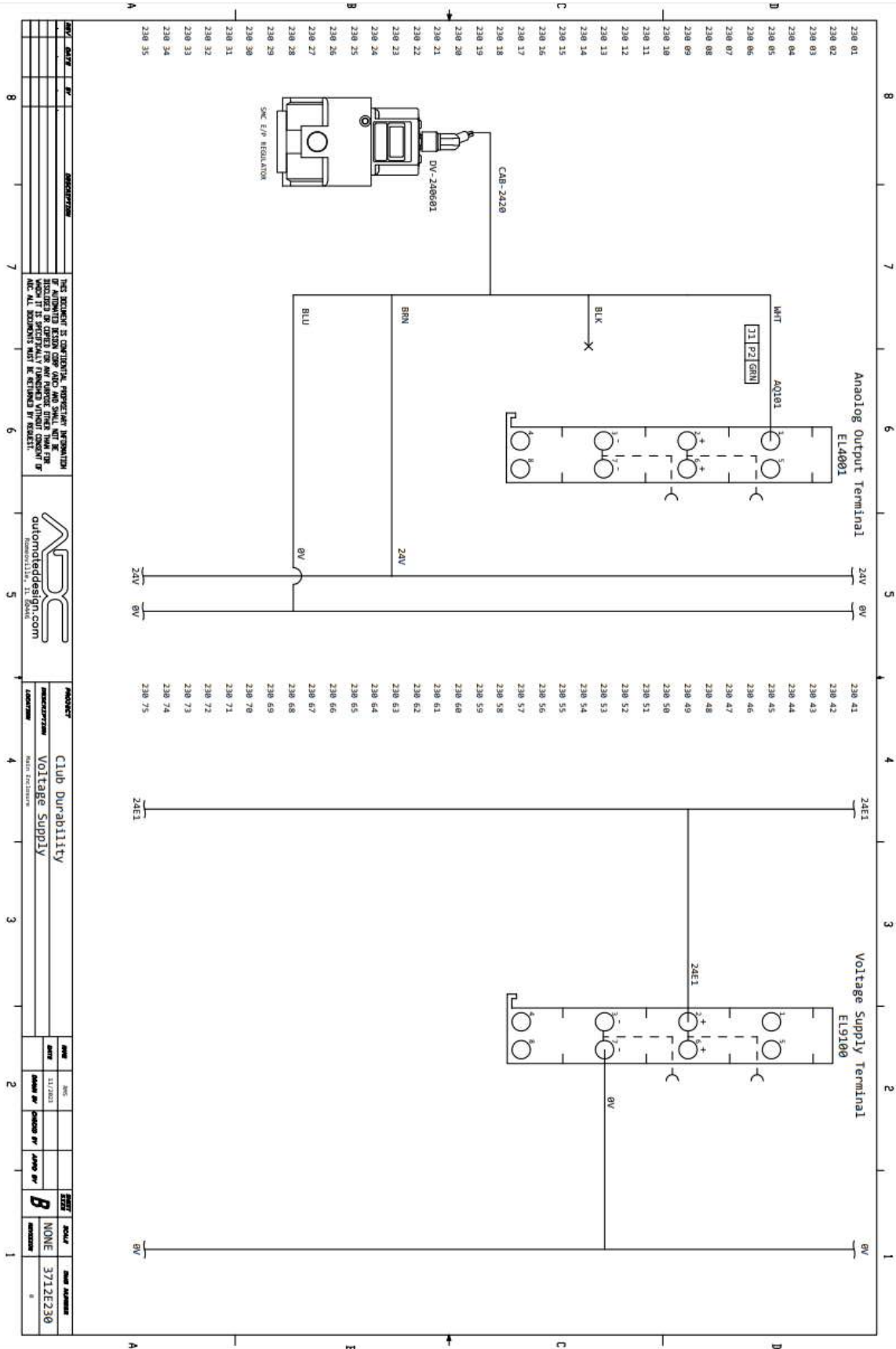
TITLE: 3712 CLUBMASTER
 DESCRIPTION: DOOR ASSEMBLY
 DATE: 9/28/2023
 DRAWN BY: [Name]
 CHECKED BY: [Name]
 SCALE: 1/2" = 1'-0"
 SHEET 1 OF 1

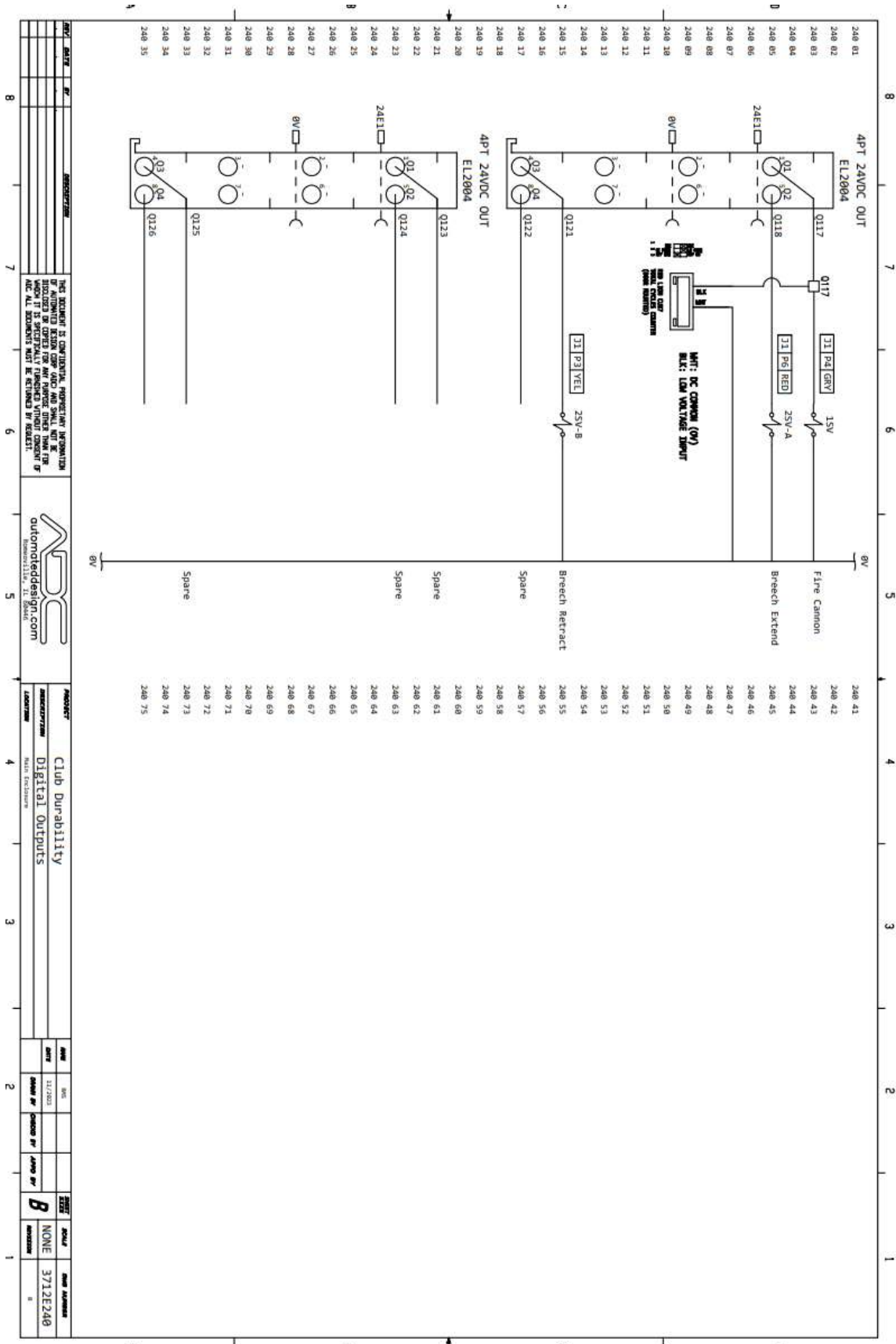
ADC Technical Documentation	Title: Club Durability Operation Manual	Page 25 of 48
Rev: 1.4	Author: ADC	Date: May 2024





ADC Technical Documentation	Title: Club Durability Operation Manual	Page 33 of 48
Rev: 1.4	Author: ADC	Date: May 2024





ADC Technical Documentation	Title: Club Durability Operation Manual	Page 35 of 48
Rev: 1.4	Author: ADC	Date: May 2024

REV	DATE	BY	CHKD BY	APP'D BY	REASON
1	11/2021				NONE

PROJECT	Club Durability
DESCRIPTION	Digital Outputs
DATE	11/2021

REV	DATE	BY	CHKD BY	APP'D BY	REASON
1	11/2021				NONE

REV	DATE	BY	CHKD BY	APP'D BY	REASON
1	11/2021				NONE

REV	DATE	BY	CHKD BY	APP'D BY	REASON
1	11/2021				NONE

REV	DATE	BY	CHKD BY	APP'D BY	REASON
1	11/2021				NONE

REV	DATE	BY	CHKD BY	APP'D BY	REASON
1	11/2021				NONE

REV	DATE	BY	CHKD BY	APP'D BY	REASON
1	11/2021				NONE

REV	DATE	BY	CHKD BY	APP'D BY	REASON
1	11/2021				NONE

REV	DATE	BY	CHKD BY	APP'D BY	REASON
1	11/2021				NONE

REV	DATE	BY	CHKD BY	APP'D BY	REASON
1	11/2021				NONE

REV	DATE	BY	CHKD BY	APP'D BY	REASON
1	11/2021				NONE

REV	DATE	BY	CHKD BY	APP'D BY	REASON
1	11/2021				NONE

REV	DATE	BY	CHKD BY	APP'D BY	REASON
1	11/2021				NONE

REV	DATE	BY	CHKD BY	APP'D BY	REASON
1	11/2021				NONE

REV	DATE	BY	CHKD BY	APP'D BY	REASON
1	11/2021				NONE

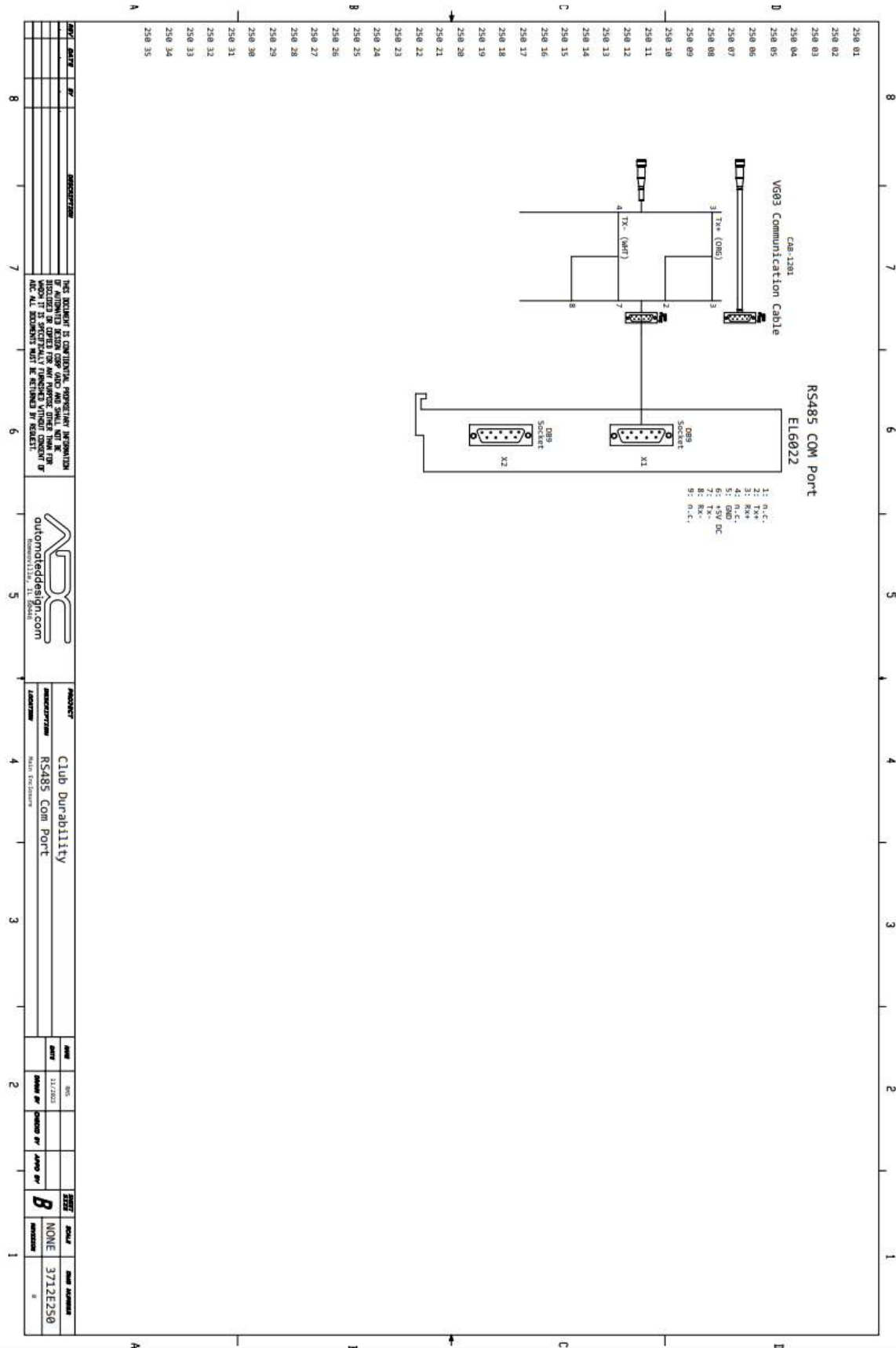
REV	DATE	BY	CHKD BY	APP'D BY	REASON
1	11/2021				NONE

REV	DATE	BY	CHKD BY	APP'D BY	REASON
1	11/2021				NONE

REV	DATE	BY	CHKD BY	APP'D BY	REASON
1	11/2021				NONE

REV	DATE	BY	CHKD BY	APP'D BY	REASON
1	11/2021				NONE

REV	DATE	BY	CHKD BY	APP'D BY	REASON
1	11/2021				NONE



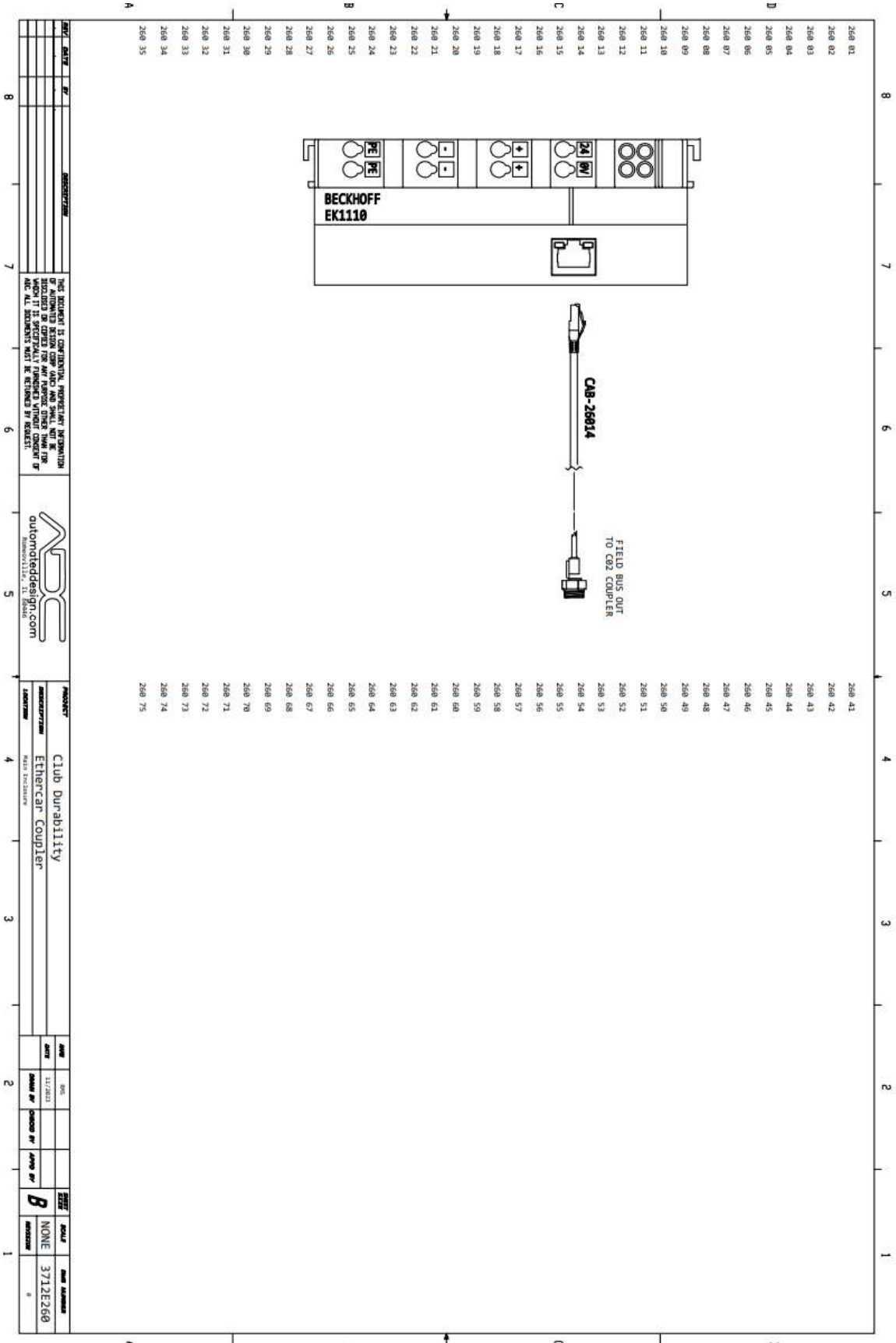
REV	DATE	BY	DESCRIPTION

THIS DOCUMENT IS CONFIDENTIAL, PROPRIETARY INFORMATION OF AUTOMATED DESIGN CORP AND SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM. ALL RIGHTS ARE RESERVED. ANY UNAUTHORIZED USE OF THIS DOCUMENT IS STRICTLY PROHIBITED.



PROJECT: Club Durability
DESCRIPTION: RS485 Com Port
DATE: 11/20/23

DATE	REV.	BY	CHKD BY	DATE	REV.	BY	CHKD BY	DATE	REV.	BY	CHKD BY

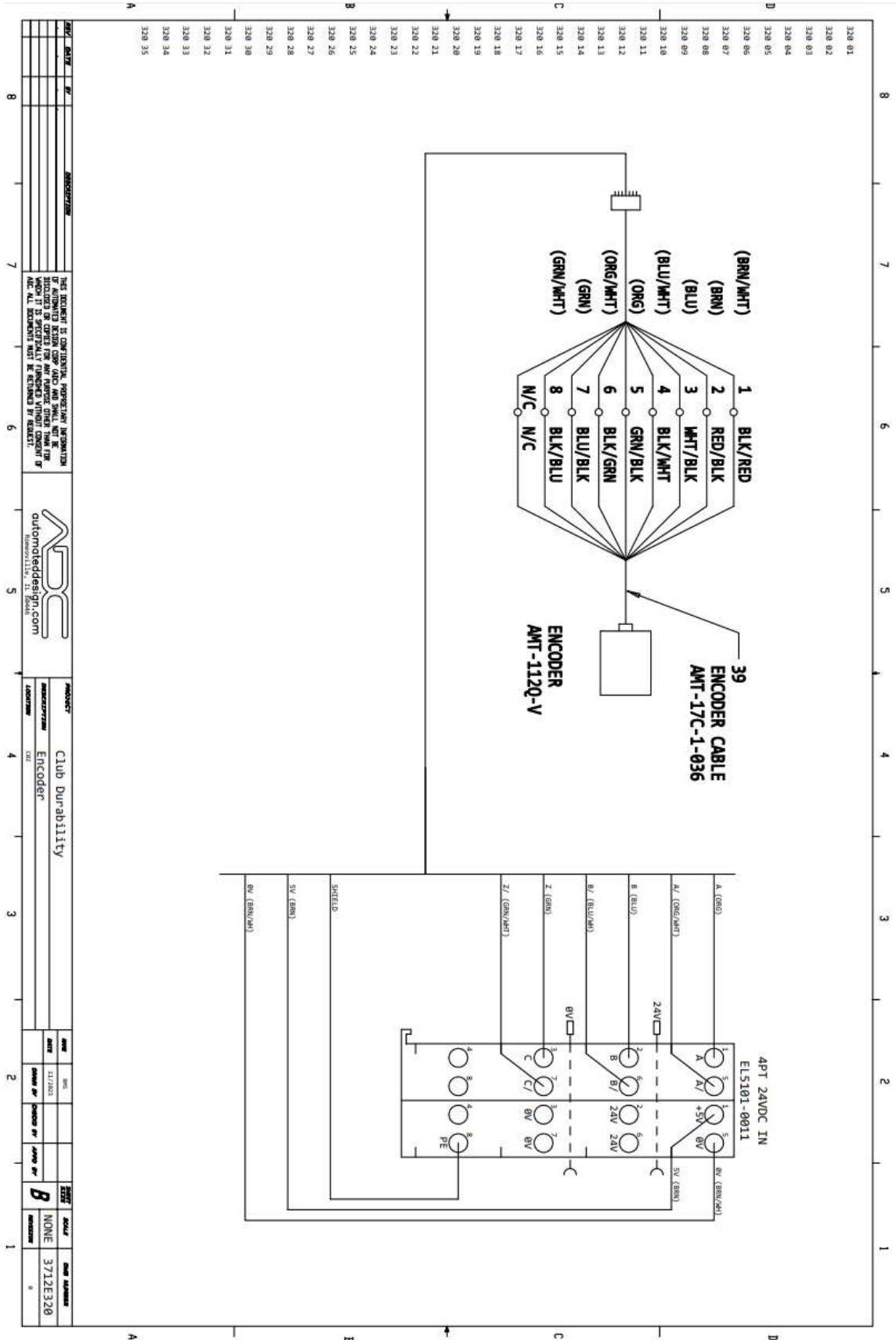


THIS DOCUMENT IS CONFIDENTIAL PROPRIETARY INFORMATION AND IS NOT TO BE DISCLOSED OR COPIED FOR ANY PURPOSE OTHER THAN THE ONE FOR WHICH IT IS SPECIFICALLY FURNISHED WITHOUT CONSENT OF ADC. ALL DIMENSIONS MUST BE WITHIN TOLERANCES SPECIFIED BY BECKHOFF.

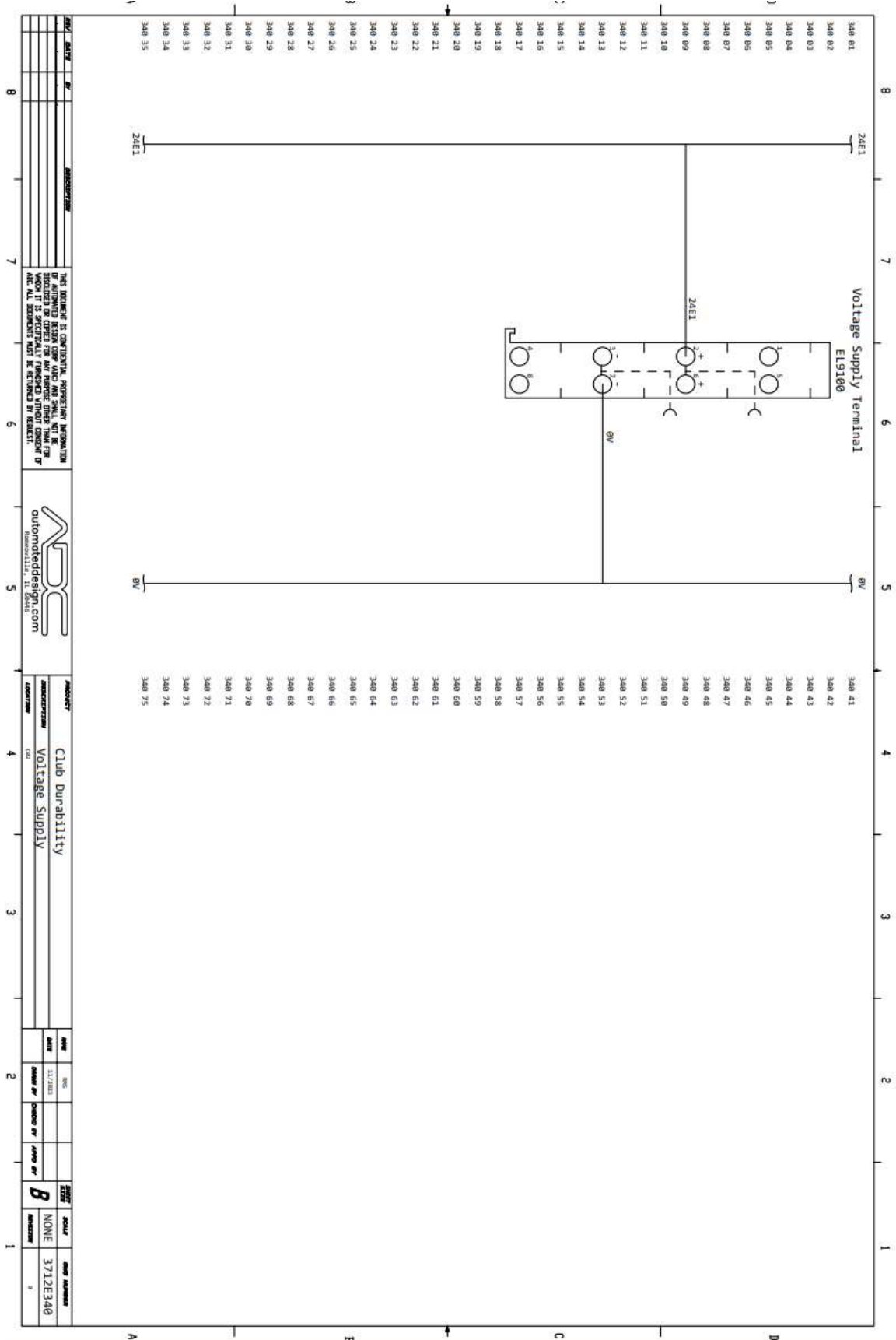


Club Durability
EtherCAT Coupler

REV	DATE	BY	CHKD	APP'D	DESCRIPTION
1	11/20/23				INITIAL RELEASE
2					
3					
4					
5					
6					
7					
8					



ADC Technical Documentation	Title: Club Durability Operation Manual	Page 40 of 48
Rev: 1.4	Author: ADC	Date: May 2024



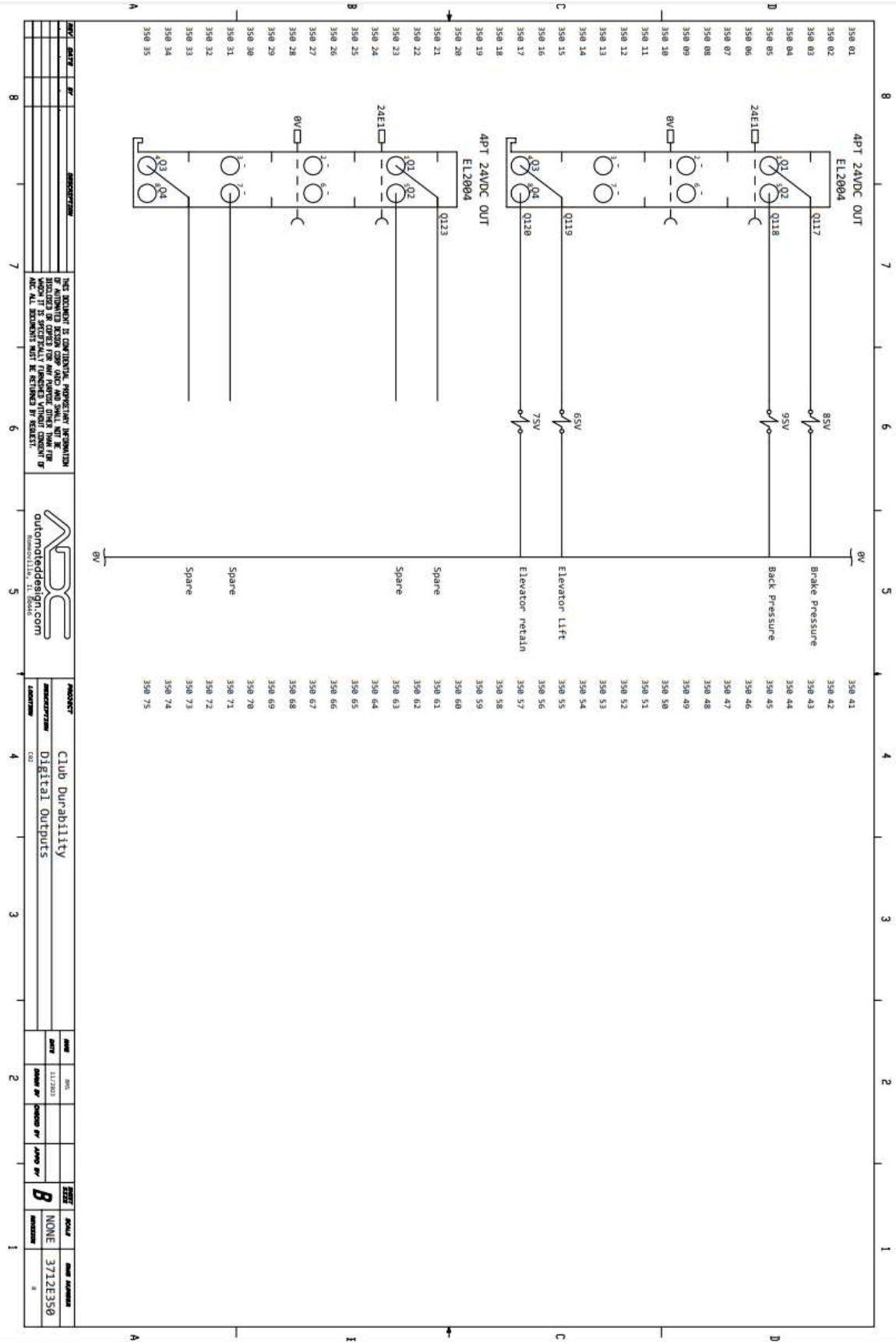
ADC Technical Documentation	Title: Club Durability Operation Manual	Page 42 of 48
Rev: 1.4	Author: ADC	Date: May 2024

REV	DATE	BY	CHKD	APPD	REASON
1	3/7/2021				NONE
2					
3					
4					
5					
6					
7					
8					

PROJECT	Club Durability
DESCRIPTION	Voltage Supply
DATE	03/07/2021
REV	1
BY	B
CHKD	
APPD	
REASON	NONE
REV NUMBER	3712E340

THIS DOCUMENT IS CONFIDENTIAL PROPRIETARY INFORMATION OF AUTOMATEDDESIGN.COM. IT IS SPECIFICALLY PREPARED UNDER CONTRACT BY AUTOMATEDDESIGN.COM FOR THE CLIENT'S USE ONLY. ALL RIGHTS ARE RESERVED BY AUTOMATEDDESIGN.COM.

automateddesign.com
 11000 W. 11th Street
 Fort Worth, TX 76134



THIS DOCUMENT IS CONFIDENTIAL. UNAUTHORIZED REPRODUCTION OR AUTOMATIC DESIGN COPY AND/OR SHALL NOT BE PERMITTED. ALL RIGHTS ARE RESERVED. THIS DOCUMENT IS THE PROPERTY OF AUTOMATED DESIGN, INC. ALL DOCUMENTS MUST BE RETURNED BY REQUEST.



PROJECT
Club Durability
Digital Outputs

REV	DATE	BY	CHKD BY	APP'D BY	REV	DATE	BY	CHKD BY	APP'D BY
1					1				
2					2				
3					3				
4					4				
5					5				
6					6				
7					7				
8					8				

ADC Technical Documentation	Title: Club Durability Operation Manual	Page 43 of 48
Rev: 1.4	Author: ADC	Date: May 2024

SPARE PARTS LIST

Part #	Description	Price
M-092-DXDEB	CYLINDER, 1.06 BORE X 2 STR, DBL ROD, MAGNET, BUMPERS	Contact ADC
MGPL25TN-50AZ-XC8	Guided Cylinder, 25mm Bore x 50mm St, w/ Ext, Stroke Adjust	Contact ADC
TB-2075-EMX	CYLINDER, TWIN BORE, 20MM X 75MM STROKE, MAGNET, BALL BUSHINGS, US DIMS	Contact ADC
021.5-DBNT	CYLINDER, 9/16" BORE X 1.5 STROKE, NON-THREADED ROD, BUMPERS	Contact ADC
CDRA1BK100-DIX00267	Rotary Actuator, 100mm Bore, 90 Deg Rot, Dbl Shaft	Contact ADC
AMT112Q-V	KIT AMT112Q ENCODER RADIAL	Contact ADC
AMT-17C-1-036	ENCODER CABLE	Contact ADC
NCDQ2B32-50DZ	CYL, COMPACT, NPT	Contact ADC
NCDMB125-0250C	Cyl, SS, 1.25 Bore x 2.5" Stroke, Style D	Contact ADC
NCDQ8B106-200C	SMC CYL COMPACT DBL AC T, 1/16 BORE, 2" STROKE	Contact ADC
SS5Y7-42-03-N11T	Manifold, 3Pos, 2910VAL, 3/8 Tube Ftg, 1/4 NPT E&P	Contact ADC
SY7000-27-2T	Manifold, 1Pos, 2910VAL, 3/8 Tube Ftg, 1/4 NPT E&P	Contact ADC
SY7140-5DZ	Valve, 1.4 Cv, 2 Pos, 1 Sol, 24VDC, 5 way, DIN Connector	Contact ADC
SY7440-5DZ	Valve, 1.4 Cv, 3 Pos, 2 Sol, Open Cntr, 24VDC, DIN Connector	Contact ADC
SY9140-5DZ-03T	Valve, Air, 5-2Way, 1 Sol, 24VDC, Subbase, 3/8 npt, DIN Connector	Contact ADC
VEX1333-03N-B	Regulator, Precision, NO GAGE, Bracket, 3/8 npt	Contact ADC
G36-P10-N01-X30	Gage for 2815RG Regulators, PSI Units	Contact ADC

ADC Technical Documentation	Title: Club Durability Operation Manual	Page 44 of 48
Rev: 1.4	Author: ADC	Date: May 2024

MAINTENANCE

Weekly

Cleaning of the rails should be performed weekly. Remove all balls from the rails and wipe down with a cloth until any dust or dirt is no longer visible. This will prevent any dirt build up in the cannon leading to a decrease in functionality in the system.

Monthly

Grease on should be applied on the Z and Y slide screws and interior Cannon Block monthly. General purpose grease should be used on application shown in Figure 2. Prior to any application of grease, ensure that the E-Stop has been pulled. To apply grease to the interior cannon block shown in Figure 4, you must manually retract the breech and apply grease on the edges of the cannon block where the breech travels. No grease should be applied inside of the barrel. The Y and Z Slide shown in Figures 3 and 4, should be greased the full length of each screw. After grease has been applied, the user can jog up, down, towards heel and towards toe, to evenly distribute the grease on the screw.



Figure 2
General Purpose Grease



Figure 4
Interior Cannon Block



Figure 5
Y-Slide Screw



Figure 3
Z-Slide Screw

ADC Technical Documentation	Title: Club Durability Operation Manual	Page 45 of 48
Rev: 1.4	Author: ADC	Date: May 2024

Yearly



Figure 6
Ball Gauge

The Ball Gauge is only activated a handful of times a day, so monthly maintenance is not needed unlike the cannon block and slides. General purpose grease should be used on application shown in Figure 2 on the previous page. Prior to any application of grease, ensure that the E-Stop has been pulled. Apply grease along the bronze slides. In manual mode, cycle the gauge repeatedly until the grease is evenly spread.

ADC Technical Documentation	Title: Club Durability Operation Manual	Page 46 of 48
Rev: 1.4	Author: ADC	Date: May 2024

TROUBLESHOOTING GUIDE

<p>The system display won't turn on.</p> <p>The system won't boot.</p>	<ul style="list-style-type: none"> - Is the system plugged into 100-120VAC, 50/60Hz, 1 Phase electrical power? - Has the Start Power button been pressed? - Make sure the power cord is fully seated. - Open the control panel and check that all circuit breakers are on and haven't tripped. - Make sure the door is closed and latched.
<p>The auto cycle stopped in the middle of a test and is sitting.</p>	<ul style="list-style-type: none"> - There has been a club fault - Open the door disabling any function to the machine. Make sure the club is clamped. - Close the door and press Start Power.
<p>The flash drive I put into the system doesn't appear.</p>	<ul style="list-style-type: none"> - Make sure that the flash drive is formatted and can be read by a Windows computer. Formatting in FAT32 is preferred.

MACHINE SHUT DOWN

The computer the machine uses is set up for Power Management. The Power Management Setup allows you to configure your system to the most effectively energy saving, while operating in a manner consistent with your own style of computer use.

The computer will power on when connected to a power outlet. There will be no need to press the power button on the computer as it will automatically start for you. Be aware that it must have power at all times while operating the machine. Any and all information, data collection and settings done through the program may be lost if power is lost. ADC will not be responsible for any lost information due to power loss of the facility and/or human error. Please be sure to save all information and settings before disconnecting power.

<p>ADC Technical Documentation</p>	<p>Title: Club Durability Operation Manual</p>	<p>Page 47 of 48</p>
<p>Rev: 1.4</p>	<p>Author: ADC</p>	<p>Date: May 2024</p>

CONTACT ADC

For further assistance, you may contact our technical support department in the following ways:

- Call + 1-630-783-1150 Mon-Fri 8:00am – 4:30pm Central Standard Time (CST)
- Email: tbj@automateddesign.com

LIMITED WARRANTY

This is an unofficial explanation of your system's limited warranty. The official warranty was included with your system's proposal. In cases where these two documents disagree, the official warranty included with your system's proposal is correct. This operation manual does not override ADC's Standard Terms and Conditions.

ADC will repair or at its option replace, without charge, components of your product which prove to be defective in material or workmanship, within the specifications listed in the system's proposal, under normal use during the warranty period of one (1) year from date of shipment. This warranty is good only to the original purchaser of the system during the warranty period.

This warranty pertains only to components or software manufactured by ADC. Components purchased from a third party for the system are only covered by the warranty of their respective manufacturer.

No other express warranty is applicable to this system. THE DURATION OF ANY IMPLIED WARRANTIES, INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY, IS LIMITED TO THE DURATION OF THE EXPRESS WARRANTY HEREIN. ADC SHALL NOT BE LIABLE FOR THE LOSS OF USE OF THE PRODUCT, INCONVENIENCE OR ANY OTHER DAMAGES, DIRECT OR CONSEQUENTIAL, ARISING OUT OF THE USE OF OR INABILITY TO USE THIS PRODUCT OR FOR ANY BEACH OF ANY EXPRESS OR IMPLIED WARRANTY, INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY APPLICABLE TO THIS PRODUCT.

THE ABOVE WARRANTY DOES NOT APPLY TO:

1. Service trips to your facility to deliver and pickup, install, instruct, or replace house fuses or correct house wiring or plumbing, or correction of unauthorized repairs.
2. Damage to the product caused by accident, fire, floods, or acts of God.
3. Repairs when your system is used in other than its intended environment or application.
4. Damage resulting from accident, alteration, misuse, abuse, or improper installation.
5. Damages caused during and/or after delivery.

Therefore, these costs are paid by the consumer.

ADC Technical Documentation	Title: Club Durability Operation Manual	Page 48 of 48
Rev: 1.4	Author: ADC	Date: May 2024