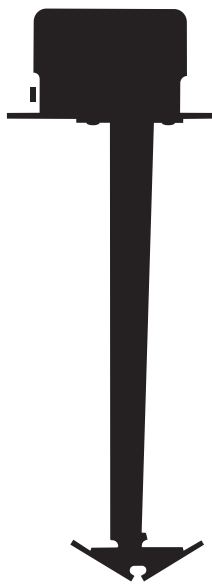
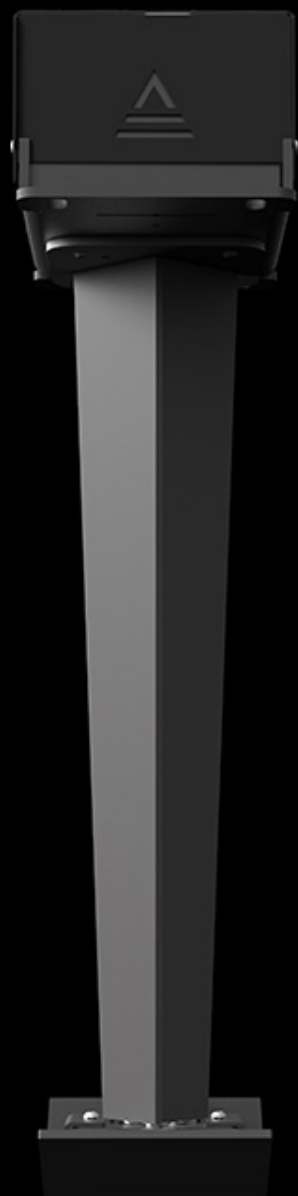


C O M M A N D S T R Y K E R TM



spireOSTM

O P E R A T I O N S M A N U A L



1-800-761-1231

COMMAND STRYKER™

spireOS™

OPERATIONS MANUAL

Version 2.3 | Spire Ranges © 2024



Our customers are the heroes who make our world, countries, and communities safer. At Spire, we create exceptional shooting range systems that prepare them for when duty calls.

OUR MISSION?

**EVERY HERO COMES
HOME SAFE.**



CONTENTS

COMMAND STRYKER:

INTRODUCTION	8
WARRANTY	9
BALLISTIC RATINGS	10
LIMITATION OF LIABILITY	11

MASTER CONTROLS:

NAVIGATION	13
WELCOME	14
MAIN MENU	15
MANUAL SESSION	17
OPERATIONAL CONTROLS	18
OPERATIONAL INDICATORS	19
COURSE OF FIRE SESSION	21
MENU	22
COURSE EDIT	23
TARGET SELECTION	24
IN PLAY	25
ALIBI	26
RANGE SETTINGS	27
STRYKER CONFIGURATION	28
TARGET CALIBRATION	29

MOBILE CONTROLS:

MOBILE APP	32
ADD PROGRAM	33

STRYKER COMPONENTS:

TARGET BILL OF MATERIALS	36
TARGET UNIT	38
DRIVE UNIT	39
CLAMP	40
MASTER CONTROL CONSOLE BILL OF MATERIALS	41
MASTER CONTROL CONSOLE	42

MAINTENANCE:

WEEKLY / MONTHLY	45
TOOLS	46
LIST OF TOOLS NEEDED FOR MAINTENANCE	47
SCHEMATICS	49
CONTROL PANEL	50
POWER SUPPLY PANEL	51
RECOMMENDED REPLACEMENT PARTS	52
STRYKER REPLACEMENT PARTS LIST	53

CONTENTS

SERVICE PLANS:	
SERVICE PLANS	55
TROUBLESHOOTING:	
HMI TOUCH SCREEN.	58
TARGET UNITS	59
PLC LED INDICATORS.	60
GLOSSARY:	
TERMS	64
SYMBOLS.	65

COMMAND STRYKER INTRODUCTION

The Command Stryker is an overhead, turning target system that is ideal for any range's customized training programs and courses of fire. Electric-powered actuators quickly and quietly turn targets 90, 180 and 360° with random edging and friend/foe presentation. Targets can be controlled individually or synchronized with a Spire master control touch screen and/or wireless remote. The Stryker system is indoor rated and proven durable, making it an ideal target system for all types of facilities and organizations, including law enforcement, military, government, commercial, and indoor ranges.

MASTER CONTROL CONSOLE OVERVIEW

The Master Control Console allows a range master to manually control drills for an individual position or for all of the positions simultaneously on the range. As an option, a phone app allows for the rangemaster to control the system from the firing line. Additionally, an optional wireless remote allows for the range master to control the system from the firing line.

IMPORTANT SAFETY INFORMATION



Maintenance and use must adhere to the guidelines in this manual. Improper use of any of the equipment can result in poor performance, product damage and even serious physical injury. Properly trained personnel should only operate the equipment within the range. For technical, mechanical and electrical maintenance, it is recommended that a trained professional be consulted. Protective headwear, eyewear and gloves should always be worn when performing any maintenance. Danger risks include, but are not limited to, electric shock, head injuries, limb or body crushing, and eye trauma.

WARRANTY OF EQUIPMENT

Refer to agreement documents for specific warranty details for your range. Consumables, negligence, and improper use of equipment (including firing armor-piercing rounds or calibers not approved for your range's ballistic rating) are excluded from all warranties.

All products provided and installed by Spire Ranges are warranted against defects in material or workmanship under normal use and service, subject to limitations detailed below. Warranty period begins at the conclusion of the original installation.

This warranty applies to the original installation only. This warranty does not cover damages caused by improper installation, misuse, or lack of proper maintenance. This warranty does not cover damages caused by alterations or repairs made by anyone who is not pre-authorized in writing by Spire Ranges to modify, alter, repair, or otherwise handle in any way the product.

Spire Ranges reserves the right to determine if any part is defective and to repair or replace parts as it elects. This warranty does not cover shipping costs of defective parts from the owner's site. Return shipping to the site is covered by Spire Ranges during the warranty period. This warranty covers on site labor, travel expenses and accommodations if applicable.

Damage of Spire Ranges equipment resulting in utilizing armor piercing (AP) ammunition or tracer rounds will not be covered under warranty. In addition, high velocity rounds (both ball and frangible) traveling at speeds more than 3000 fps may result in wear, dimpling and pocking of the 1/4" AR500 ballistic shields and target clamps depending on the angle of impact. Such wear, dimpling, and pocking under these conditions is not covered under warranty.

BALLISTIC RATINGS

Ammunition specs listed below are examples of energy and velocity only. Note, any use of Armor Piercing (AP), Steel Core, or Tracer Rounds will void the warranty.

PLATE RATING	MUNITIONS TYPE	MAX ENERGY	MAX VELOCITY
1/4" AR500	Pistol	1175 ft-lbs	1485 fps
3/8" AR500	Pistol/Rifle	3600 ft-lbs	3300 fps
TYP. AMMO	BULLET WEIGHT	MAX ENERGY	MAX VELOCITY
.22 LR	40 gr HP	140 ft-lbs	1400 fps
9MM LUGER	124 gr FMJ	460 ft-lbs	1293 fps
.357 MAG	158 gr JSP	663 ft-lbs	1375 fps
.44 MAG	240 gr SWC	1175 ft-lbs	1485 fps
5.56X45MM NATO	55 gr FMJ	1402 ft-lbs	3388 fps
7.62X51MM NATO	150 gr FMJ	3048 ft-lbs	3025 fps
.308 WIN	150 gr SPTZ	2800 ft-lbs	2900 fps
30-06	180 gr SPTZ	3360 ft-lbs	2900 fps
300 WM	190 gr BTHP	3548 ft-lbs	2900 fps

Spire Ranges products can handle .50 BMG in moderation; however, due to the large amounts of energy exerted from the round, the following applies:

Repeatedly using .50 BMG will shorten the life expectancy of the product and may void warranty.

Repeated impacts of .50 BMG fired in the same location of the product can cause damage in as few as 50 rounds.

Any armor piercing (AP) rounds, particularly those from .50 BMG will void any warranty.

LIMITATION OF LIABILITY

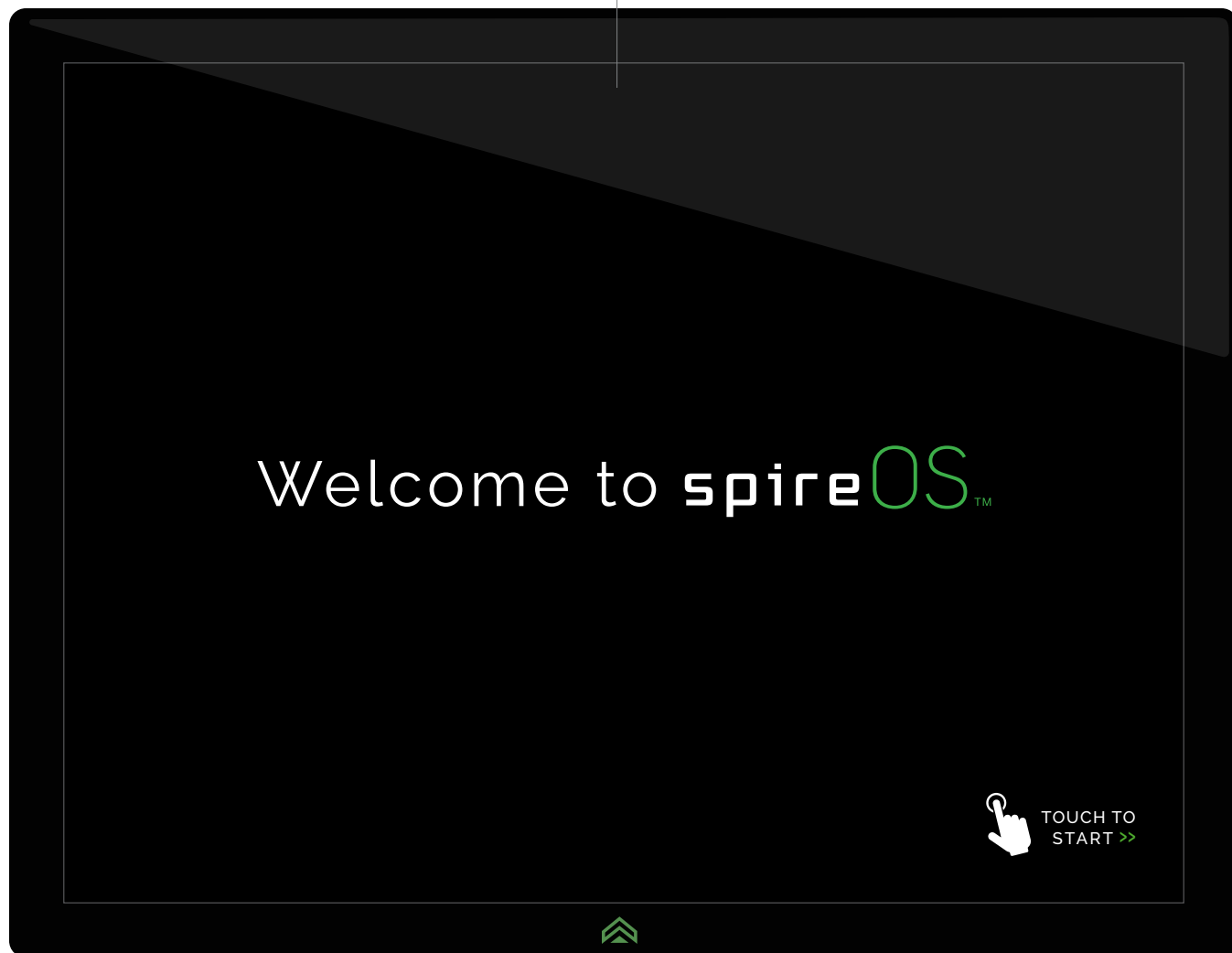
Neither Spire Ranges, nor any company affiliated with it, makes any warranties, representations or promise as to the performance or quality of the product other than what is specified in the original agreement between Spire Ranges and the range Owner. The liability of Spire Ranges to the Owner for damages arising out of the manufacture, sale, delivery, use of resale of this product shall be limited to and shall not exceed the cost of repair or replacement of defective parts. Spire Ranges shall not be liable for loss of use, inconvenience or any other incidental, indirect or consequential damages.

No representative of Spire Ranges has the authority to make any representation or promise on behalf of Spire Ranges or to alter or modify the terms or limitations of warranties in any way.

MASTER CONTROLS:

NAVIGATION

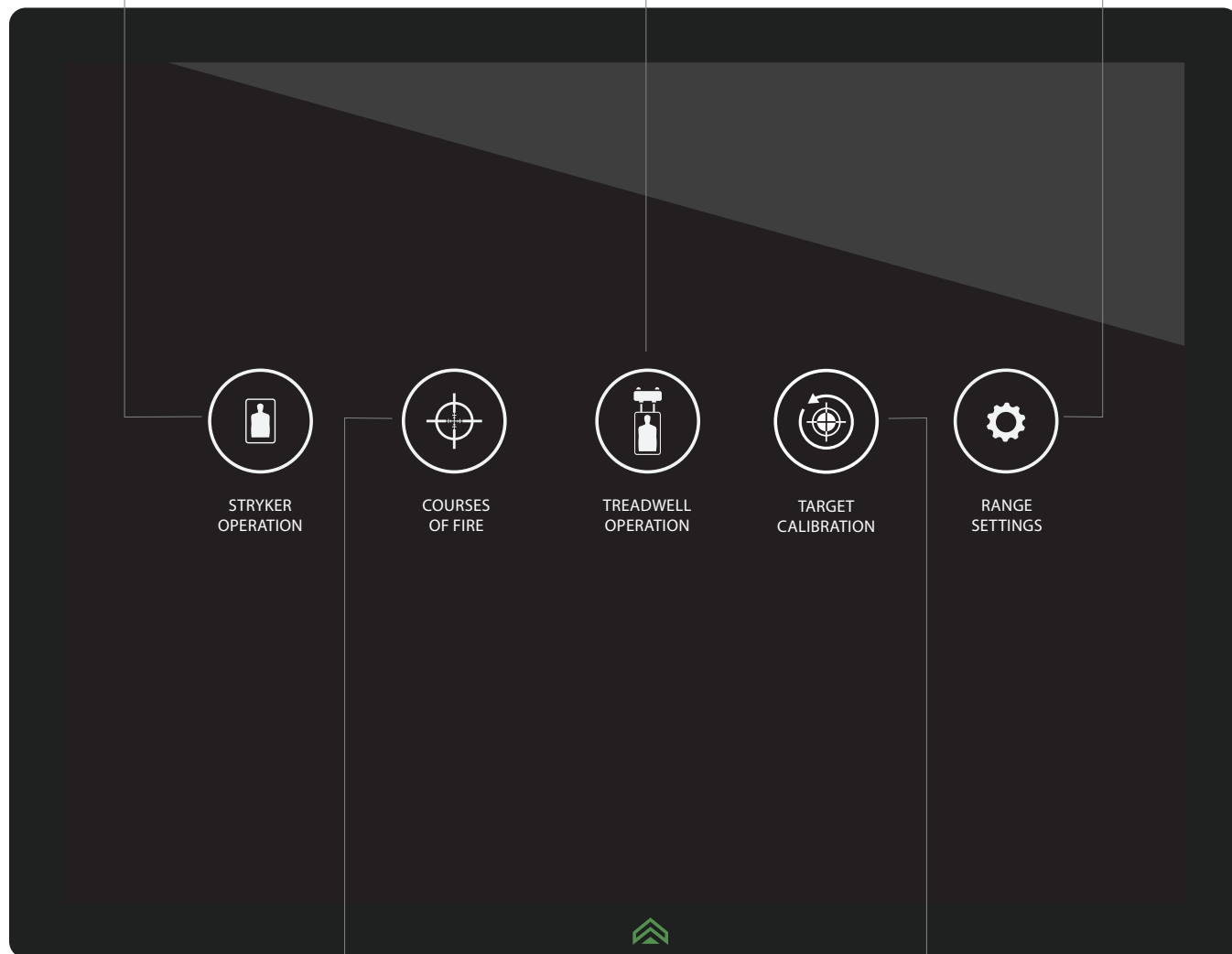
Start by touching anywhere



Manual Operation Screen
p. 18

Treadwell Operation
(optional)

Range Settings Menu
p. 27



STRYKER
OPERATION



COURSES
OF FIRE



TREADWELL
OPERATION



TARGET
CALIBRATION

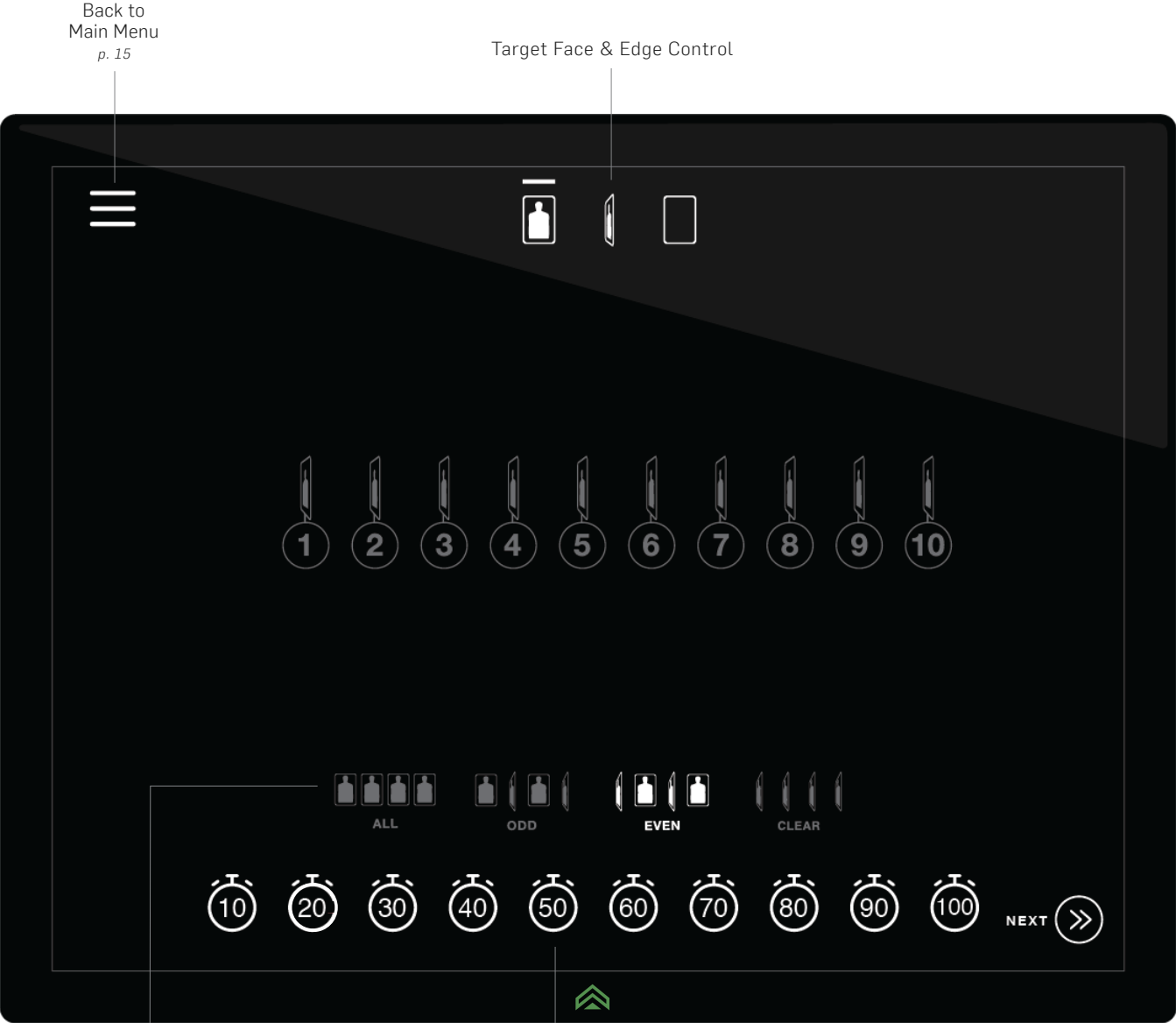


RANGE
SETTINGS

Courses of Fire Menu
p. 22

Target Calibration Screen
p. 29

MANUAL SESSION



Back to
Main Menu
p. 15

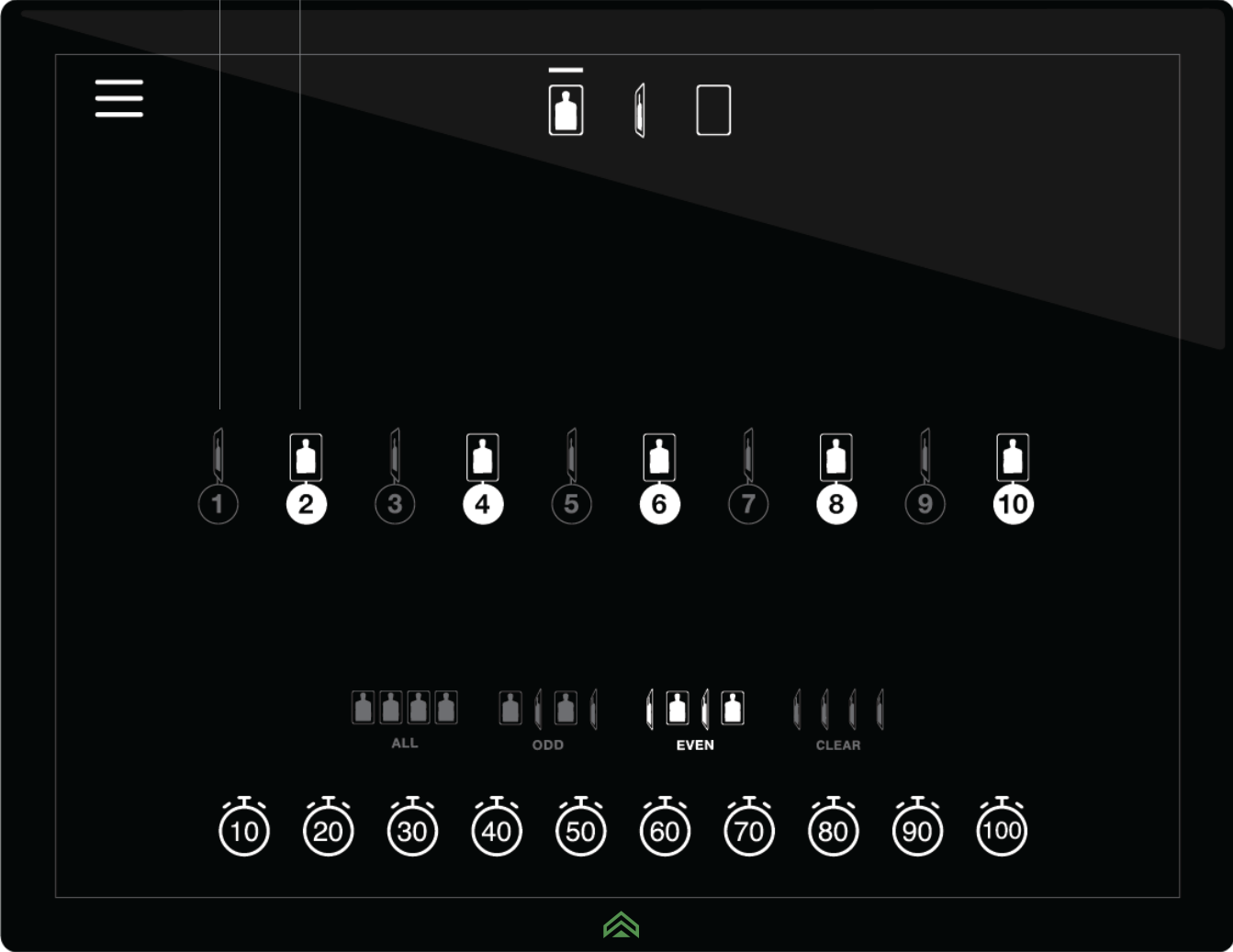
Target Face & Edge Control

Multilane Quick Selection:
All, Odd, Even, or Clear

10 Preset Times
*[Indicator will tick down and turn
grey upon countdown completion.]*

Target Lane
Unselected
(Target at Edge)

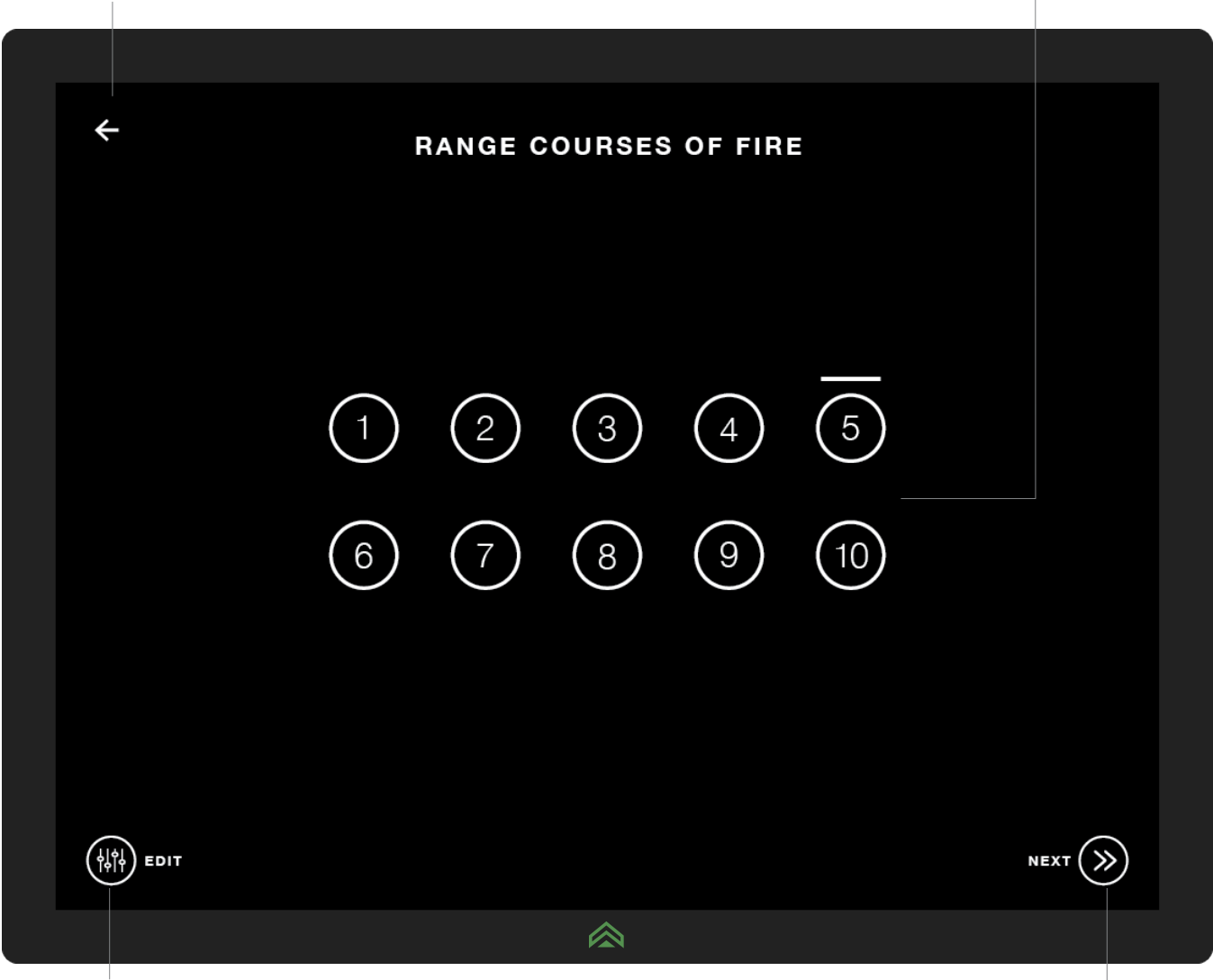
Target Lane
Selected
(Target at Face)



COURSE OF FIRE SESSION

Back to Main Menu
p. 15

10 Courses of Fire set
by the Range Master
[Course 5 is selected]



Edit Selected Course of Fire
p. 23

Navigation to Target Selection
for selected course of fire
p. 24

Back to Courses
of Fire Menu
p. 22

Increase or decrease the number of
active stages for the course of fire

⊗

COURSE FIVE [EDIT]

OF STAGES — 13 +

COURSE STAGES EXPOSURE TIME [seconds]

1 – 10

60

60

60

60

60

60

60

60

60

60

11 – 20

60

60

60

—

—

—

—

—

—

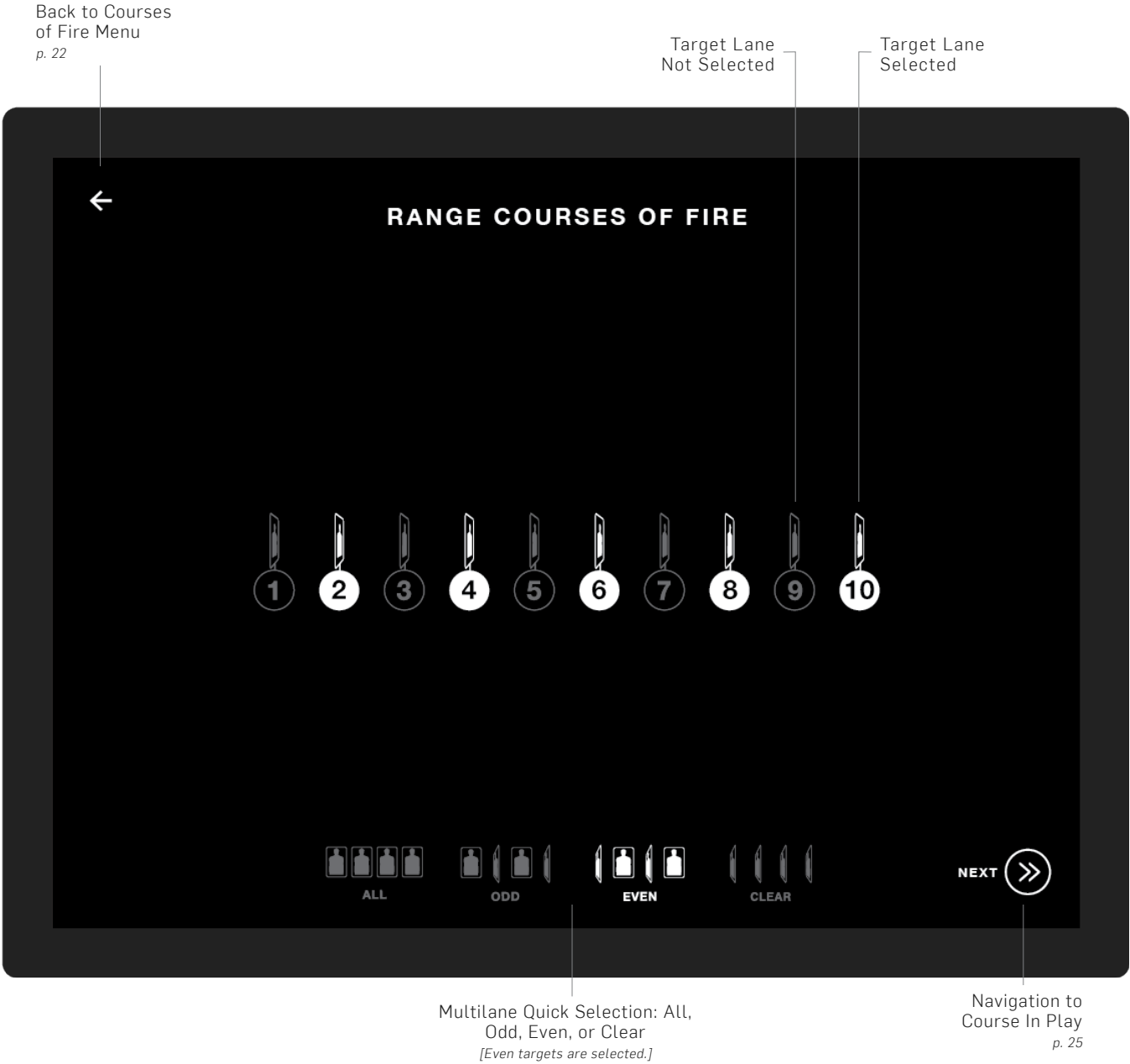
—

SAVE

Active Times

Inactive Times

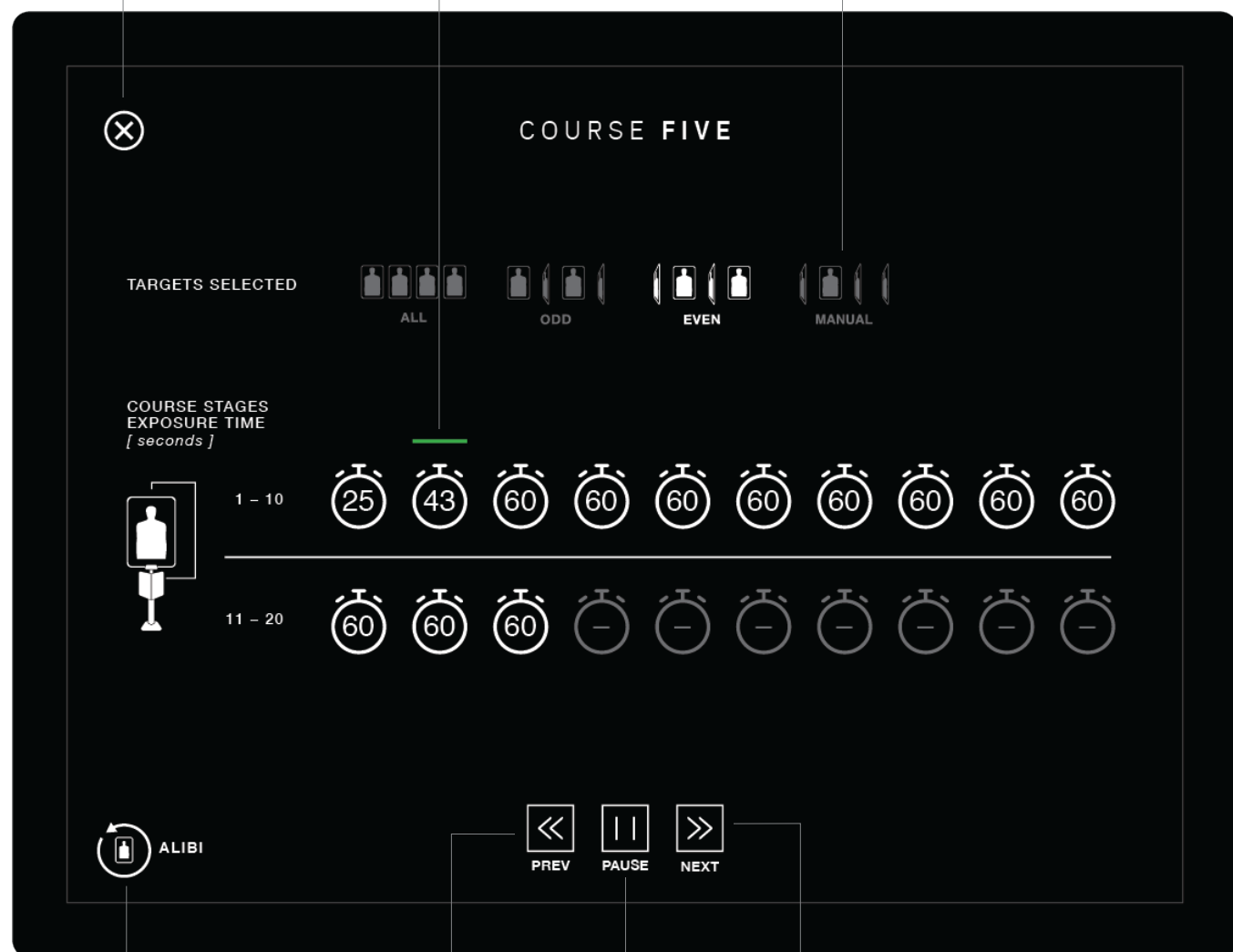
Save & Return to
Courses of Fire Menu
p. 22



Back to Courses
of Fire Menu
p. 22

Current Stage
[Stage 2 is indicated.]

Selected Targets Indicators
[Even group is indicated.]



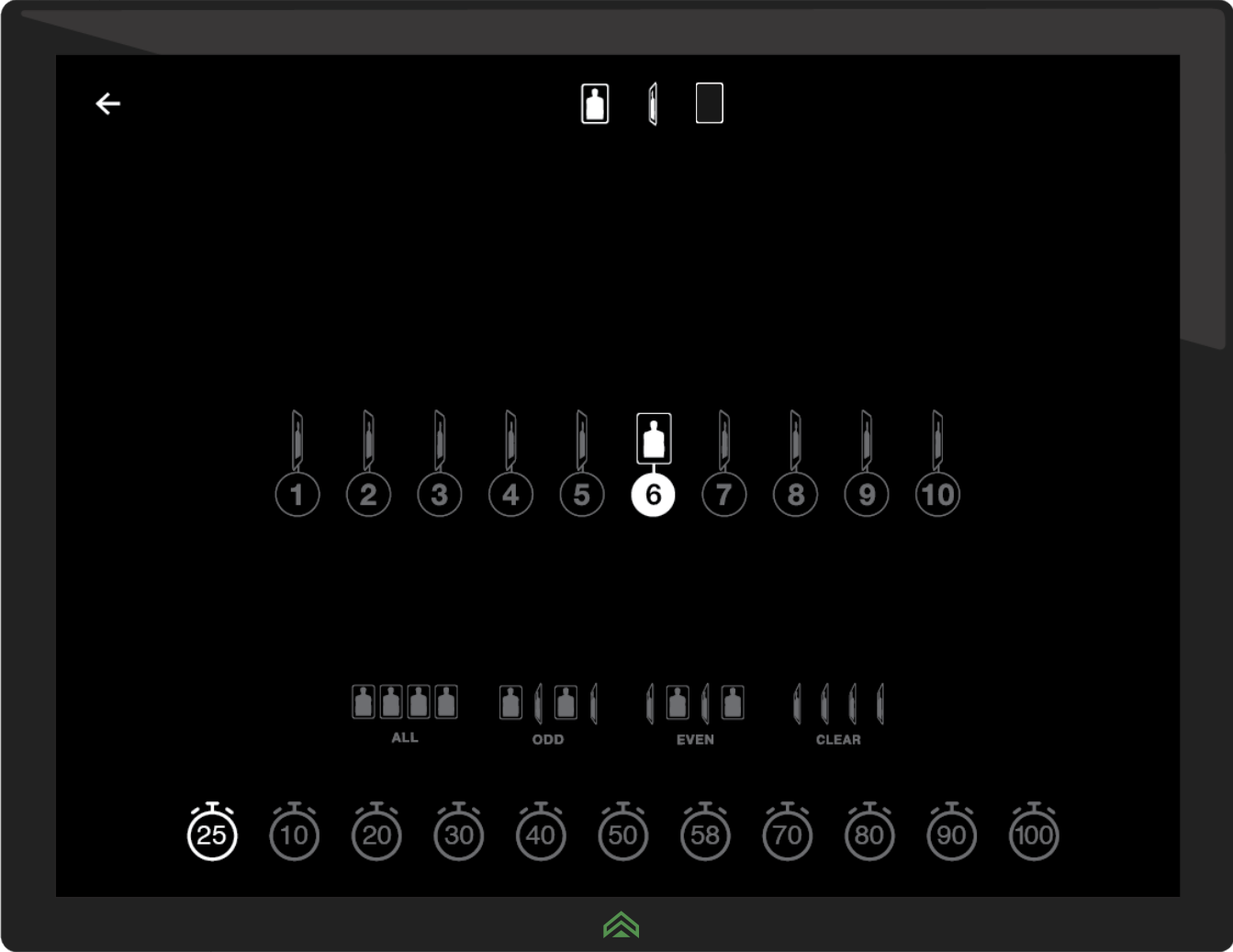
Alibi Screen
p. 26

Previous
Stage

Pause/Start
Stage

Next
Stage

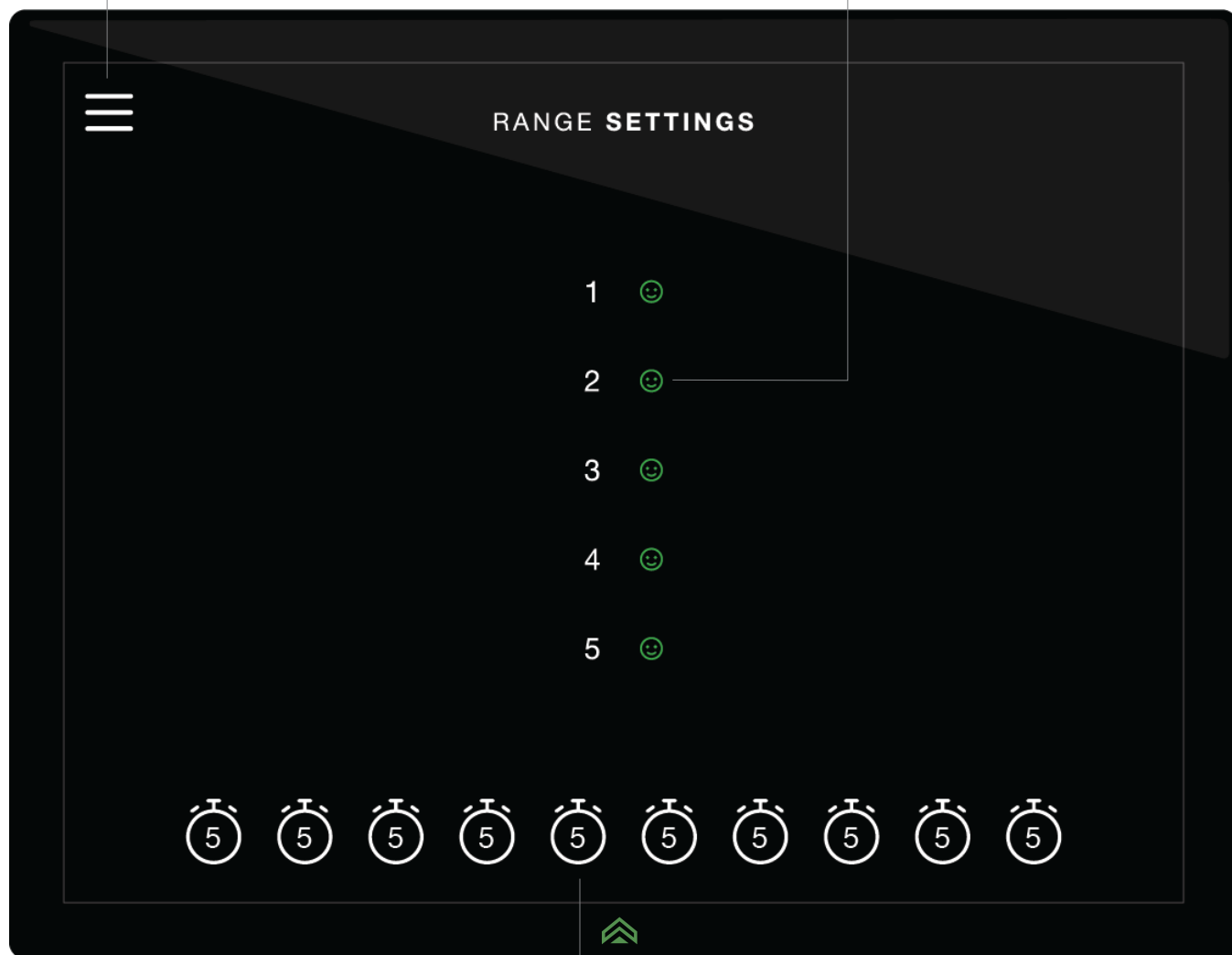
Back to In Play
p. 25



Time is automatically loaded
from the last stage completed.

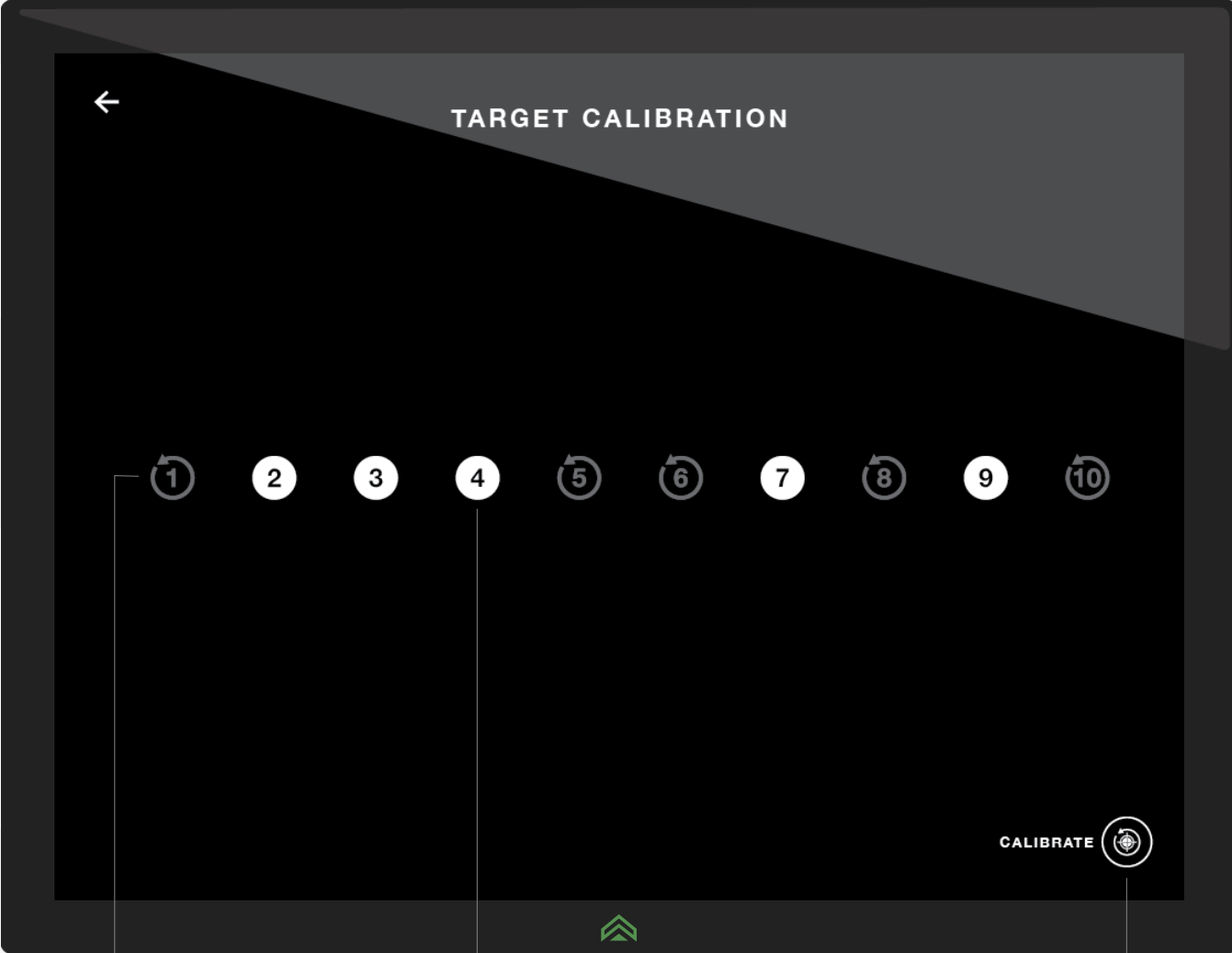
Back to Courses of Fire Menu
p. 15

Lane Status Indicators



Preset Exposure Times

STRYKER CONFIGURATION



Unselected
target carrier
to calibrate

Selected target
carrier to calibrate

Calibrates selected
targets

MOBILE CONTROLS:

- [1] Download cMT Viewer App for the device.



Android



Apple



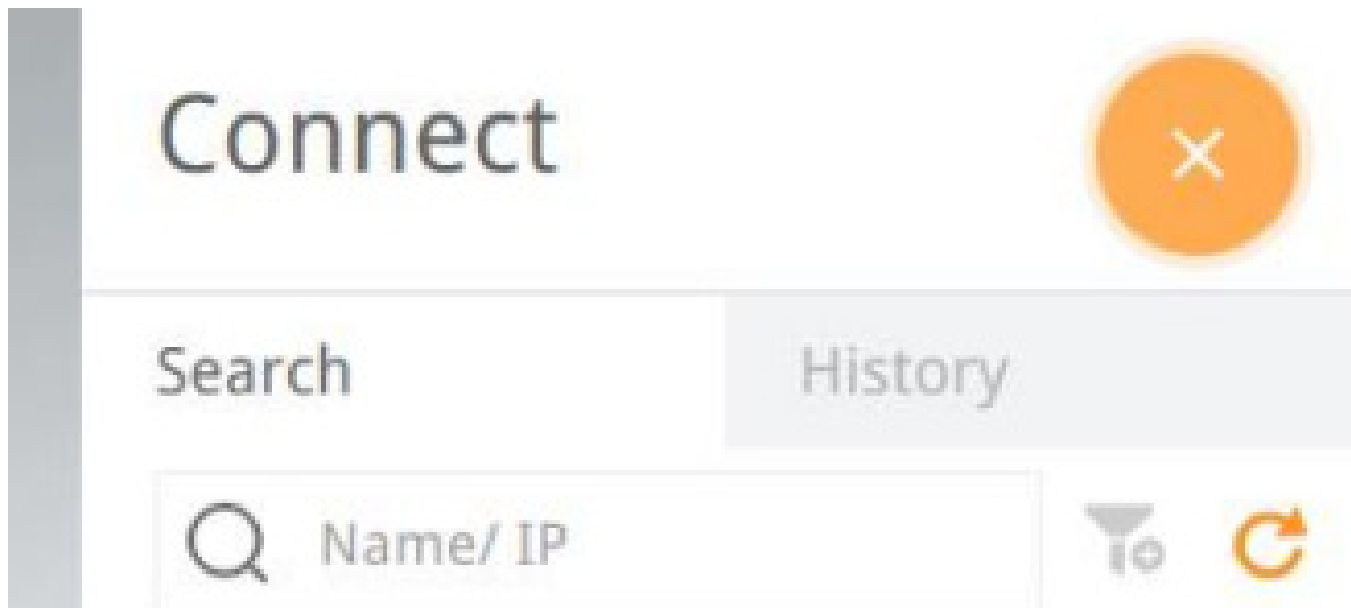
Windows

- [2] Connect to the range WiFi.

- WiFi: RangeAccess
- Password: spireranges

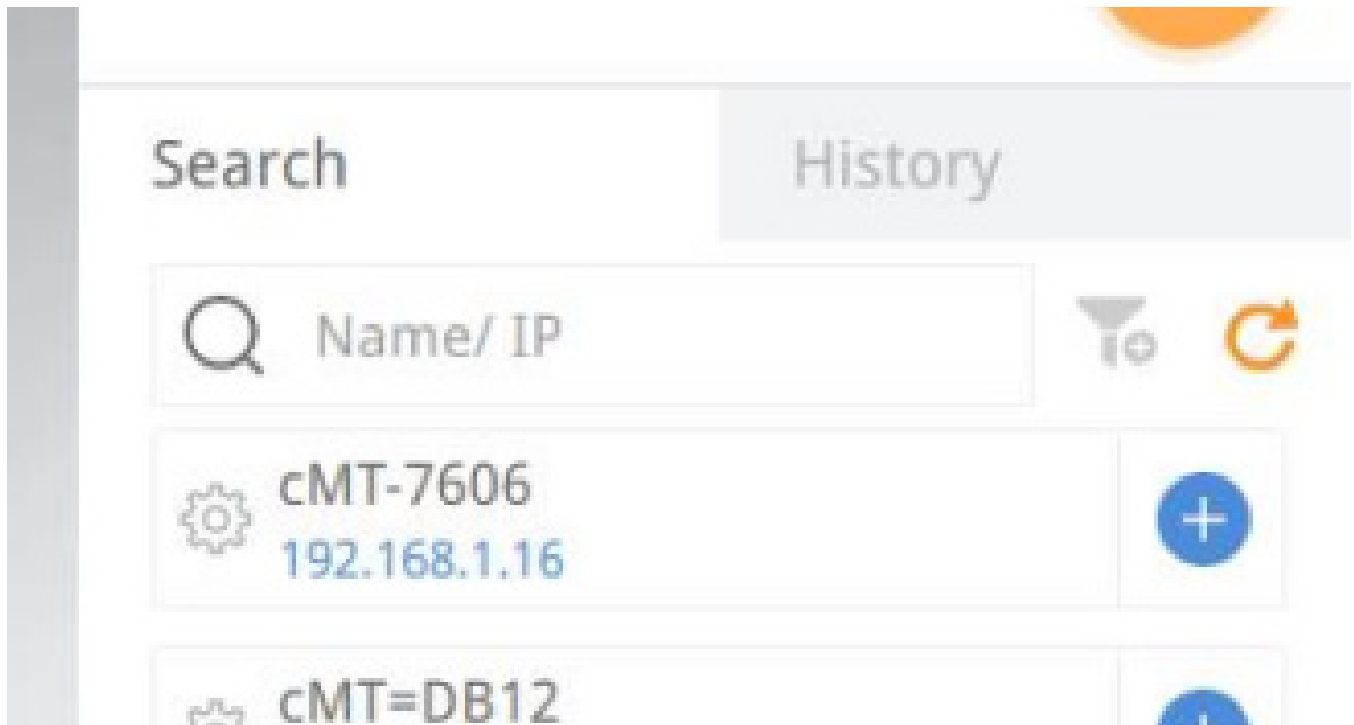
- [3] Open cMT Viewer.

- [4] Press the orange "+" at the top of the screen.



[5] The program should appear. Generally it will have the address of 192.168.1.61. Press the "+" button to add the program. Password is 111111 (six 1's).

- If the program does not appear automatically, try pressing the orange reload button.
- If it still does not appear, try typing 192.168.1.61 into the Name/IP field.
- **Note:** Generally the IP address for your range will be 192.168.1.61 as mentioned above. But, some ranges are unique and will have a different address. This is especially common when there are multiple bays in your range and each bay has a different master control. In that case, try the following addresses:
 - Bay 1: 192.168.1.61
 - Bay 2: 192.168.1.62
 - Bay 3: 192.168.1.63
 - etc.
- If those do not work, contact Spire.
- **Note:** If the Master Control screen is not working, then the app will generally not work either. Generally the app gets its program from the master screen.



[6] The Operations Screen should load if everything is working correctly.

STRYKER COMPONENTS:

CODE	DESCRIPTION	PRT #	QTY
1	STEPPER MOTOR-34 DOUBLE STACK	ELE-68934	1
2	STRYKER/FURY CONTROL HARNESS (OCTOPUS BOX)	ELE-8085-102	1
3	10-32 X 3/8" BUTTON HEAD SCREW - STAINLESS STEEL	HBH-1032-0385-SS	2
4 & 14.3	**1/4"-20 X 1/2" BUTTON HEAD SCREW - STAINLESS STEEL	HBH-25020-050-SS	16
5	1/2" X 3/4" X 1/2" FLANGE BUSHING-BZ	HFB-500750-500	1
6	1/2" SHAFT LOCK COLLAR	HLC-500125-406	1
7	1/2" L050 LOVEJOY - NO KEYWAY	HLJ-050	1
8	14MM L050 LOVEJOY - NO KEYWAY	HLJ-14	1
9	**L050 LOVEJOY RUBBER SPIDER	HLJ-DAMP	1
10	STRYKER HOUSING COVER	STP-7531-005	1
11	STRYKER CLAMP SHAFT WITH FLATS	STP-7532-010	1
12	STRYKER HOUSING - WELDMENT	STW-7500-200	1
13	***STRYKER DOWNRIGGER - WELDMENT	STW-7500-201	1
14	***RECON/STRYKER CLAMP - ASSEMBLY	RSA-7533-100	1
14.1	RECON/STRYKER CLAMP - WELDMENT	RSW-7033-200	1
14.2	1/4"-20 X 1/4" BUTTON HEAD SCREW - STAINLESS STEEL	HBH-25020-025-SS	2
14.4	SPRING - 0.455 OD X 0.377 ID X .039 WD X 1.75 LG ZINC	HSP-455377-175	2

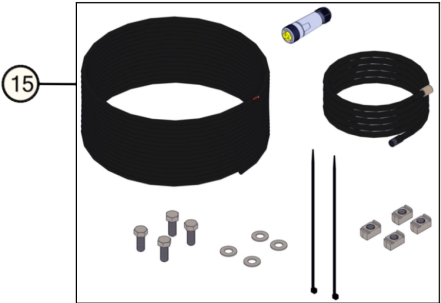
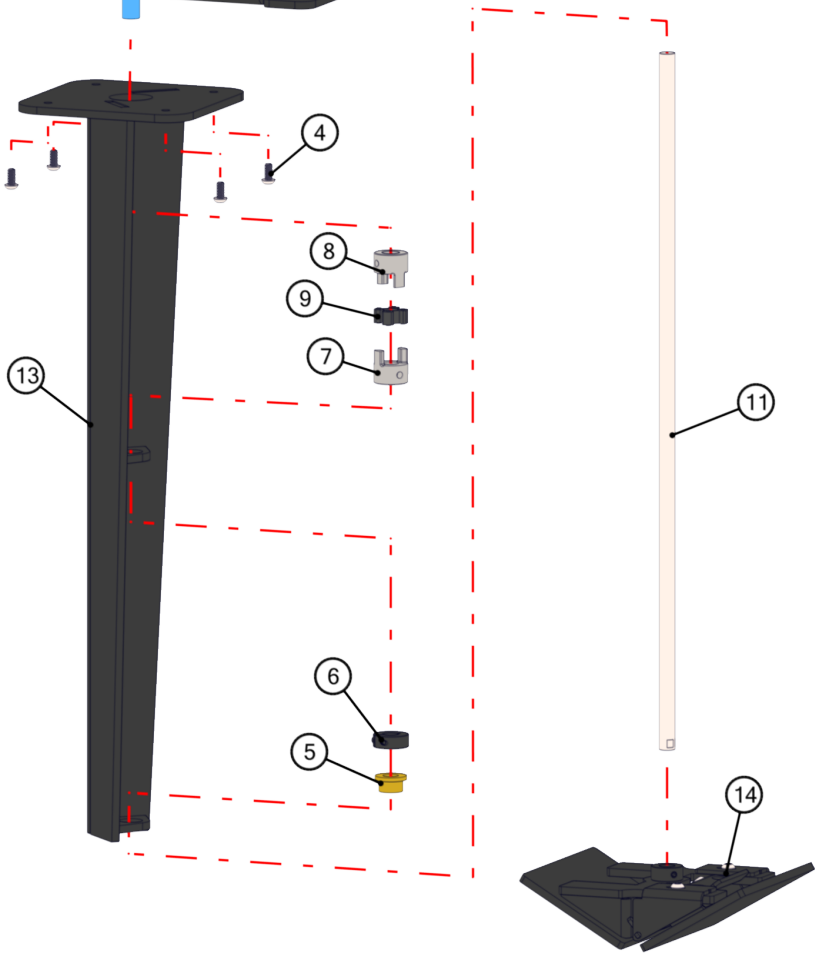
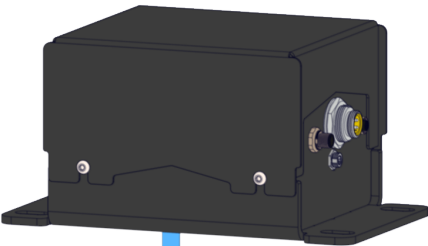
** Indicates recommended replacement parts. (See p. 120 for more information)

*** Indicated parts that are consumables and are not covered under the warranty agreement. In addition, any misuse, lack of maintenance, and/or modifications made to any Spire products will void all warranties.

NOTE: Clamp Shaft has been revised as of 02/21. Shafts before this date will appear different.

NOTE: Included inside part 6 is 1/4"-20 X 1/4" set screw - Torque: 80 in-LB (Part # HSS-25020-025-BK).

CODE	DESCRIPTION	PRT #	QTY
14.5	RECON/STRYKER CLAMP LEVER	RSP-7033-005	1
14.6	RECON/STRYKER CLAMP PIVOT JAW	RSP-7033-006	1
14.7	RECON/STRYKER CLAMP PIVOT BRACKET - LEFT	RSP-7033-007	1
14.8	RECON/STRYKER CLAMP PIVOT BRACKET - RIGHT	RSP-7033-008	1
15	STRYKER INSTALL KIT	STK-7500-900	1



PHYSICAL DIMENSIONS

VALUE

LENGTH × WIDTH × HEIGHT

12 × 7½ × 31¼ IN (304.8 × 190.5 × 806.5 MM)

WEIGHT

34 LBS (15.4 KG)

TEMPERATURE RATINGS

VALUE

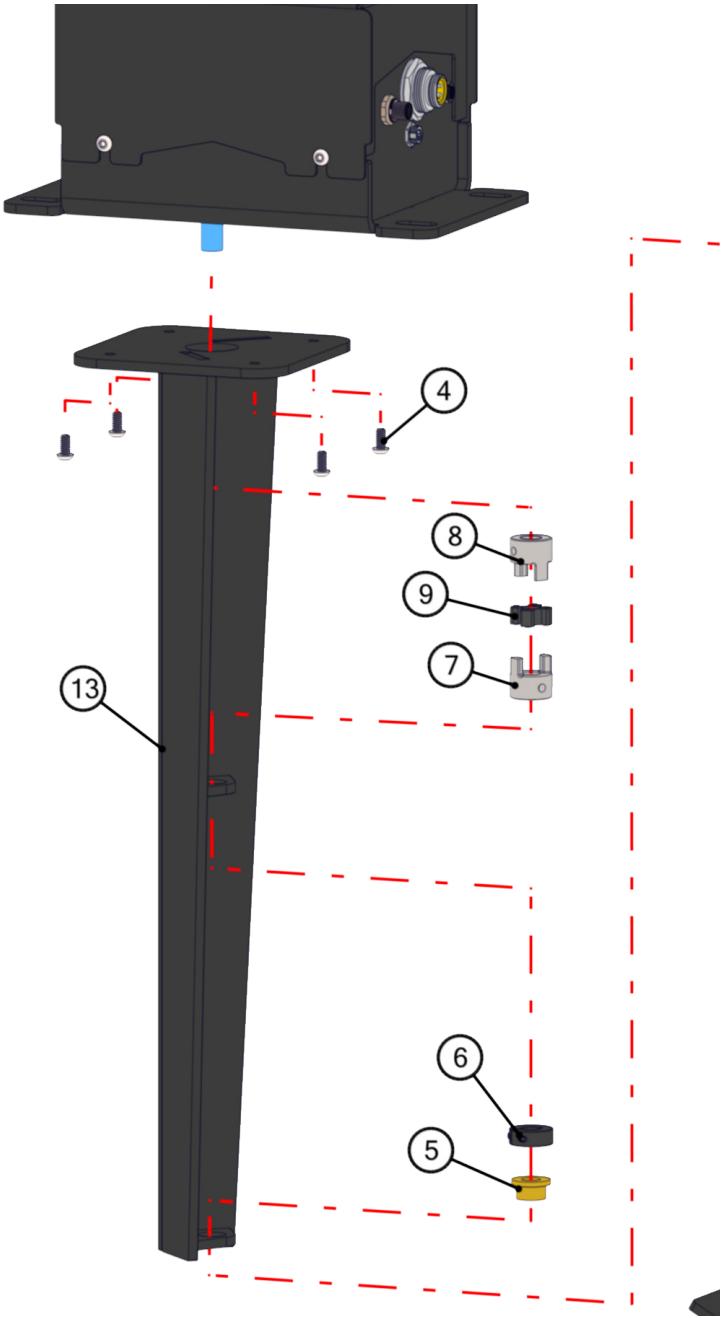
OPERATING

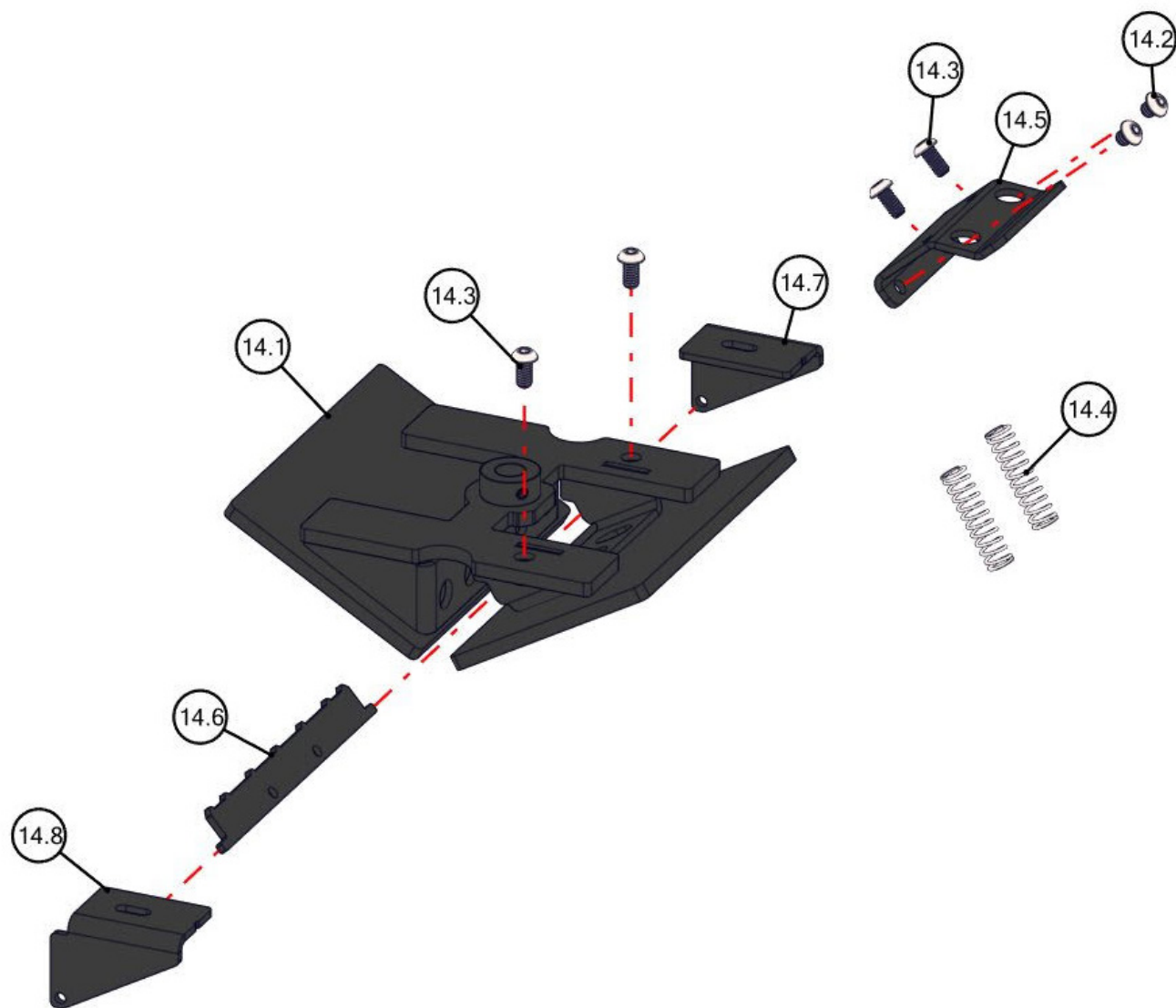
-10~50°C (14~122°F)

STORAGE

-20~50°C (14~122°F)

PHYSICAL DIMENSIONS	VALUE
LENGTH × WIDTH × HEIGHT	12 × 7½ × 7½ IN (304.8 × 190.5 × 190.5 MM)
POWER	VALUE
VOLTAGE	24 VDC
UNIT AMP	3 AMP
SUPPLY AMP	5 AMP
CIRCUIT PROTECTION	VALUE
INSIDE POWER SUPPLY CABINET	5 AMP

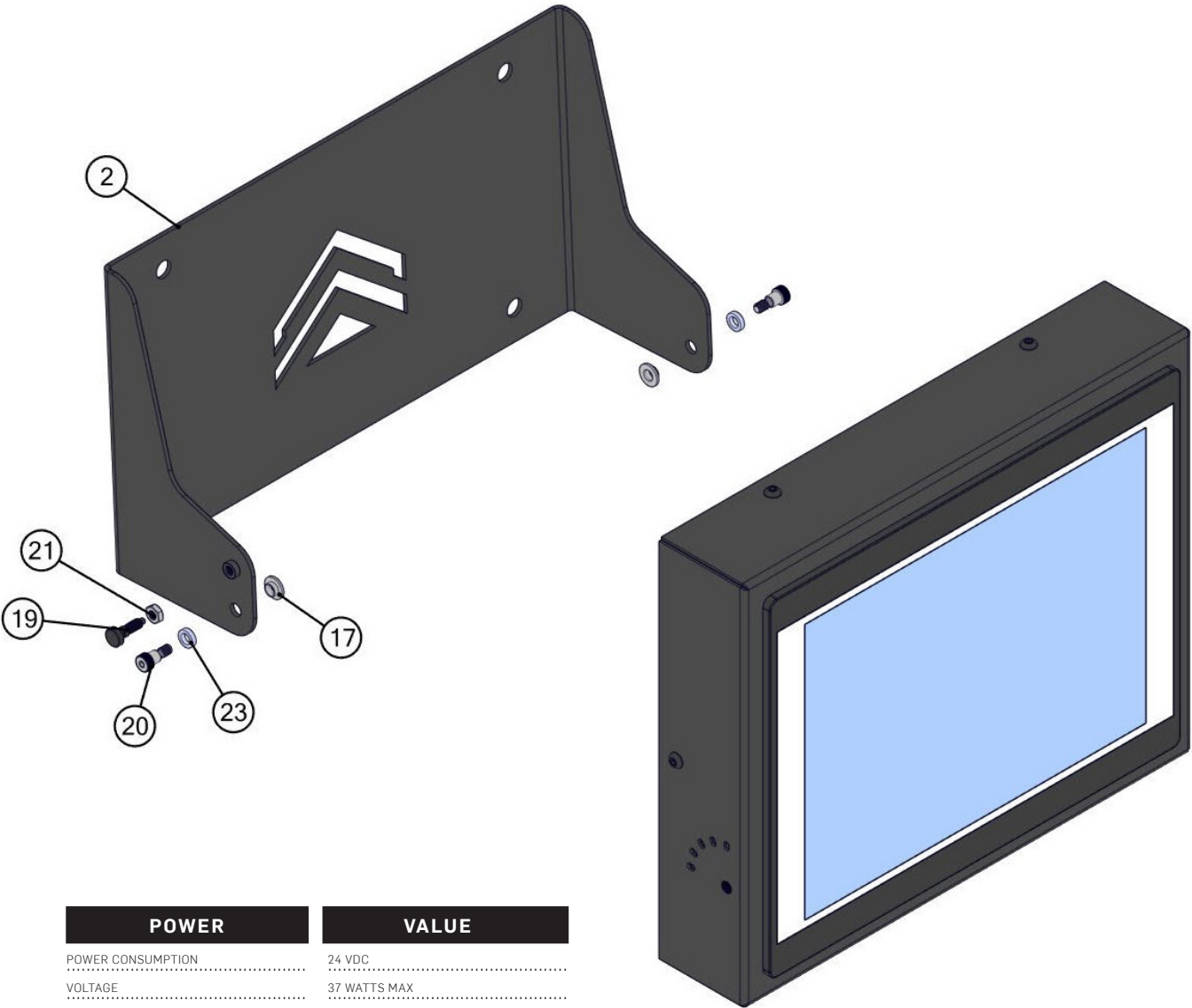




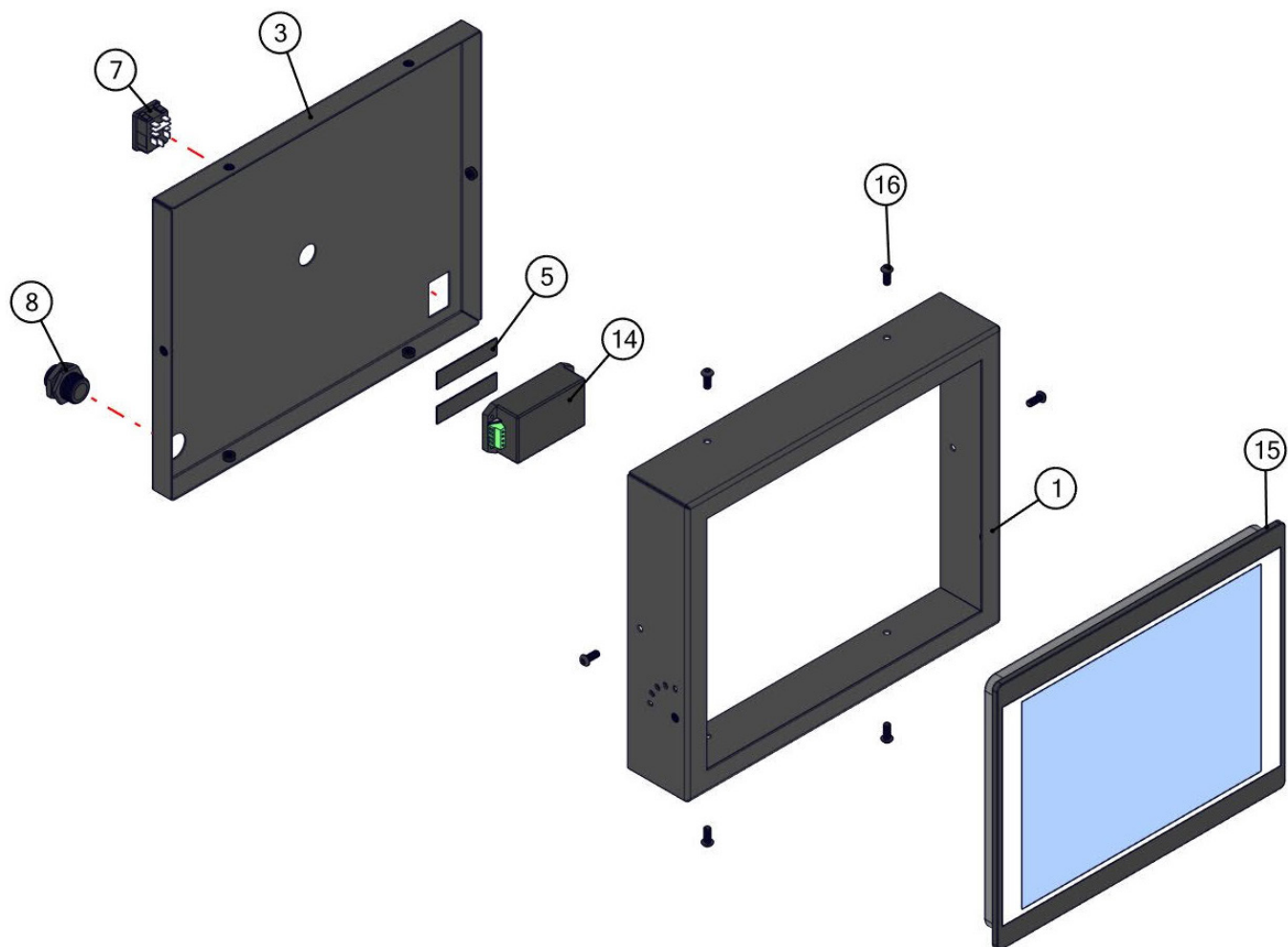
CODE	DESCRIPTION	PRT #	QTY
1	15" HMI HOUSING	CTP-7915-201	1
2	15" HMI MOUNTING PLATE	CTP-7915-203	1
3	15" HMI HOUSING BACK PLATE	CTP-7915-212	1
5	DOUBLE SIDED TAPE	DST-75003-300	2
7	POWER SWITCH	ELE-2032-030	1
8	RJ45 COUPLER	ELE-31C6-RJ45	1
14	24V POWER SUPPLY	ELE-6024-120	1
15	15" HMI	ELE-65150-CBK	1
16	1/4"-20X5/8" BUTTOH HEAD BLACK OXIDE	HBH-25020-063-BK	6
17	.313 x .620 x .060 INSUL WASHER-NY	HIW-313620-060-NY	2
19	1/4"-20X1/2" RETURN SPRING PLUNGER	HRS-25020-050	1
20	.313 x .313 x .250-20 SHSB	HSB-313313-25020	2
21	1/4"-20 JAM NUT- SS	HSN-25020-0014-SS	1
23	.340 x .740 x .060 WASHER-NY	HWS-317500-125-NY	2

** Indicates recommended replacement parts. (See p. 120 for more information)

*** Indicated parts that are consumables and are not covered under the warranty agreement. In addition, any misuse, lack of maintenance, and/or modifications made to any Spire products will void all warranties.



POWER	VALUE
POWER CONSUMPTION	24 VDC
VOLTAGE	37 WATTS MAX
TEMPERATURE RATINGS	VALUE
OPERATING	0-55°C (32-131°F)
STORAGE	-25-75°C (-13-167°F)



MAINTENANCE:

ROUTINE MAINTENANCE

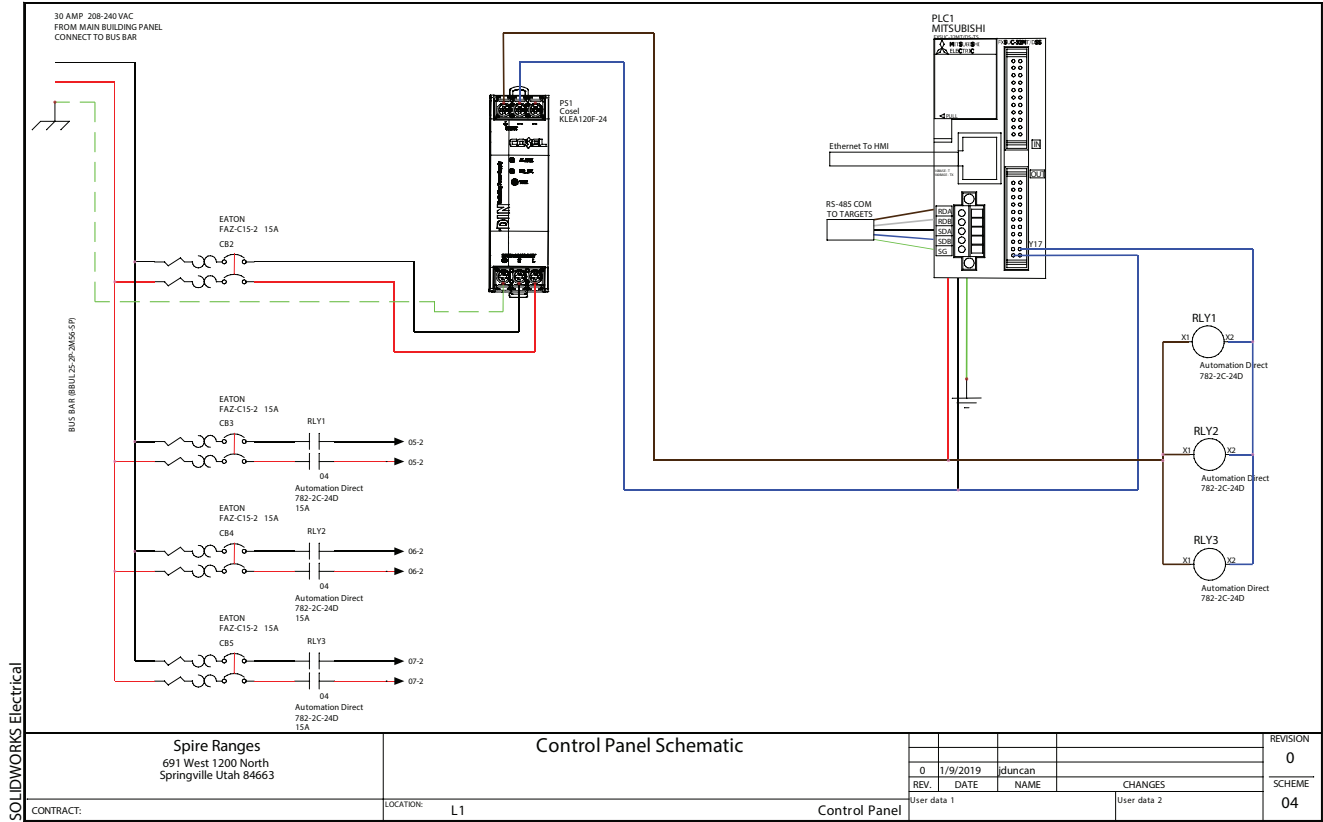
TIME TABLE	PROCEDURE
Weekly	1. Check each set screw (see p. 59) to ensure they have remained tight. If they are loose, torque them to 80 in-lbs and add blue Loctite. 2. Lightly twist clamp with carrier turned on to ensure there is no movement or slip of the clamp to the shaft. 3. Check clamp jaw (refer to p. 40) to ensure the jaw holds targets securely. If the targets are loose or too tight, loosen the screws and slide the pivot brackets until the jaw holds targets securely.
Monthly	1. Check each love joy screw set (refer to p. 59) to ensure they have remained tight. If they are loose, tighten them to 68 in-lbs and add blue Loctite. 2. Check all the screws and bolts on the Stryker and the mounting assembly have remained tight. If any are loose, add blue Loctite and hand tighten. 3. Check all wire connections on the Stryker head unit all are tight. If they are loose, finger tighten them.

TOOLS

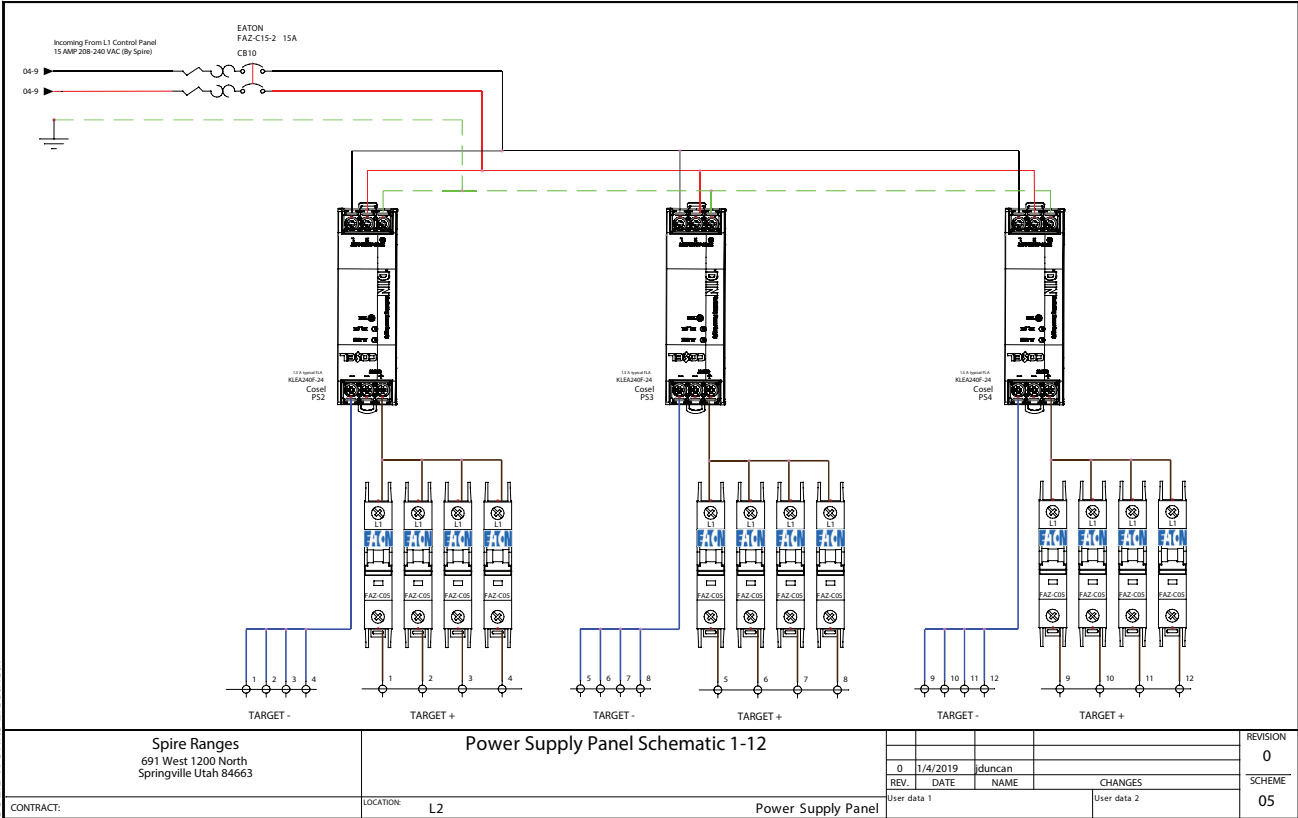
LIST OF TOOLS

- 5/32" Allen Wrench
- 5/32" Extended Allen Wrench
- 1/8" Allen Wrench
- 1/8" Extended Allen Wrench
- 3mm Allen Wrench
- Medium Strength Blue Thread Locker
- Mini Flathead Screwdriver
- Multimeter

SCHEMATICS



SOLIDWORKS Electrical



RECOMMENDED REPLACEMENT PARTS

DESCRIPTION	PRT #	QTY
CLAMP	RSA-7533-100	1
CLAMP MOTOR	ELE-68934	1
STRYKER PLC	ELE-6005-534	1
HARDWARE REPLACEMENT KIT (Below items are included in kit)	STRYKER-HARDWARE-KIT	1
CLAMP SET SCREW	HSS-25020-038-SS	10
SPIDER CLAMP-SIDE SET SCREW	HSS-25020-025-BK	5
SPIDER MOTOR-SIDE SET SCREW	HSS-06M10-005-SS	5
LOVEJOY RUBBER	HLJ-DAMP	2
BODY BUTTON SCREW	HBH-25020-050-SS	10

*** Indicates parts that will need to be programmed for a specific lane. It is recommended for them to be purchased and to remain on Spire shelves where they can be programmed to a specific lane as needed.

SERVICE PLANS:

OVERVIEW

At the core of Spire Ranges is our commitment to keep our installed equipment in each range running at its optimum performance. To maintain that standard, below is a list of the different service package levels available to our clients. We look forward to providing your range with a quote that is unique to your range.

LEVEL	TRIPS PER YEAR	PARTS DISCOUNT
Bronze	1	0%
Silver	2	5%
Gold	4	10%

SERVICES OFFERED WITH EACH SITE VISIT:

- Provided Refresher Training
- Software Update/Reconfiguration
- Test all Motors, Valves, Cylinders, Lights, & Proximity Switches
- Target Clamp Inspection/Adjustment
- Check/Secure Electrical Connections
- Verify Proper Voltages
- Verify Controller(s) (HMIs/Computer) Functionality
- Assess Cable Tension & Adjust
- Assess Track Health & Tighten/Replace any Loose/Missing Hardware
- Verify Proper Charging of Targets
- Stall/Bench Inspection
- Trap Inspection
- Overall Range Health Inspection

TROUBLESHOOTING:

Given below are possible causes and solutions for system problems. Within this section, you will find sequential steps that can be used to help troubleshoot a problem. If a problem persists after following these troubleshooting guidelines, please contact the Spire support team.

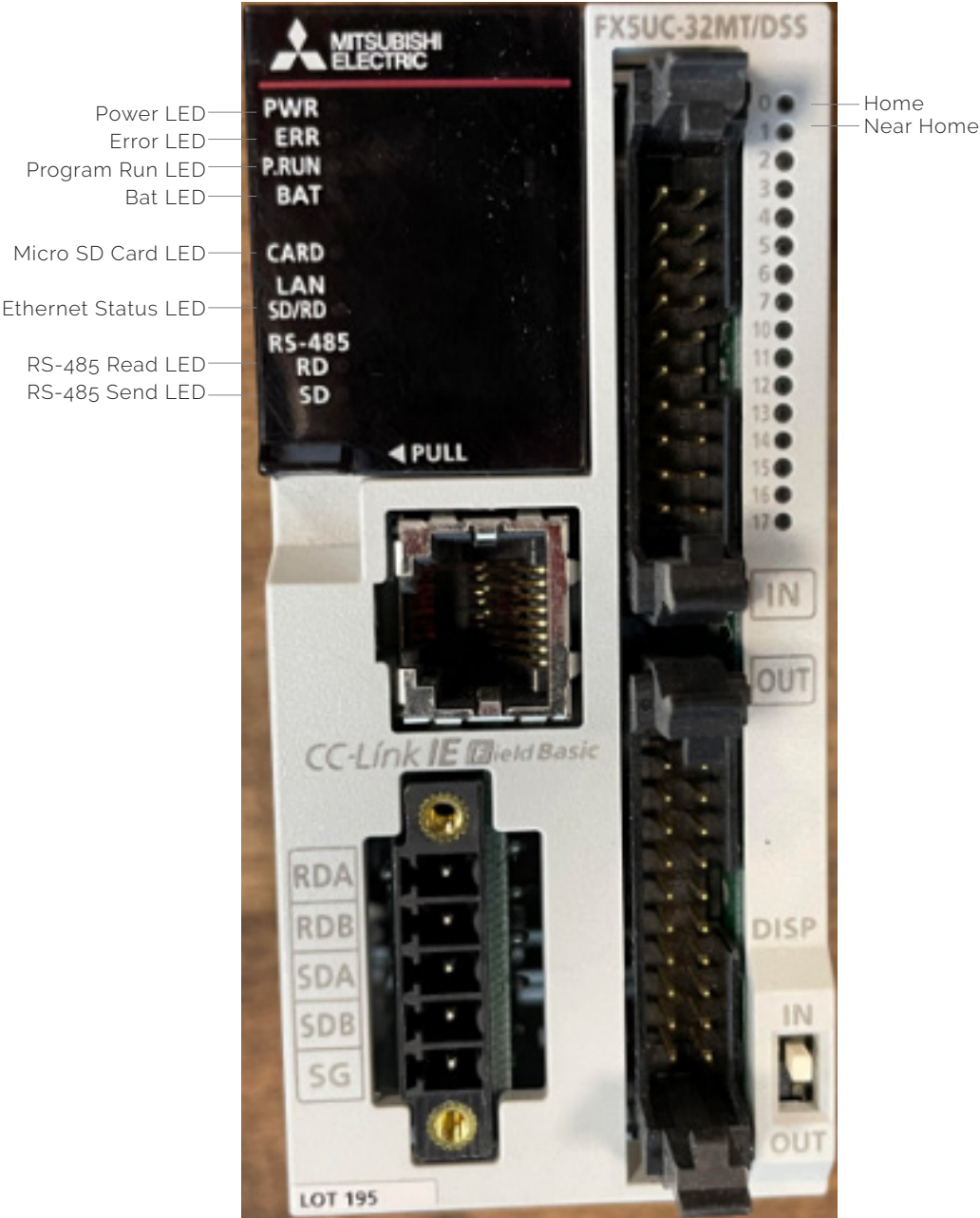
1.0 HMI TOUCH SCREENS (MASTER & LOCAL)

PROBLEM	POSSIBLE CAUSE	POSSIBLE SOLUTION
1.1 Dark Blank Screen	(1) Screen is in sleep mode	(1) Touch the screen to bring HMI out of sleep mode.
	(2) No power supplied to HMI	(1) Check the power supply connection. (2) If the 15" master, check the fuse on the back of the screen. (3) Check circuit breaker to see if tripped. (4) If problem persists, contact Spire for technical support.
1.2 Single Nonresponsive Button on Screen	(1) HMI screen error	(1) Check power supply to PLC. If PLC has power, cycle power to PLC. (2) If there is no indicator light for power to the PLC, check circuit breaker to see if tripped.
	(2) HMI calibration needed	(1) Power cycle the screen and (2) immediately touch the screen during startup. (3) Follow the on-screen prompts to calibrate.
	(3) HMI / PLC fault	(1) Contact Spire for technical support.
1.3 Entire HMI Touch Screen Nonresponsive	(1) HMI error	(1) Cycle power to HMI.
	(2) HMI / PLC fault	(2) Cycle power to the PLC.
1.4 Communication error	(1) Ethernet (RJ45) cable unplugged or damaged	(1) Check all RJ45 connections in control panel. (2) Check RJ45 connection to screen. (3) Follow cable to ensure they are not smashed or damaged.

2.0 STRYKER TARGET UNITS

PROBLEM	POSSIBLE CAUSE	POSSIBLE SOLUTION
2.1 Misaligned target(s)	(1) Alignment error	(1) Navigate to the Menu Screen on the HMI Touch Screen. (2) Select Target Calibration.
	(2) Drive coupling malfunction	(1) Check for drive coupling separation. (2) Reseat both metal couplings so they are tight against each other and retighten both set screws with low strength thread locker.
2.2 Nonresponsive targets (not moving)	(1) Turning motor position error	(1) Navigate to the Menu on the HMI touch screen. (2) Select Target Recalibration. (3) Reselect targets. (4) If the problem persists, flip the power switch of the HMI on the back of the enclosure. (5) Once the system has rebooted, tap the control touch screen to begin.
	(2) Obstruction in drive system	(1) Power off the targets. (2) Turn the target manually by hand to see if it turns. (3) If it doesn't turn, check the backside of the downrigger for obstruction. (4) Remove obstruction if one is present.
	(3) Turning motor fault	(1) Contact Spire for technical support.

PLC LED STATUS



PROBLEM	POSSIBLE CAUSE	POSSIBLE SOLUTION
6.0 No Green PWR (Power) Light	(1) Bad power cable connection/damaged cable	(1) Inspect the PLC power cable (red/black/green cable coming out of the bottom of the PLC) for damage. (2) Ensure that the PSU in the control box has power and that no breakers are flipped.
	(2) Bad PLC	(1) Contact Spire for a replacement PLC.
6.1 Steady/Flashing Orange ERR (Error) Light	(1) Communications with targets were lost	(1) Generally this is simply an alarm that there was a problem. If the targets are functioning correctly, then ignore the ERR light. This light will turn on every time the power off button on the HMI is used. (2) Check the cable connections on the affected target turner motors.
6.2 No Green P.RUN (Program Run) Light	(1) Program not running (switch in center Stop position)	(1) Move the switch under the black cover to the Reset position and hold for 5 seconds. Then move it back to Run position. (2) Ensure the switch is not in the center Stop position.
6.3 Flashing Green P.RUN (Program Run)	(1) Program paused/stopped (switch in center Stop position)	(1) See 6.2.
6.4 No Green LAN SD/RD (Ethernet Status) Light	(1) Bad/damaged ethernet cable	(1) Replace ethernet cable.
	(2) Bad/damaged ethernet switch	(1) Swap PLC ethernet cable to another port on the switch.
	(3) Bad PLC	(1) Contact Spire for a replacement PLC.

GLOSSARY:

TERM	DEFINITION
Calibration	Adjusting the various parts of the system precisely for their particular function.
Consumable Components	Products that are expected to wear out and that get used up throughout the lifetime of the product (will need to be replaced on a regular basis).
Course (of Fire)	The programmed set of actions for each shooting target.
Edge	The side of the shooting target (not face or back).
Error / Warning / Alarm	A minor problem with the system, but the system will still run.
Exposure Times	The amount of time the face (not the edge) will be positioned toward the shooter.
Fault	A major problem with the system. The system will not run.
HMI	A human-machine interface, which is a feature of any device that enables humans to engage and interact with machines. Common examples include touchscreens and keyboards.
Loctite	A brand of adhesives that is used to prevent loosening of metal fasteners caused by vibrations.
PLC	A programmable logic controller, which is a computer control system, that controls other devices based on various information available to it.
Range Master	The person in charge of any given session.
Stage	A step in the Course (of Fire).

SYMBOL	DEFINITION
	Power (On/Off).
	Ethernet LED. Will light steady when an active Ethernet connection is made and flash when there is activity.
	Signal Strength.
	Caution.
	Risk of Electrical Shock.
	Risk of Hot Surface.
	Grounding Point/Terminal.



THE PINNACLE OF SHOOTING RANGES™