



iChip 600 Follow Spot Owner's Manual

June 2020

Version 0.01

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Document Revisions

Date	Version Number	Document Changes
06/20/2020	0.01	Initial Draft

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1 Introduction

This iChip 600 is a modern long throw LED follow spot, featuring dual handle zoom lens controls, beam sizing iris, chopper and dimmer. The iChip system consist of a compact follow spot body and a heavy-duty stand. Powered by a simple 120 or 220VAC input the iChip 600 can be plugged into any standard wall outlet. The follow spot is supplied with a six position self-canceling color changer with colored position markers built into each handle.

Model Number	Decription	Input Voltage	Output
12062	iChip 600	208 – 240 Vac, 165 Amp DC	7000W

The power supply takes incoming line voltage and transforms it to a low voltage, high current DC output. The incoming AC line is filtered to eliminate noise and is then converted to DC. This DC voltage is switched on and off by a solid-state switching circuit and converted to a high frequency square wave. The square wave is fed into output transformers to provide low voltage and high current. Rectifiers convert the high frequency signal to DC, and the output is filtered to eliminate noise and ripple. Output to the xenon lamp is adjustable through use of individual potentiometers on each of seven modules that make up the DC power supply.

The power supply also includes a 15A 208-240 Vac circuit breaker that is used to power the control circuits in the moving light head and power the cooling systems in both the moving light head and power supply.

Built-in protective circuits include a high temperature limit switch and overvoltage detection. The thermal switch will open and interrupt power supply operation if internal temperatures exceed safe operating limits. Overvoltage in the AC input voltage will also disable the power supply until the voltage is corrected.

A multi-pin CPC receptacle is standard on all units and supplies control voltage and signals between the moving light head and power supply. supplied for use with Strong follow spotlights and is compatible with all current and legacy follow spots.

A Red Camlock connector is provided to connect DC+ and a Black Camlock connector is provided to connect DC-.



CAUTION: Refer all servicing of this unit to an authorized Strong Lighting equipment dealer. Switching-type Xenon power supplies employ solid state circuitry requiring sophisticated diagnostic equipment not generally available to field service personnel. Hazardous high voltages exist within the power supply cabinet.



DANGER: Be sure to read this manual in its entirety before attempting to install, operate or maintain the Savanna Automated Searchlight.



2 Installation



CAUTION: This equipment operates at hazardous voltages, and should be operated by qualified, trained personnel only. Do not remove power supply cover panels when the unit is energized



When positioning the power supply, allow several inches of clearance around the power supply cabinet to allow for an unobstructed air flow. If the intake or outlet grilles are blocked, thermal switches will shut the unit off to prevent heat damage.

Connect the multi-pin CPC plug and the DC leads to the power supply and moving light head before connecting the input AC line voltage to the power supply. Be sure to properly align the CPC connectors to one another. Once aligned make sure that the threaded coupling ring is fully engaged and hand tight. Turn the Camlock connectors one quarter turn to make sure they are locked to each other.

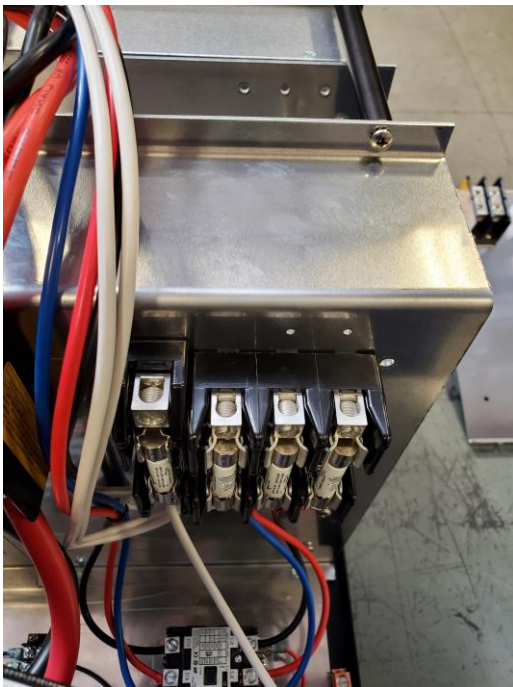
Input AC power leads run to the unit must be of the correct size and type to conform to local codes. Install in conduit as required. The indoor Savanna power supply is built in two different configurations. One for North American style power, 208 Vac, three phase power and one for European style power 380 Vac, three phase power. NOTE: 380Vac three phase power input connections must also include a Neutral conductor where phase to Neutral voltage is between 220 and 230 Vac. In all cases an Earth Ground point is provided and must be connected for safe use.

Input power should be provided to the power supply on a 24/7 basis and ON/OFF control of the lamp should be provided by DMX command.

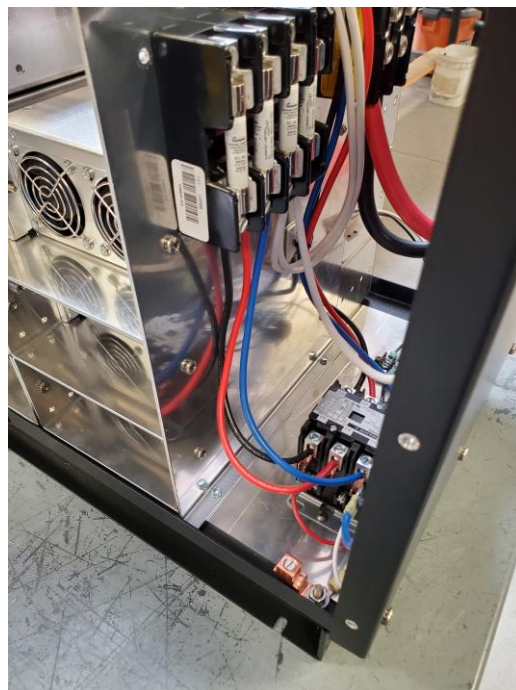


Power Supply Connector Panel

AC input power is connected to the fuse block provided (European systems will have four fuses). The power supply is protected by a 40A 480V ac fuse for 7000W systems and a 30A 480V ac fuse for 4000W systems.



View of Fuse Block



View of Earth Ground Lug



View of Mounting Points

The moving light head must be secured to a fixed mounting point by use of the four mounting holes in the base. These holes are sized for ½” or 12mm bolts. The weight and torque of the moving light head is such that it is not stable without the required mounting bolts. Be sure to mount the moving light head in a position that allows for full free movement of the light. Minimum clearance for both the Pan and Tilt axis is 43” (1.1m)



DMX Input Panel

A DMX input is needed for each Savanna unit. A standard 5-pin XLR connector is provided for DMX input and a through connect is also provided to “daisy-chain” multiple fixtures together. Each Savanna fixture requires 14 channels of DMX control. Follow all DMX standard procedures for cable length and termination. An external DMX terminator is required at the end of each DMX daisy-chain.

Like the power supply the moving light head needs to have a source of fresh air for cooling purposes. Take extra care to ensure adequate air flow if the moving light head(s) are being installed in a confined space.

NOTE: When making plans for installation of both the power supply and moving light head please take into consideration the need to allow access space for maintenance and repair. This is especially important if the lights are being installed in an elevated space or platform.

DMX channel assignment is done via RDM. To access this function, you need an DMX test/RDM controller device like a City Theatrical DMXCat.

It is highly recommended that the full functionality of the Savanna system be tested with a DMX controller before a lamp is installed. **NOTE: Do not under any circumstance try to turn on the xenon lamp without a lamp installed. This can damage your DMX controller/tester.**

3 Lamp Installation

It is recommended that lamp installation and removal be done by a two-person crew.



DANGER: The handling of a xenon lamp may expose the operator or technician to hazards resulting from bursting of the quartz envelope, because of the high internal pressure of the xenon gas.



Bursting may occur if the lamp is dropped or mishandled. The hazard is substantially increased if the lamp is hot from operation, as the gas pressure increases in a manner directly proportional to the increased temperature. Whenever the xenon lamp is removed from its protective cover, and until the installation or removal is complete and the lamphouse assembly is secured, the operator or technician **MUST** wear protective clothing, including Kevlar™ gloves, acetate face shield, and protective jacket or equivalent. (These items are available from Strong Lighting.) Instructions regarding protective clothing are subject to change by any local or federal agency that may have authority over such matters, dependent on area or point of use of the Strong Lighting equipment.

It should be noted that xenon lamps do not “explode” in the normal sense, in that there is no combustible energy-releasing reaction occurring. They merely “burst” like a balloon or a pressure vessel. The hazard is related to the flying particles of glass-like quartz, which are propelled with sufficient force to penetrate normal clothing, eyes, and skin. It can not be over-emphasized that protective clothing, gloves, and eye protection be worn when handling xenon lamps.

LAMP INSTALLATION PROCEDURE

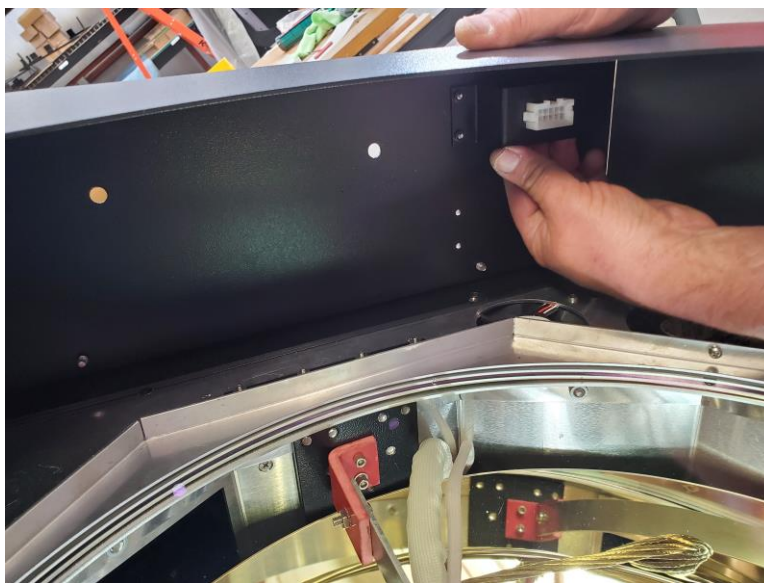
1. Place the lamp head in the upright vertical position.
2. Unlatch the outer lamphouse housing, lift straight up and set aside.



3. Remove any Scroller or Douser cartridges that might be installed and set aside. Take note of the Spring Steel Clips and make sure to release them on both sides before attempting to remove any cartridges.



-
4. Remove the Scroller/Douser housing. To do this it will be necessary to remove six screws from around the housing and to disconnect any Scroller or Douser connectors that are attached to the housing. This connector is held in place by two small plastic clips on each side of the connector. Note the orientation of the connector so that it can be reinstalled correctly.



5. Remove the thumb screw retaining the heat filter bracket.
6. Carefully open the heat filter bracket/door to access the lamp.
7. Carefully remove xenon lamp from shipping container. (Save the container and packing for future shipping purposes.) Use caution to handle the lamp only from the metal ends. Do not allow your fingers to come in contact with the quartz

-
- envelope. Finger oils or other foreign material on the quartz envelope can lead to rapid, premature failure. If accidentally touched and contaminated, carefully clean the quartz envelope with tissue moistened with alcohol and then wipe dry with a clean, dry, lint-free cloth.
8. If attached remove the braded wire lead from the lamp.
 9. Inspect the upper lamp bullet and end pin of the lamp to make sure that these contact areas are clean and free of corrosion, oxidation or any contaminant which could cause a high resistance electrical joint. Make sure, that the set screw on the upper lamp bullet is loosened and that the upper lamp bullet will slide freely over the front anode (+) end of the lamp.
 10. Slip the upper lamp bullet on to the end pin of the lamp and tighten set screw.
 11. Remove the front lamp support.
 12. Inspect reflector for cleanliness and clean if necessary (see reflector cleaning instructions in Maintenance section)
 13. Carefully screw the threaded end of the lamp into the lamp receiver mounted in the rear of the fixture. This spot is located directly behind the small opening in the rear of the reflector.
 14. Replace the front lamp support. Take note of the X on the lamp support bar. The front lamp support should NOT cover this mark.
 15. Replace braded wire lead to lamp. Making sure that this connection is tight.
 16. Connect braded wire lead from the lamp to the lamp support with the ¼-20 hardware provided.
 17. Remove lamp protective wrap.
 18. Now reverse steps 7 through 1 to replace and close the mechanical components necessary to reach the lamp. Be sure to inspect the condition of both the heat filter and the front glass and clean as necessary (see heat filter cleaning instructions in Maintenance section).

LAMP REMOVAL PROCEEDURE



DANGER: Wear all required protective clothing and follow prescribed steps carefully.



1. If the xenon lamp has been in operation, wait *at least* 20 minutes after Lamp shutdown (with blowers operating), before opening the lamp head. This will allow the internal lamp pressure to reduce to a level that is permissible for handling, provided that the specified protective clothing is worn.
2. Reverse the steps of the Lamp Installation Procedure in section above.

4 Operation

Once installation is completed and all input AC voltages have been tested and DMX operation has been confirmed you may proceed to test the moving light system.

Set the control switches to match the picture below. LIGHT: OFF and LOCAL.



Control Switches

Once you have confirmed that the area is clear apply AC input power to the system. The system after a short delay will begin its “homing” process. The douser will close, and both the Tilt and Pan axis will move towards home. NOTE: It is normal during this “homing” process for the douser to make a sudden growling sound and for the Tilt and Pan movement to bang into their stops. Once the light has completed the “homing” process it will assume the positions that are being sent by the DMX controller. In the absence of a DMX input signal the light will slightly back off the home position and assume the zero position and await DMX control.

In the Local mode control of the lamp ON/OFF function is provided by the ON/OFF switch on the panel pictured above. Turning the switch ON will cause the power supply to operate and send open circuit voltage to the lamp and igniter. Once the igniter detects the presence of Open Circuit voltage the igniter will generate its high voltage pulse and will deliver it to the lamp, igniting the lamp. Turning this switch to OFF will extinguish the lamp and begin a 20-minute cool down timer built into the light.

Setting the REMOTE/LOCAL switch to REMOTE and then setting the LIGHT switch to ON will prepare the Savanna for remote control via DMX. At any time, the light can be returned to LOCAL control to facilitate trouble shooting.

Be sure to replace the clear plastic cover after any time you access the LIGHT and REMOTE/LOCAL switches.

DMX Channel Map

Channel Number	Function
1	Pan Coarse
2	Pan Fine
3	Tilt Coarse
4	Tilt Fine
5	Douser (0=Closed, 100%=Open)
6	Zoom
7	Color Scroller 1
8	Unused
9	On/Off (below 50% = Off, Above 50% = On)
10	Color Scroller 2
11	Color Scroller 3
12	Unused
13	Unused
14	Unused

NOTE: There is a five second delay on the execution of both the ON and OFF command.

5 Maintenance

The Savanna Automated Searchlight is designed to provide years of trouble-free operation so long as a few simple maintenance steps are followed.

A clean searchlight is a happy searchlight. The Savanna has been provided with two washable air intake filters mounted on the rear cover. Remove these filters at least once every three months for cleaning. Environments with high levels of dust may require more frequent cleaning. From time-to-time these filters may have to be replaced depending on wear and environmental factors.

Every time you change your lamp you should give the entire fixture a good cleaning inside and out. Depending on conditions this might include the need to vacuum out any accumulated dust or debris. When the lamp is removed it is an ideal time to clean the reflector.

The reflector in your Savanna Automated Searchlight is a vital component and must be serviced and cleaned with the upmost care. To begin the cleaning process surface dust must first be removed. This can be accomplished with either the use of a compressed gas (air) or a soft cloth. The source of compressed gas should be clean, dry and filtered. Cloths can include Webril wipes, laundered birdseye weave diapers and surgical cotton.

Once any dust or dirt has been removed the surface can be cleaned with the use of an aliphatic solvent. These include methanol, isopropanol, ethanol and acetone. Use a soft cloth to apply the solvent, clean and dry the surface. Be sure to wear appropriate Personal Protective Equipment when working with solvents. In all cases any cleaning of the reflector should only be attempted when the lamp is removed, and the reflector is cold.



WARNING: The surface of your reflector has been coated with several layers of thin-film coatings that give your reflector its high-efficiency reflective properties. Any damage to these coatings will diminish the reflective properties of the reflector and shorten the useful life of the reflector.

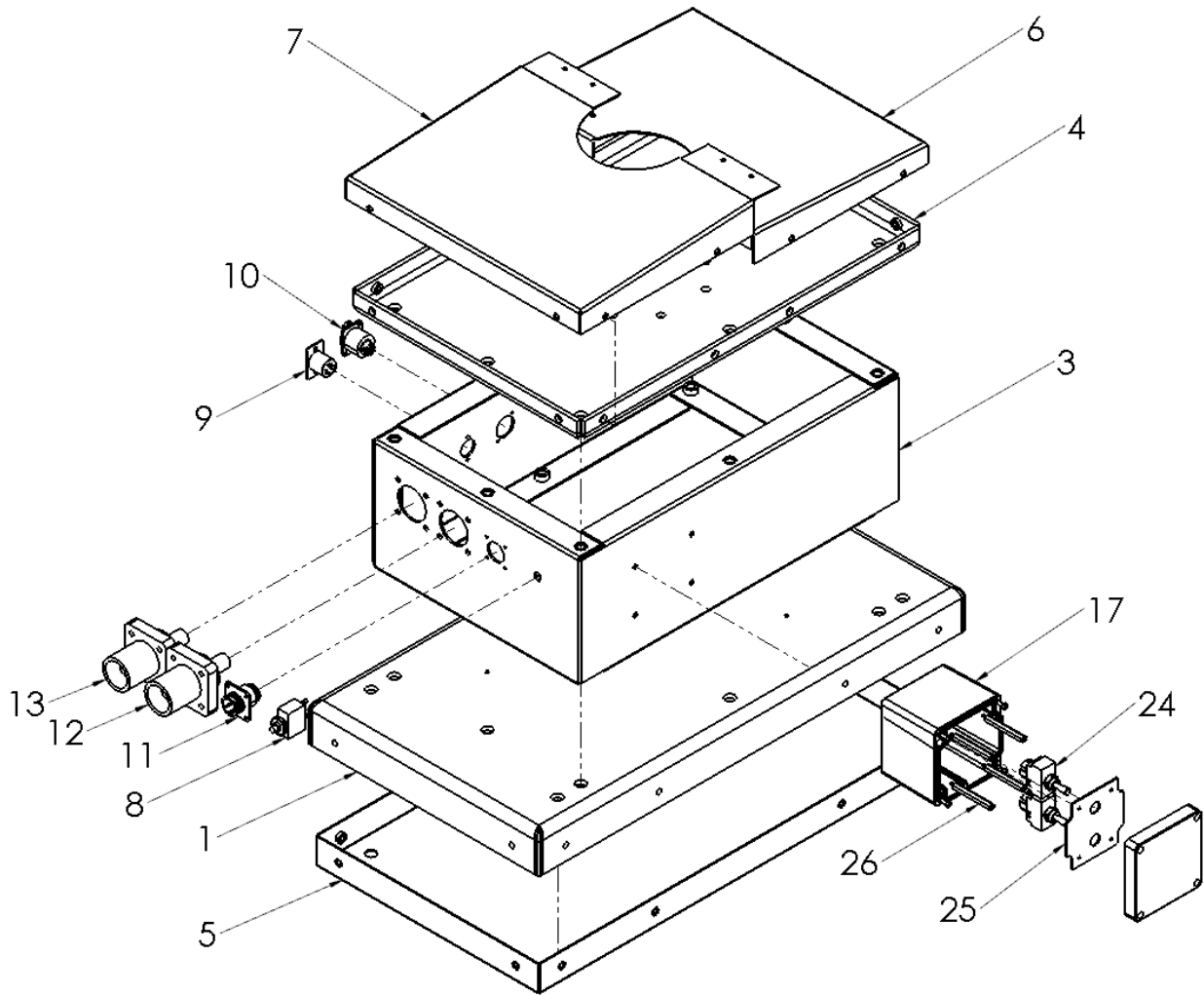


During a lamp change it is good timing to inspect the rest of the fixture to address issues before they become problems. Use the checklist below to fully review the condition of your fixture.

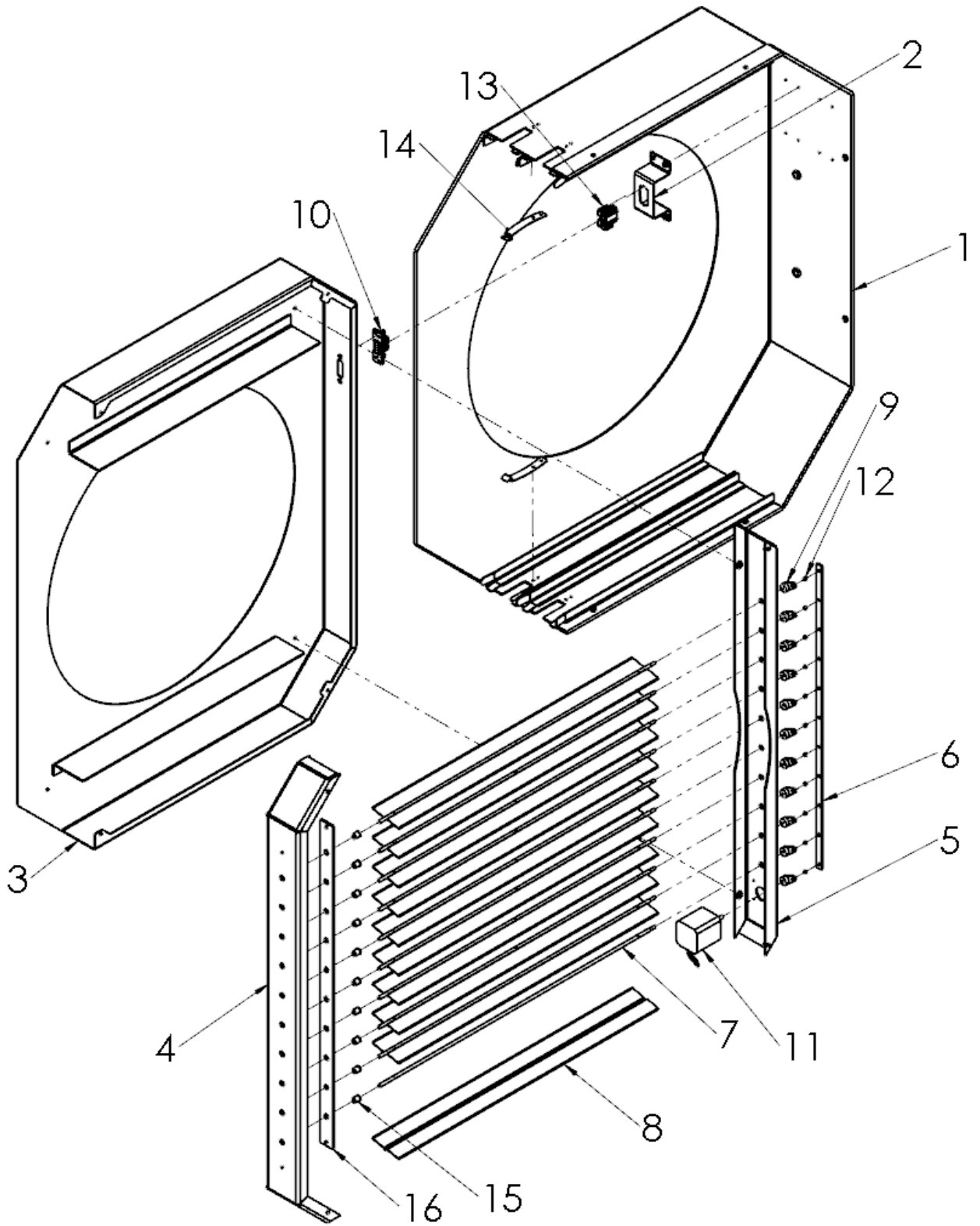
Savanna Automated Searchlight Maintenance Checklist

Date:				Inspector:	
Model:		Serial Number:		Cold Inspection: Power Off, Lamp Off, Unit Open	
Hour Reading (via RDM):				Reflector Condition:	Cleaned:
Hot Inspection: Power On, Lamp On				Lamp Condition:	
Volt/Amp Meter Reading				Connector Condition:	
Time	Volts DC	Amps DC	Watts	DC+ Camlock	
At Strike				DC- Camlock	
10 minutes				CPC Cable	
Watts = Volts * Amps				Heat Filter Glass Condition:	Cleaned:
Lamp House Blowers:				Front Glass Condition:	Cleaned:
Douser Operation:				Douser Blade Condition:	
Focus Operation:				Gaskets:	
Tilt Operation:				Latches:	
Pan Operation:				Belts:	
Remote and Local Strike:				Front Lamp Leads:	

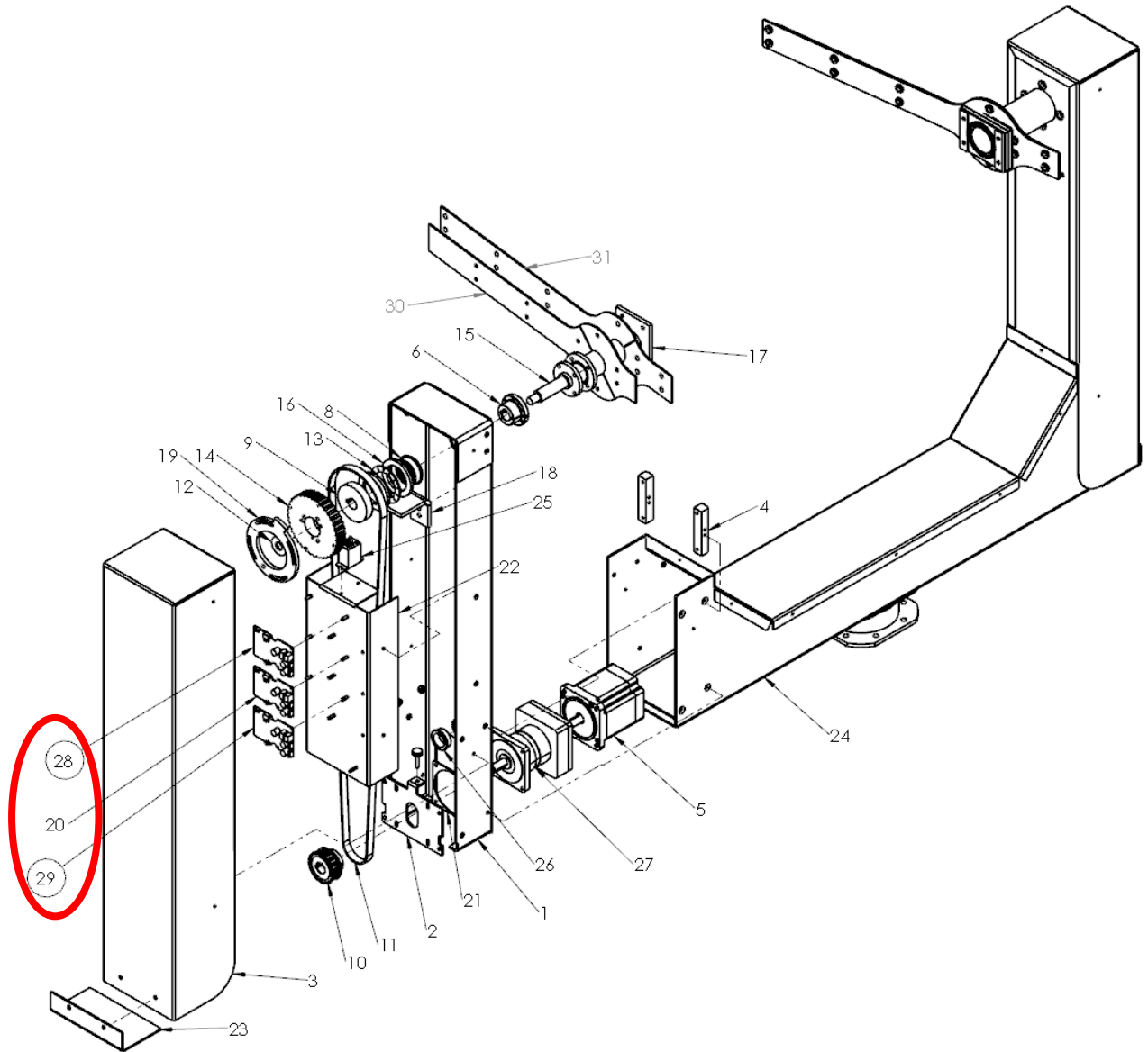
6 Exploded Views



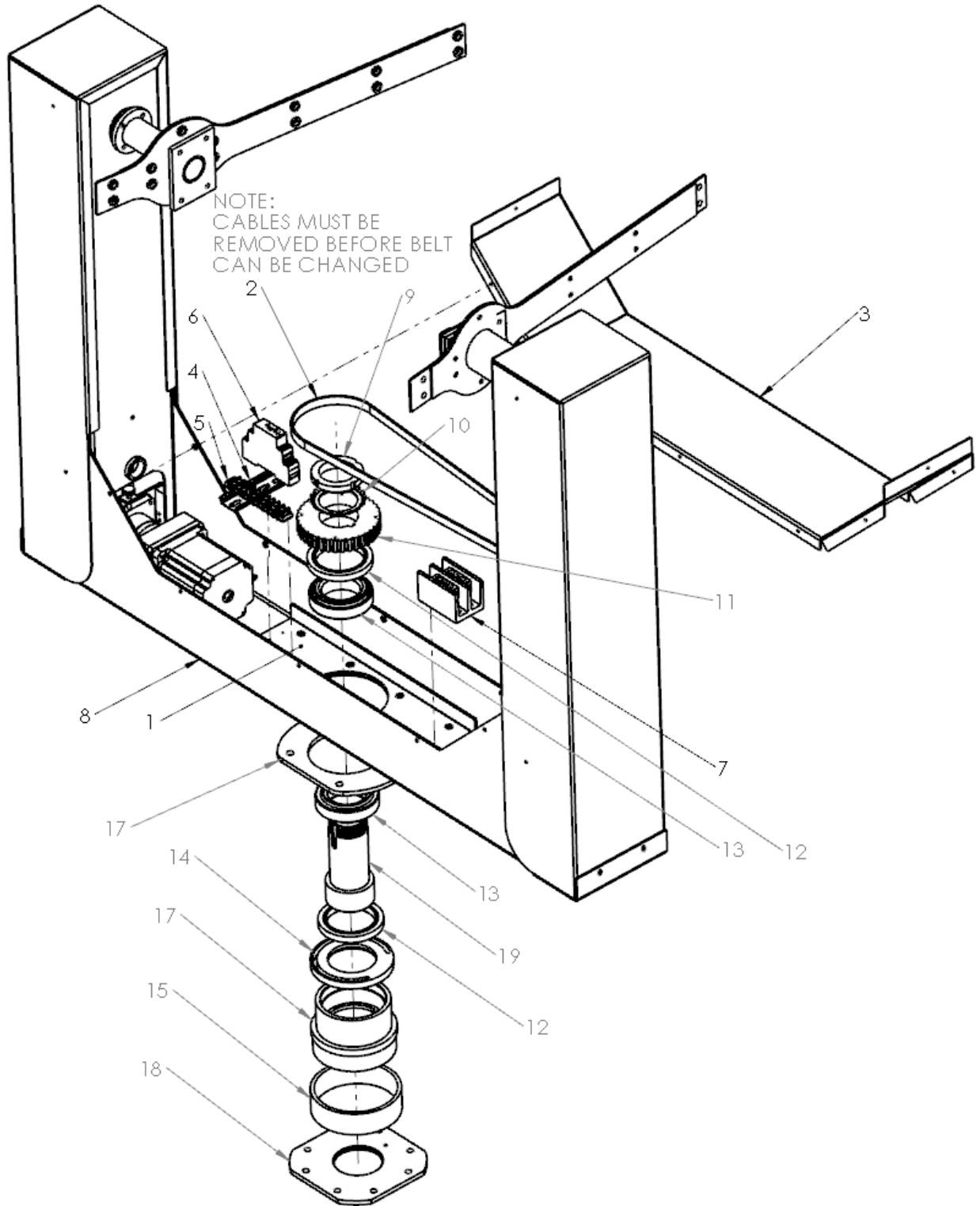
ITEM	PART NO.	DESCRIPTION	QTY.
1	20104	Bottom Plate Mounting Box	1
3	20105	Savanna Box	1
4	20106	Top Plate Mounting Box	1
5	20107	Bottom Cover Mounting Box	1
6	20108	Top Cover Mounting Box 1	1
7	20109	Top Cover Mounting Box 2	1
8	9700265	Circuit Breaker 15A 2 Pole Popout	1
9	9700172	DMX Female Connector	1
10	9700173	DMX Male Connector	1
11	CACHM139	CPC Receptacle 9 Pos	1
12	20144	Cam-Lok Receptacle Male Red	1
13	20145	Cam-Lok Receptacle Male Black	1
17	20168	Switch Box w/Lid	1
24	3161048	Toggle Switch	2
25	20159	Switch Box Face Plate	1
26	20161	Standoff Brass 50mm	4



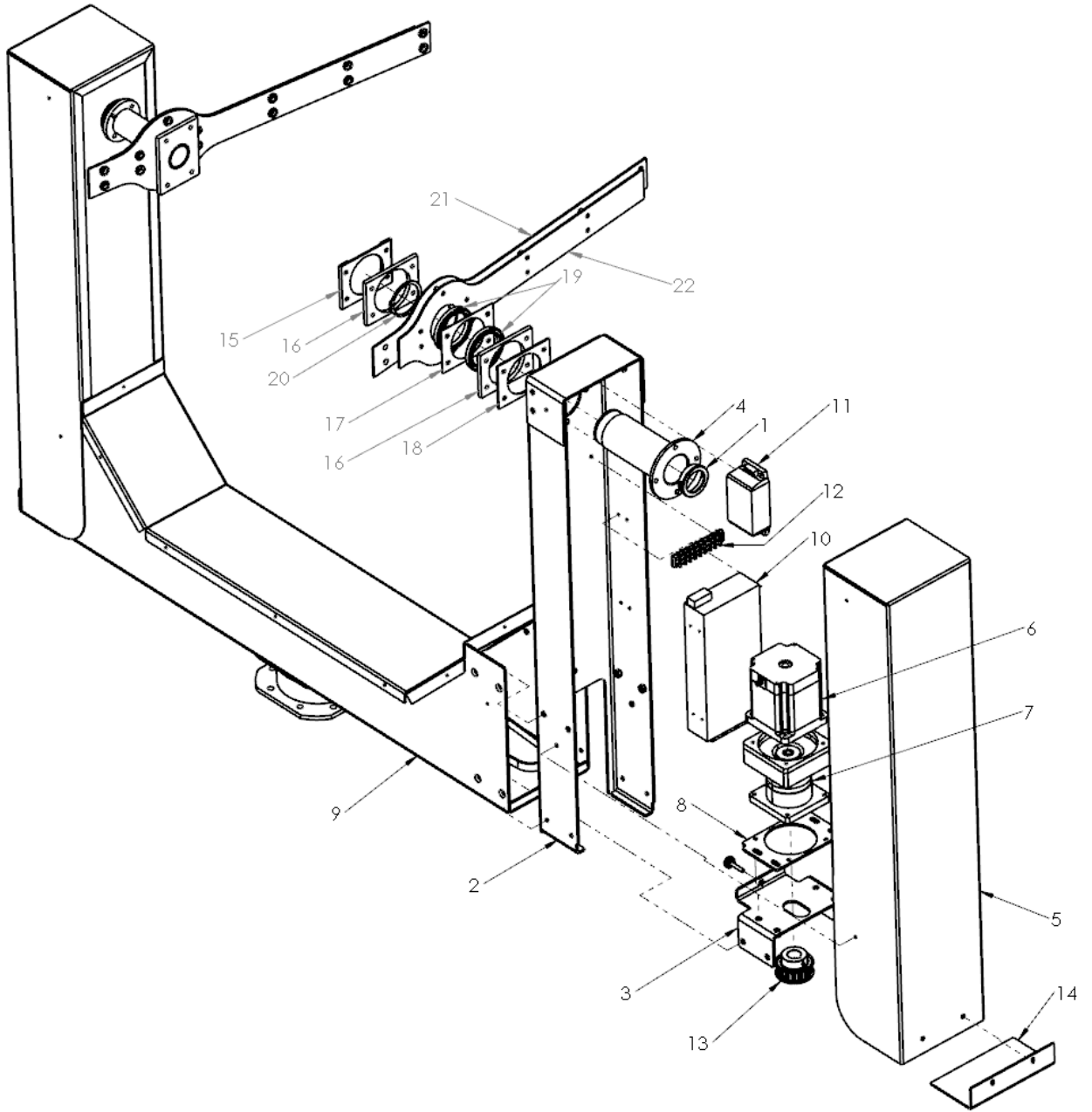
ITEM	PART NO.	DESCRIPTION	QTY.
1	20081	DCC Chassis	1
2	20094	Connector Bracket	1
3	20088	Dowser Shell	1
4	20089	Dowser Bracket Front	1
5	20090	Dowser Bracket Rear	1
6	20091	Dowser Transmission	1
7	M5KLRTA	Dowser Vane Rod	10
8	S57L017B	Dowser Vane	10
9	MC00001	Dowser Blade Arm	11
10	CMF10RPM	MFJR BMI Recept. 10 Pos	1
11	30016	Motor	1
12	20157	Nylon Spacer	11
13	CMF10MBM	MFJR BMI Recpt. Housing 10 Pos	1
14	SWC0243	Retention Spring	2
15	20138	Bushing	10
16	20169	Doubler Plate	1



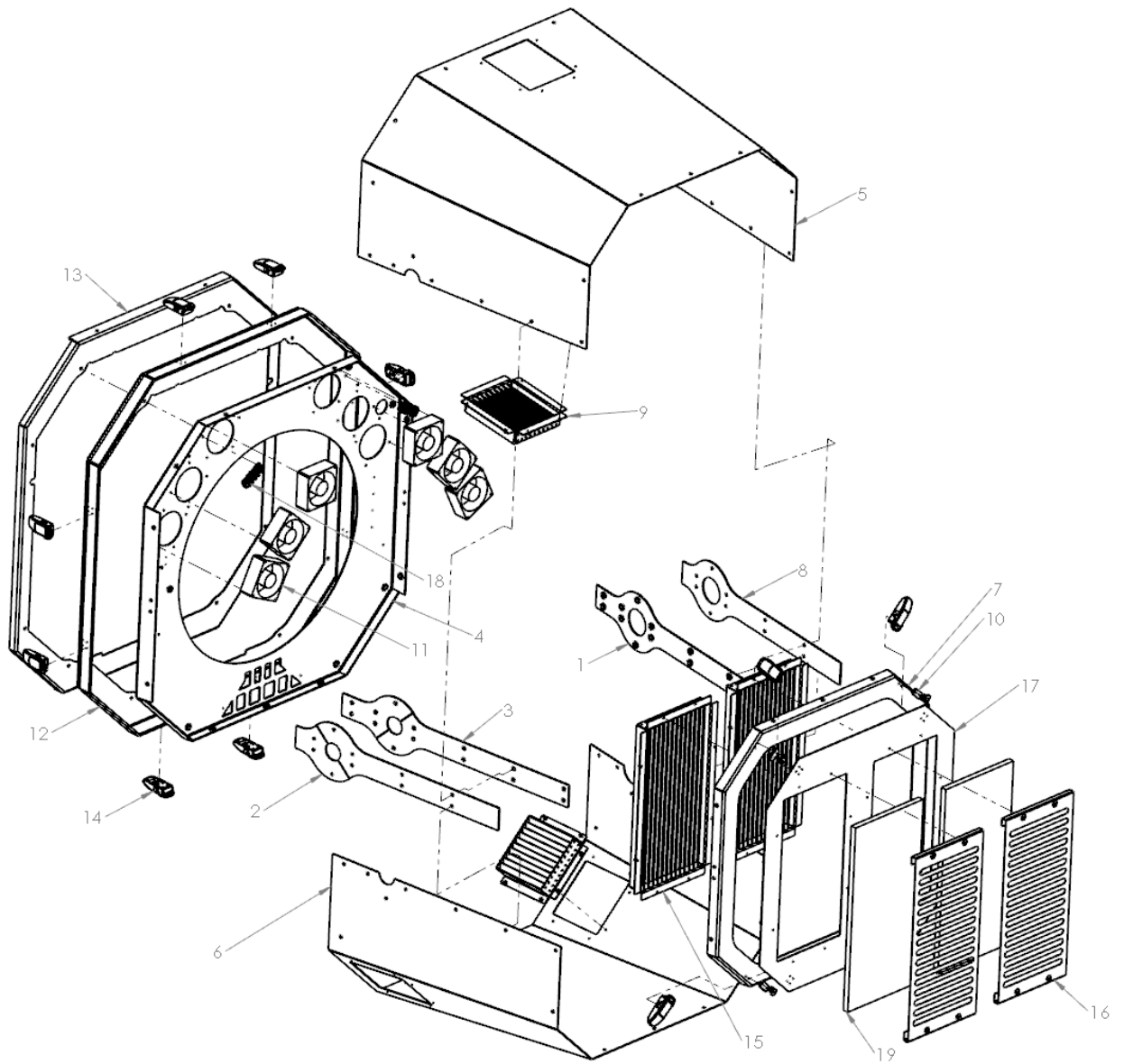
ITEM	PART NO.	DESCRIPTION	QTY.
1	20004	Yoke Leg 2	1
2	20007	Motor Mount 2	1
3	20011	Yoke Leg Cover	1
4	20012	Yoke Corner Holder	2
5	20082	Stepper Motor	1
6	20100	Bushing	1
8	20102	Bearing 7512 DLG	1
9	20072	SM Tilt Spindle Spacer Retainer	1
10	20111	Pully .375P 16T .5W	1
11	20113	Belt .375P 165T .5W	1
12	4170072	Washer 1/2 FL	1
13	NTA2840	Thrust Bearing	1
14	M2KL1830	Tilt Gear	1
15	MSMB40713	Tilt Spindle	1
16	TRF2840	Washer Thrust	2
17	20009	Solid Shaft Savanna	1
18	20180	Bracket, Rotation Stop	1
19	20179	Ring, Rotation Stop	1
20	XXXXX - MOTOR CONTROL BOARD, 2 CHANNEL		3
21	20186	Plate, Motor Adaptor 2	1
22	20187	Bracket, Electrical Board	1
23	20189	Yoke Arm Base Cover	1
24	20002	Yoke Base	1
25	10576	Relay, 24V	1
26	4198047	Grommet	1
27	20139	Gearbox	1
28	xxxxx	board	1
29	xxxxx	board	1
30	20020	Back Box Bracket 3	1
31	20021	Back Box Bracket 4	1



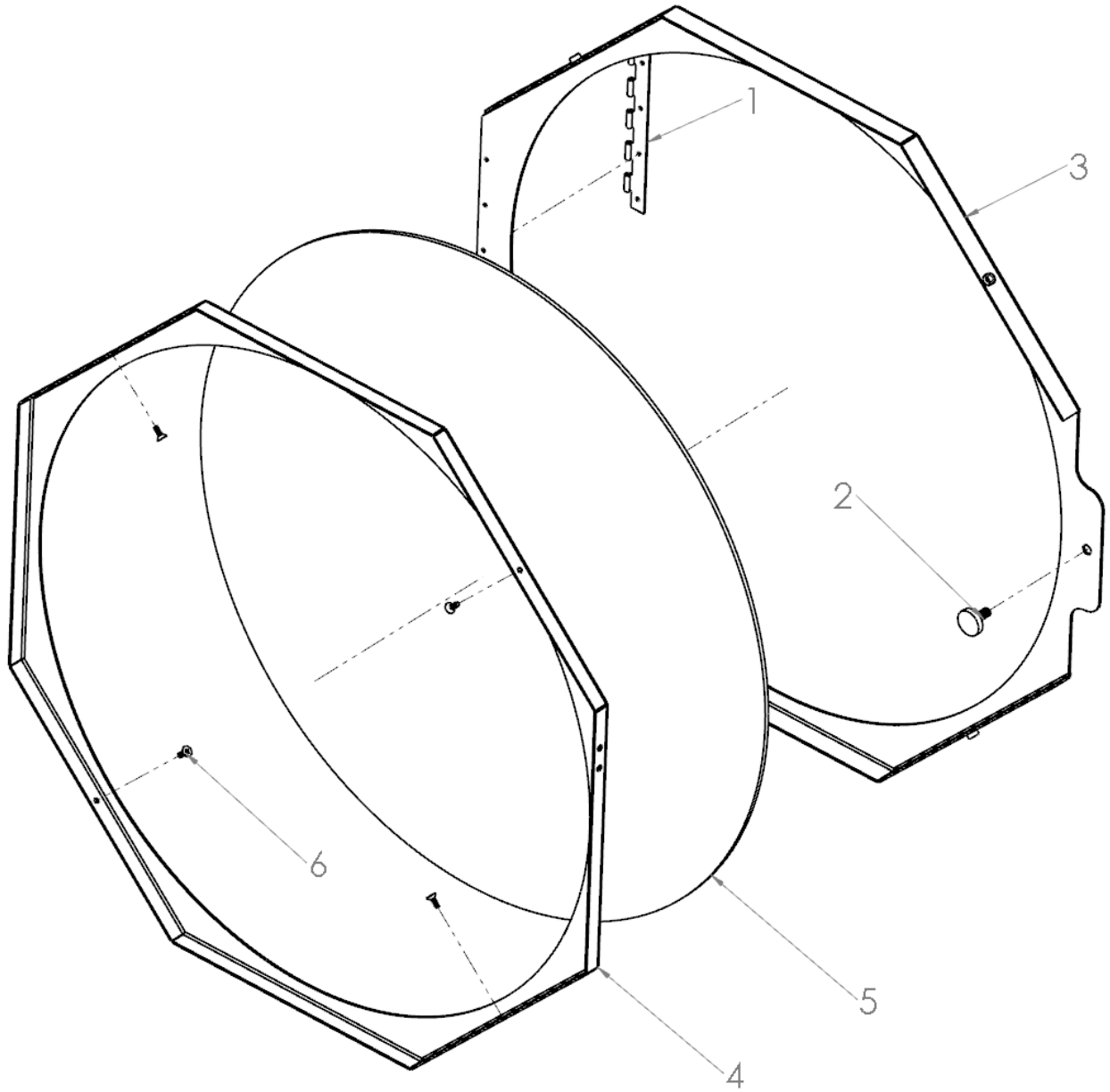
ITEM	PART NO.	DESCRIPTION	QTY.
1	20005	Yoke Base HRB	1
2	20188	Belt .375P 121T .5W	1
3	20010	Yoke Base Cover	1
4	9700109	Din Rail	1
5	ETBL375	Terminal Block 10 POS	1
6	9700098	Time Delay & Sensor Relay	1
7	3162044	Splitter, 2 Lines	1
8	20002	Yoke Base	1
9	DMXLCKNT	Locknut Pan Spindle	1
10	DMXLCKWS	Spindle Pan Lockwasher	1
11	M2KL1820	Pulley Pan Gear	1
12	DMXGRSSL	Shaft Seal 2.5	2
13	DBRMXPST	Bearing Wheel Set 38	2
14	20016	Yoke Pan Retainer	1
15	SX1186	Spacer	1
16	20015-1	Pan Sleeve Tube	1
17	20015-2	Pan Sleeve Plate	1
18	20014-1	Pan Shaft Base	1
19	20014-2	Pan Shaft Tube	1



ITEM	PART NO.	DESCRIPTION	QTY.
1	10499	Snap Bushing 1.75	1
2	20003	Yoke Leg 1	1
3	20006	Motor Mount 1	1
4	20008	Tilt Shaft Hollow	1
5	20011	Yoke Leg Cover	1
6	20082	Stepper Motor	1
7	20139	Gearbox	1
8	20135	Plate, Motor Adaptor 1	1
9	20002	Yoke Base	1
10	20140	Power Supply 48V	1
11	EPSU4524ST	24V DC Power supply	1
12	21 62006	Terminal Block 8 POS	1
13	20111	Pulley .375P 1 6T .5W	1
14	20189	Yoke Arm Base Cover	1
15	20061	Shaft Retainer Out	1
16	20062	Shaft Bearing Housing	2
17	20063	Shaft Middle Retainer	1
18	20060	Shaft Retainer In	1
19	DBRT5701	Tilt Bearing	2
20	DBRT57SR	Snap Ring	1
21	2001 9	Back Box Bracket 2	1
22	20026	Back Box Bracket 1	1

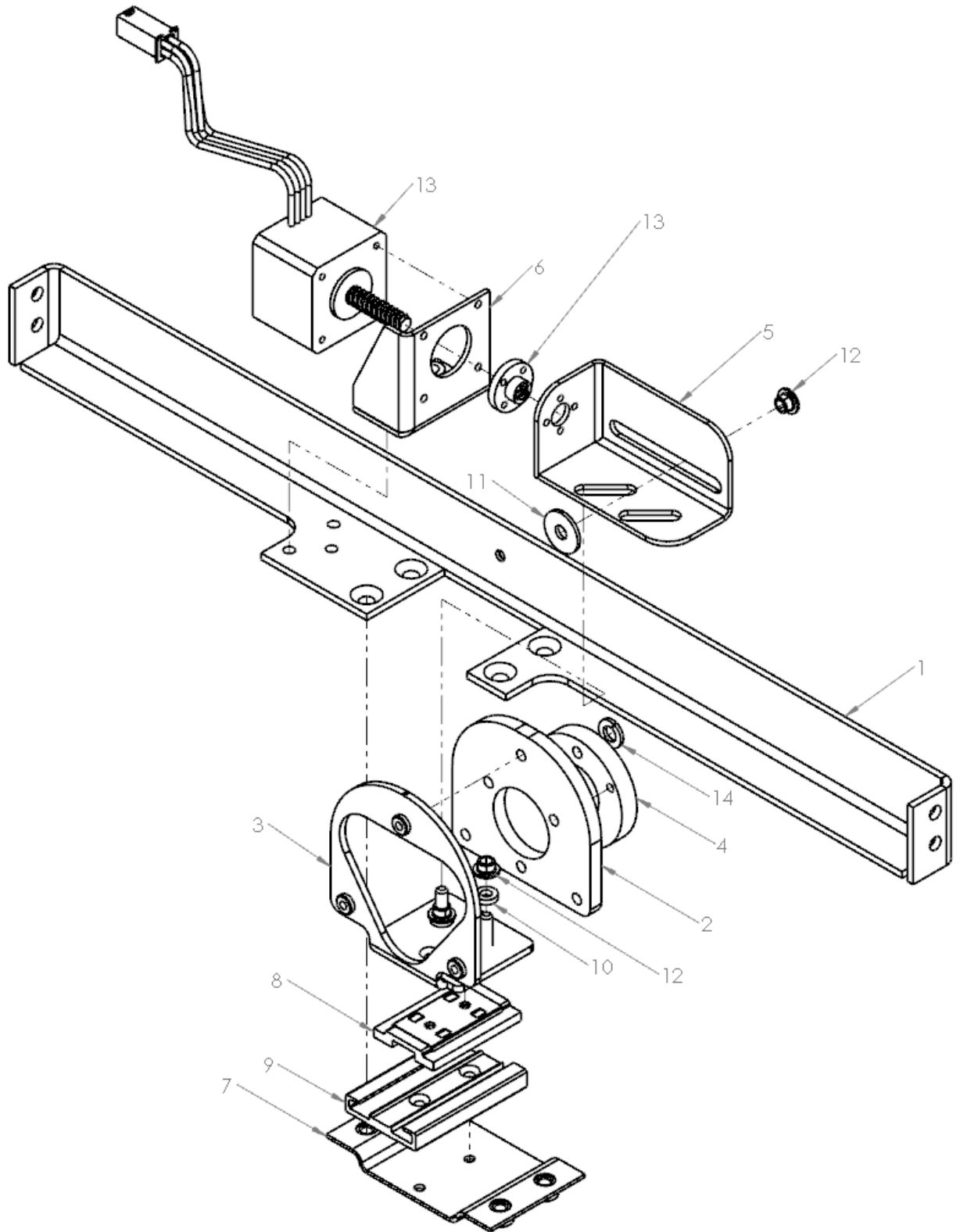


ITEM	PART NO.	DESCRIPTION	QTY.
1	20019	Back Box Bracket 2 (Yoke Assembly)	1
2	20020	Back Box Bracket 3 (Yoke Assembly)	1
3	20021	Back Box Bracket 4 (Yoke Assembly)	1
4	20022	Front Bulkhead Back Box	1
5	20023	Top Housing Back Box	1
6	20024	Bottom Housing Back Box	1
7	20025	Rear Bulkhead Back Box	1
8	20026	Back Box Bracket 1 (Yoke Assembly)	1
9	20028	Exhaust Assembly	3
10	20034	Back Door Latch Standoff	4
11	EFN80320	Fan 80 mm	6
12	20031-1	Front Mounting Bracket	1
13	20031-2	Front closing bracket	1
14	20116	Latch	12
15	20029	Inlet Assembly	2
16	20030	Inlet Assembly Cover	2
17	20033	Rear Bulkhead Back Box Door	1
18	ETB4140	TERMINAL BLOCK 4 POS	2
19	22018	Back Box Inlet Filter	2



ITEM	PART NO.	DESCRIPTION	QTY.
1	10044	Hinge Access Door	1
2	12011	Thumb Screw	1
3	20017	Glass Door Bracket 1	1
4	20018	Glass Door Bracket 2	1
5	V2033HMU	Glass 20.5 in Hot Mirror	1
6	4060375	SCR FLSH6-32 X 3/8 SS	4

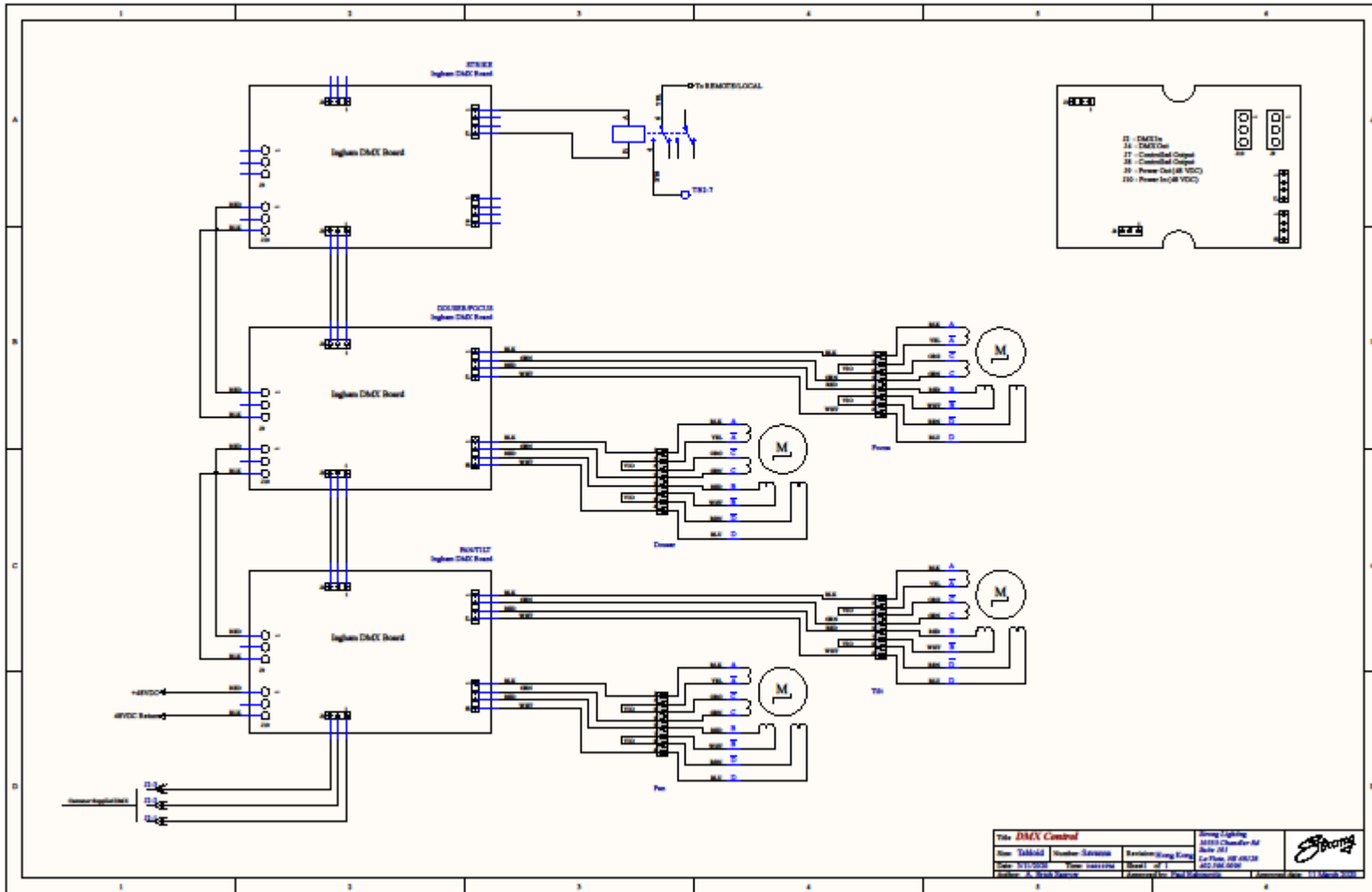
ITEM	PART NO.	DESCRIPTION	QTY.
1	10499	Snap Bushing 1.75	1
2	20038	Rear Bulkhead Inner Box	1
3	20065	Large Door Inner Box	1
5	20068	Small Door Inner Box	1
7	20013	Fan Retainer Inner Box	3
9	20037	Front Bulkhead Inner Box	1
10	20039	Spine Inner Box	2
11	20040	Low Housing Inner Box	1
12	20041	Top Housing Inner Box	1
13	20042	Middle Bulkhead Inner Box	1
14	20043	Fan Bracket Inner Box	3
15	20044	Airflow Deflector	3
16	20045	Spyder	1
17	22050	Focus Assembly Savanna	1
23	20053	Top Exhaust Housing	1
24	20054	Low Exhaust Housing	2
30	20092	Blower Reversed Impeller	3
32	20114	Inlet Ring	3
34	20132	Reflector & Ring	1
38	9700143	Ignitor	1
42	M3KL041	Lamp Bullet SX 3K-5K	1
43	ML40091	Lamp Support MX4	1
45	2330694 - 10196680 Kolben D69,5x93,0 verj. D24,5_Einbaukolben gepumpt 7000W HS CL	Lamp 7K	1
73	20191	Spyder Isolation Bracket	2
78	20131	Motor Run Capacitor	3
79	3161007	Thermal Switch	1
80	ETB4140	Terminal Block 4 Pos	3

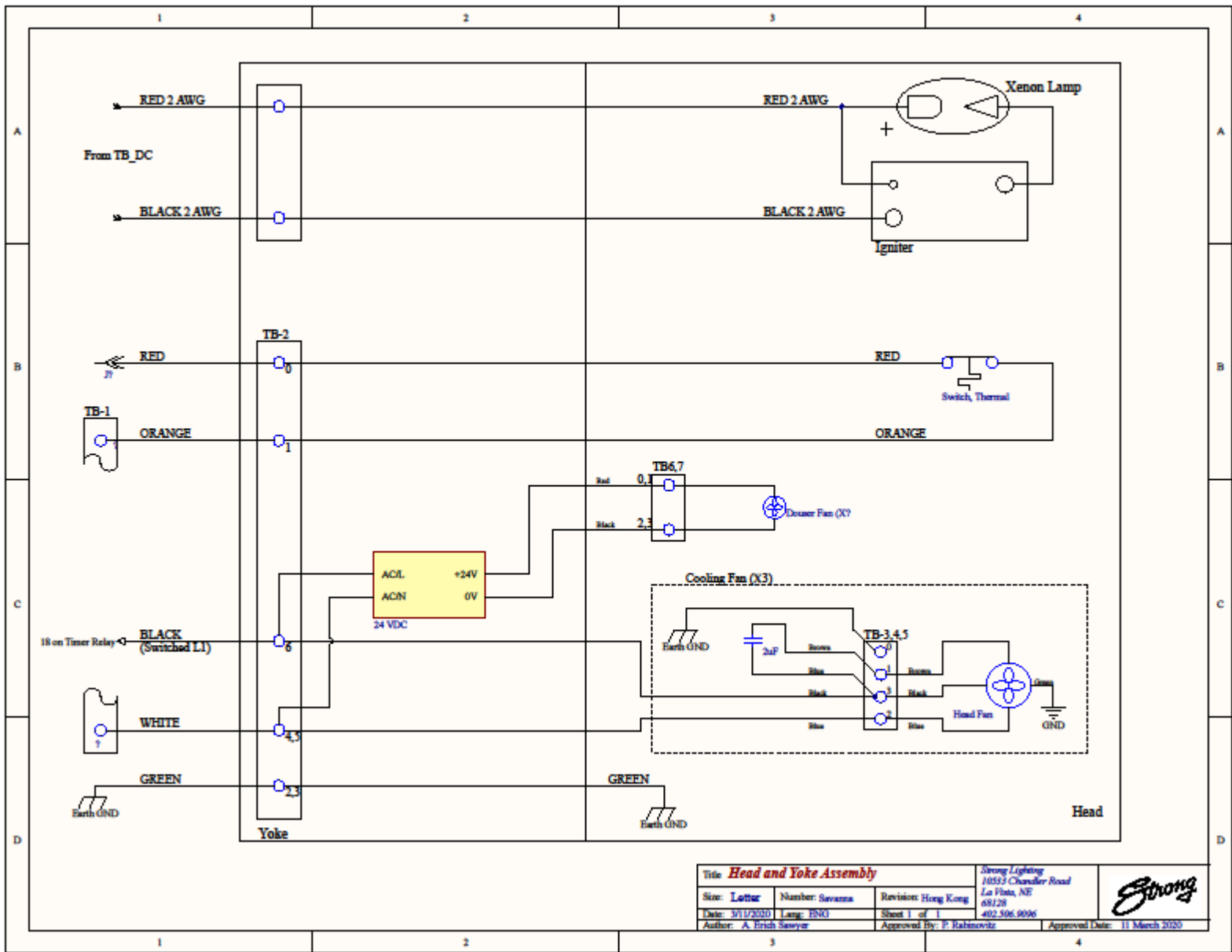


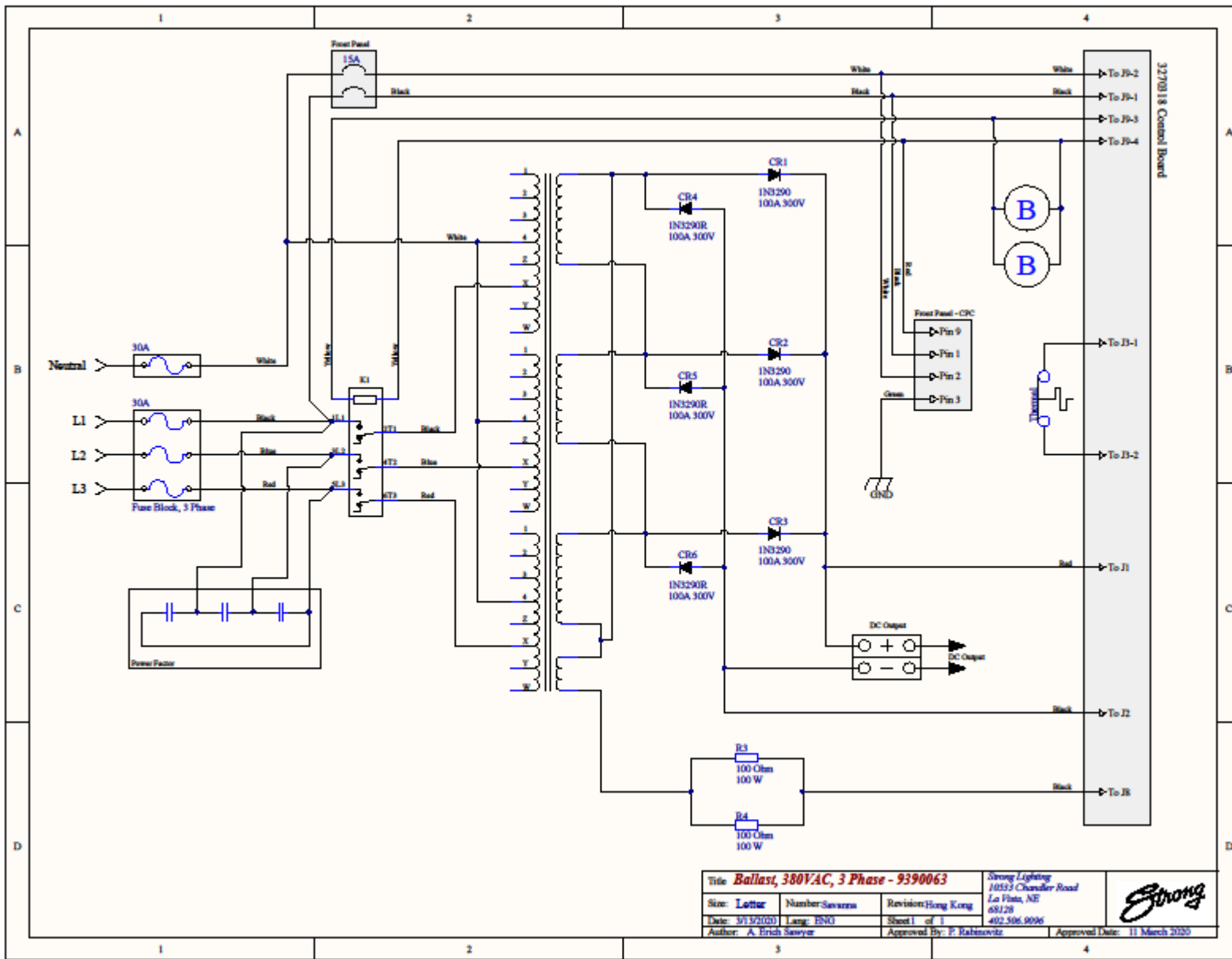
ITEM	PART NO.	DESCRIPTION	QTY.
1	20046	Rear Rail Inner Box	1
2	20036	Insulator Lamp Sleeve	1
3	20048	Slider	1
4	20049	Lamp Sleeve	1
5	20050	Lamp Actuator	1
6	20051	Lamp Motor Bracket	1
7	20183	Lamp Rear Carriage Guide Bracket	1
8	20184	Carriage	1
9	20185	Rail	1
10	20190	Aluminum Spacer	2
11	20192	Nylon Washer	1
12	20193	Bearing Sleeve w/ Flange	3
13	22048	Focus Motor Savanna	1
14	4257005	Split L/W 1/4 Bronze	1

7 Schematics

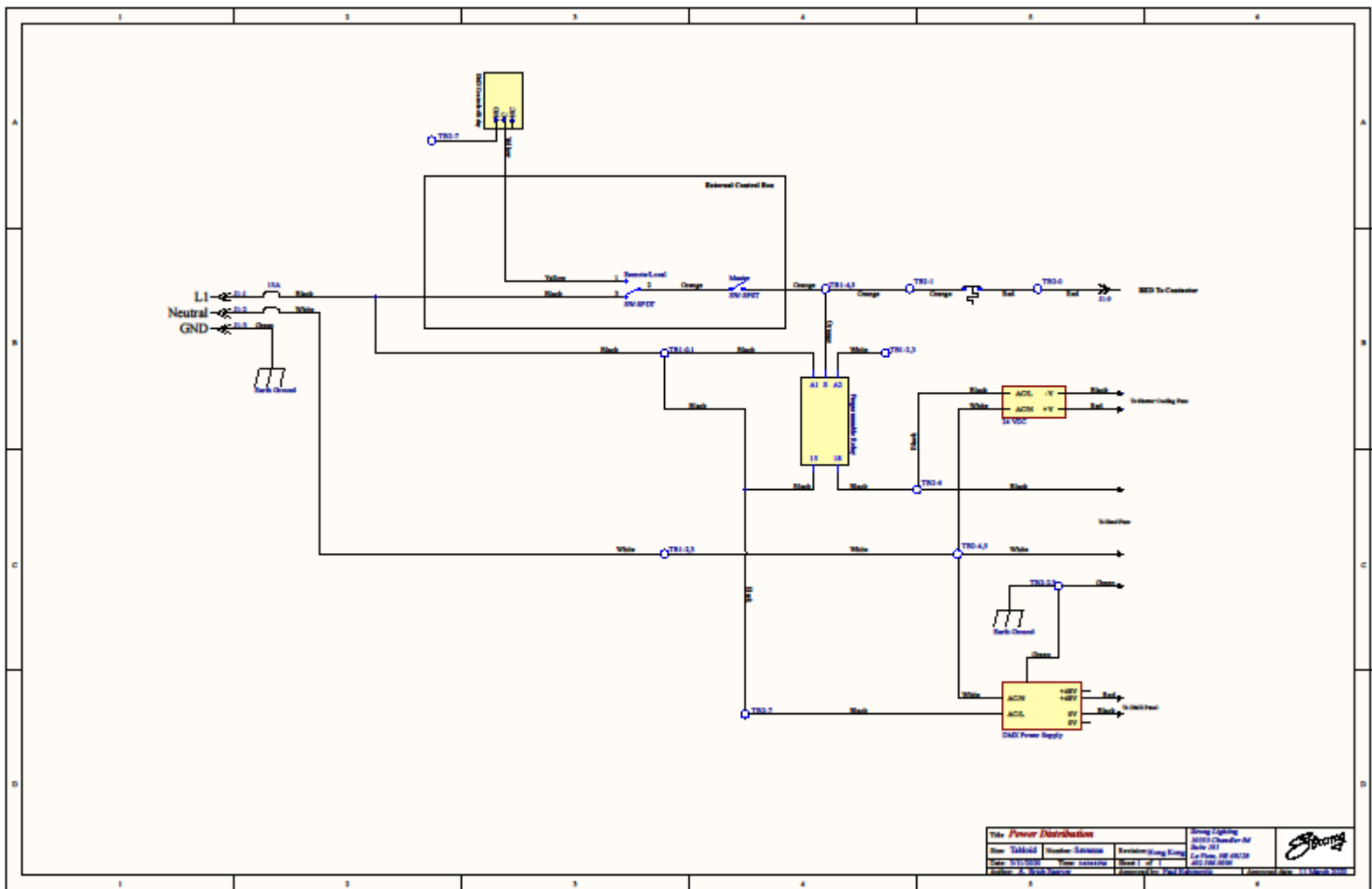
Please consult the following pages for system schematics.







Title Ballast, 380VAC, 3 Phase - 9390063			Strong Lighting 10513 Chandler Road La Plata, NE 68128 402.506.0006	
Size: Letter	Number: Savanna	Revision: Hong Kong		
Date: 3/13/2020	Lang: BNG	Sheet 1 of 1		
Author: A. Erich Sawyer	Approved By: P. Rabinovitz		Approved Date: 11 March 2020	



Title: Power Distribution			Using: Lighting
Rev: 04/04/14	Number: 04/04/14	Revision/Using: Using	04/04/14
Date: 01/11/2014	Time: 04:44:24	Sheet 1 of 1	Lo-Power: 04/04/14
Author: A. Smith			Approved: P. Smith

