Operation Manual

PREDATOR XS

TURNTABLE STRETCH WRAPPER

SERIAL NUMBER

Please refer to the serial number in all correspondence with Highlight or any Highlight Distributor. This identifies your machine and will help in our ability to quickly and efficiently respond to your needs.

OPERATION MANUAL NUMBER: PRED_XS / APRIL 2018

HIGHLIGHT INDUSTRIES, INC.

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Table of Contents

Table of Figures

1

Highlight Industries, Inc.

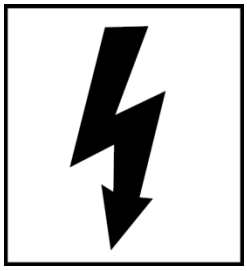
Predator XS Turntable Stretch Wrapper Operation Manual

General Information

Safety Messages

For the best result with the Predator XS Turntable Stretch Wrapper, carefully read this manual and all of the warning labels attached to the equipment before installing and operating it, and follow instructions exactly. Keep this manual for machine reference.

Definitions and Symbols

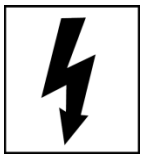


High Voltage!
This symbol indicates high voltage. It calls your attention to items or operations that could be dangerous to you or other persons operating the equipment. Read the message and follow the instructions carefully.

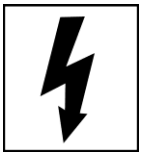
Warning!
This symbol indicates a potentially hazardous situation which, if not avoided, can result to bodily injury, or serious damage to the product.

Notes
This symbol indicates an area or subject of special merit, emphasizing the equipment's capabilities, common errors in operation or maintenance, or other special instructions that can provide benefits to users.

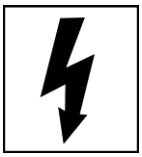
General Precautions – Read These First!



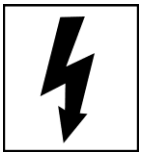
High Voltage!
Disconnect AC input power before checking components, performing maintenance, cleaning up, and when the machine is not in use. Do NOT connect or disconnect wires and connectors while power is applied to circuit.



High Voltage!
Wiring work should be carried out only by qualified personnel. Otherwise, there is a danger of electric shock or fire.



High Voltage!
The user is responsible for conforming to all applicable code requirements with respect to grounding all requirements. Do NOT use extension cords to operate the equipment.



High Voltage!
Motor control equipment and electronic controllers are connected to hazardous line voltages. When servicing drives and controllers, there may be exposed components with housings or protrusions at or above line potential. Extreme care should be taken to protect against shock.

Warning!
Loose clothing must NOT be worn while the machine is in operation. Stay clear of moving parts while the machine is running.

Introduction and Warranty

Introduction

Thank you for your purchase of a *Predator XS* Turntable Stretch Wrapper! Designed for the high volume industrial user the Predator XS will stretch wrap any load to the fixed stretch level of any film with full independent control of the film force. This allows even light unstable loads to be wrapped at lower cost and maximum load holding force.

Limited Warranty

Highlight Industries, Inc. warrants its Predator XS manufactured by it, and sold pursuant to this order, will be of merchantable quality, free from defects in material and workmanship as determined at the date of shipment, by generally recognized, applicable and accepted practices and procedures in the industry, for a period of three (3) years from the Highlight invoice date, under normal use and service.

When the Purchaser gives Highlight written notice of any alleged defect within the applicable warranty period, Highlight will, at its option repair or replace the same free of charge F.O.B. its manufacturing plant, installation not included. Equipment replaced under the warranty shall have the same warranty as new equipment but does not extend the warranty of the original equipment.

Satisfaction of this warranty, consistent with other provisions herein, will be limited to the replacement or repair or modification of, or issuance of a credit for, the equipment involved, at Highlight's option.

Highlight neither assumes nor authorizes any person to assume for it any other obligation in connection with the sale of Highlight's equipment.

This warranty shall not apply to any equipment which has been repaired or altered by un-authorized personnel in any way so as to, in the judgment of Highlight, affect serviceability, or which has been subjected to misuse, negligence, accident, or to equipment made by Highlight which has been operated in a manner contrary to Highlight's instructions.

In no event regardless of the cause, shall Highlight be liable for penalties or penalty clauses of any description or any damages resulting from loss of profits, use of products or for any incidental indirect or consequential damages, even if advised of the possibility of such damages. This limitation of Highlight's liability will apply regardless of the form of action, whether in contract or tort, including negligence. Any action against Highlight must be brought within twelve (12) months after cause of action accrues.

"This warranty in lieu of all other warranties whether expressed, implied or statutory including implied warranties of merchantability of fitness or extends only to the buyer or customer purchasing from Highlight Industries, Inc. or an authorized distributor."

About This Document

The purpose of this manual is to provide you with information necessary to install, operate, troubleshoot, and maintain the Predator XS Turntable Stretch Wrapper. The audience for this manual should have basic knowledge of mechanical and electronic components, standard electrical wiring practices, and schematics symbols.

To guarantee safe operation of the equipment, carefully observe the safety messages throughout this manual. Keep this operating manual and distribute it to all users for reference.

Application Assistance

If any assistance is desired, contact the distributor from whom you have purchased the unit, or call the number listed on the bottom of each page of this manual. To receive quick and proper technical support for the equipment you have purchased, please be prepared to provide the following information:

1. Machine Serial Number
2. Date of Purchase
3. Symptoms of any problems

Revision History

Revision	Revision Comment	Date of Revision
	Initial Release	November 2005
1.	Added Drive Adjustment section Modified drive board potentiometer settings Other minor corrections throughout.	February 2006
2.	Changed format, added page numbers.	September 2006
3.	New carriage and turntable.	January 2007
4.	New optional height detection method.	April 2007
5.	Added Optional Scale Package.	June 2007
6.	Removed Q60 information Added Ultrasonic information.	February 2008
7.	Revised Optional Scale Package.	April 2008
8.	Removed AFD board.	February 2009
9.	Updated Spare Parts List.	January 2010
10.	Changed HP design for Altivar 12 drives.	February 2010
11.	Hitachi drives replaced with Altivar drives.	May 2010
12.	Revised entire manual format.	January 2012
13.	Added assembly drawings of scale machines and 110 tower part numbers.	Feb 2012-RDU
14.	Updated carriage safety & dancer switches.	Nov 2012-RDU
15.	Updated manual to reflect new 1/2HP motor for High Profile machines.	Jan 2013-EAB
16.	Latch 306532 was 300041, added film finger drawing.	Jul 2013-RDU
17.	Removed Ultrasonic information Added Advanced Sensor information.	Jun 2015-DTG
18.	Updated Split Frame with Scale Drawing	Sept 2016 - WBK
19.	Updated HP split frame scale, added IR eye.	
20.	Updated the Maintenance Schedule Table and added Carriage Roller drawing.	April 2018 - RBH

Manual covers Predator XS, 20” film, LP, HP, LP with platform scale base, HP split frame scale base, standard & extended tower, and optional IR eye, optional film fingers, and an optional door roller.

2

Highlight Industries, Inc.

Predator XS Turntable Stretch Wrapper Operation Manual

Specifications

Specifications

Machine Dimensions

	Low Profile	High Profile
Length (inch)	116	108
Width (inch)	65	53
Height (inch)	93	93
Turntable Height from Floor (inch)	3.25	13.5
Max Wrap Height (inch)	80	70
Turntable size (inch)	65 Circular	48 Octagon
Operation Space (inch) W x L x H	80 x 120 x 100	
Maximum Pallet Size (inch) W x L x H	56 x 56 x 80	
Approximate Shipping Weight (lbs.)	1220	1500

Electrical Specifications

- 120VAC, 60Hz, Single Phase, 15Amp
- Lockable Disconnect Switch
- Off the Shelf Components
- Industrial NEMA 12 Push Buttons
- Allen Bradley Micrologix 1200 Programmable Logic Controller (PLC)

Turntable

- 4,000 lbs. Maximum Turntable Load Capacity
- 12 RPM Maximum Turntable Speed
- 20-30 Loads Per Hour
- 1/2 HP 3-Phase AC Motor with ½ HP AC Frequency Drive

Film Carriage

- Adjustable Speed
- Automatic Package Height Detection
- 1/2 HP 3-Phase AC Motor
- 1/2 HP AC Frequency Drive

Film Delivery

- Fixed Selectable 200% / 250% Average Pre-Stretch Level (Optional 230% / 300%)
- Adjustable Film Force
- 10 Inch Diameter Roll Capacity
- 20 Inch Height Roll Capacity (or Optional 30 Inch Height)
- 1/4 HP 3-Phase AC Motor
- 1/2 HP AC Frequency Drive

Part Number	Description	Number of Teeth
301339	Drive Gear	17
301340	Lower Fixed Gear	46
301341	Upper Fixed Gear	42
301342	Slip Gear	46/42

System Overview Prints

Note
Shown below are STANDARD assembly drawings. It may not reflect your purchased system, especially when optional items are added. Refer to the Technical References section of the manual for more detailed information.

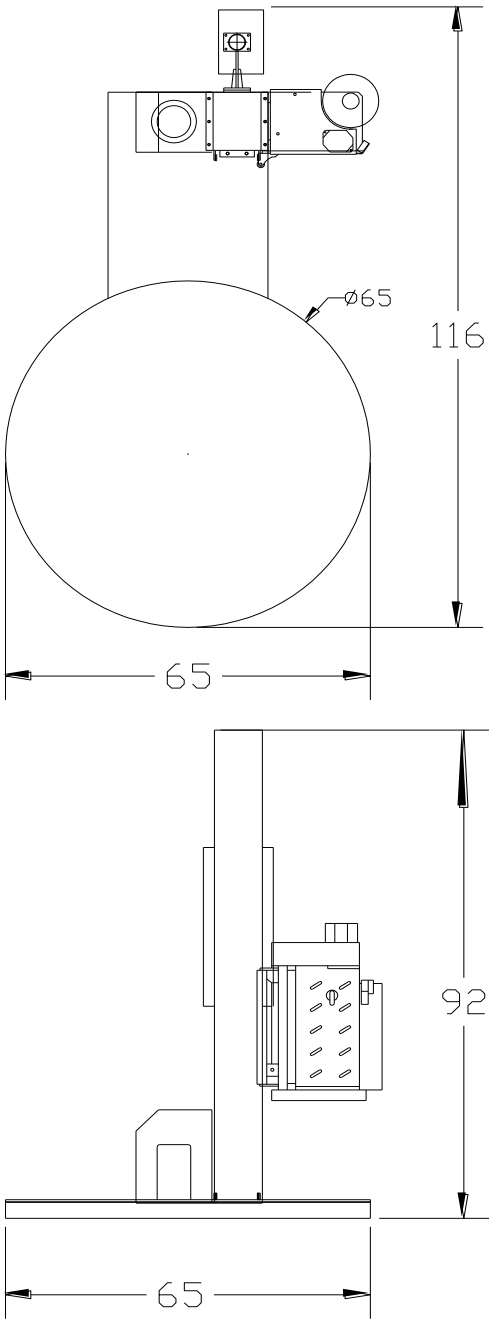


Figure 1: Predator XS Low Profile, Overview Layout

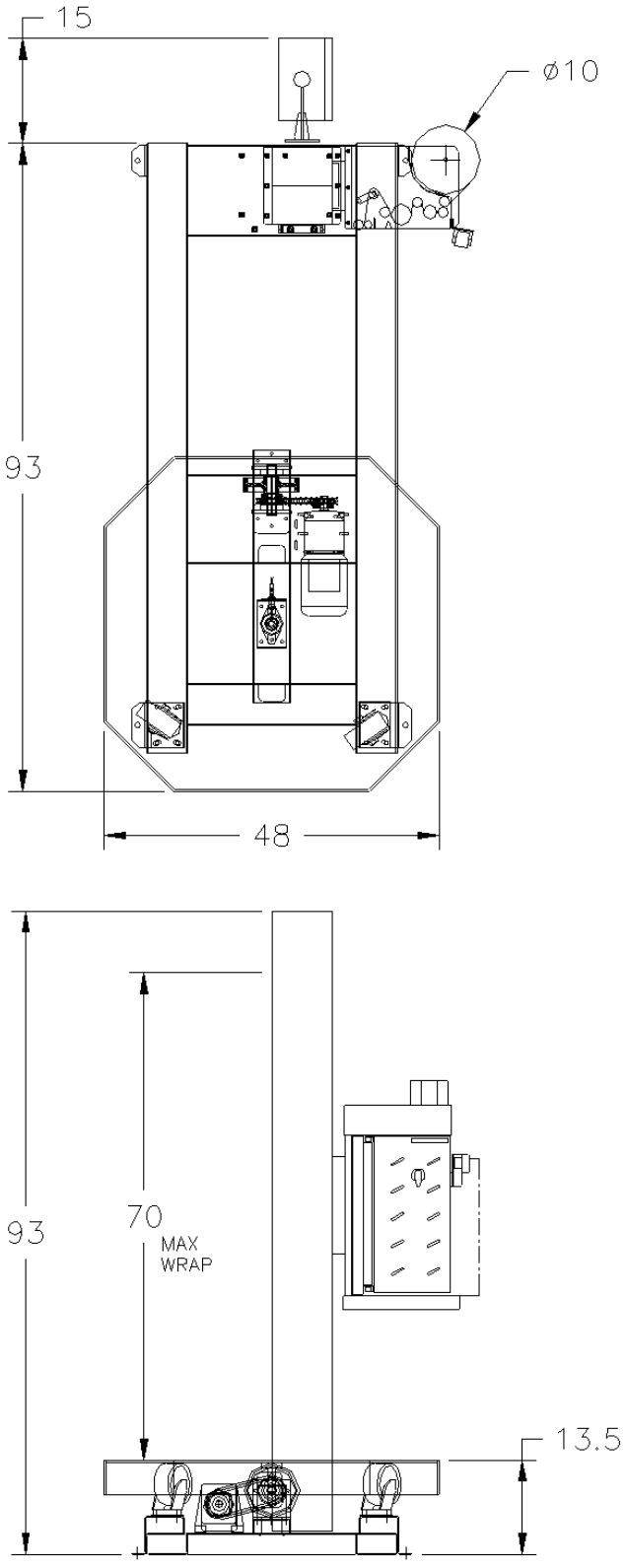


Figure 2: Predator XS High Profile, Overview Layout

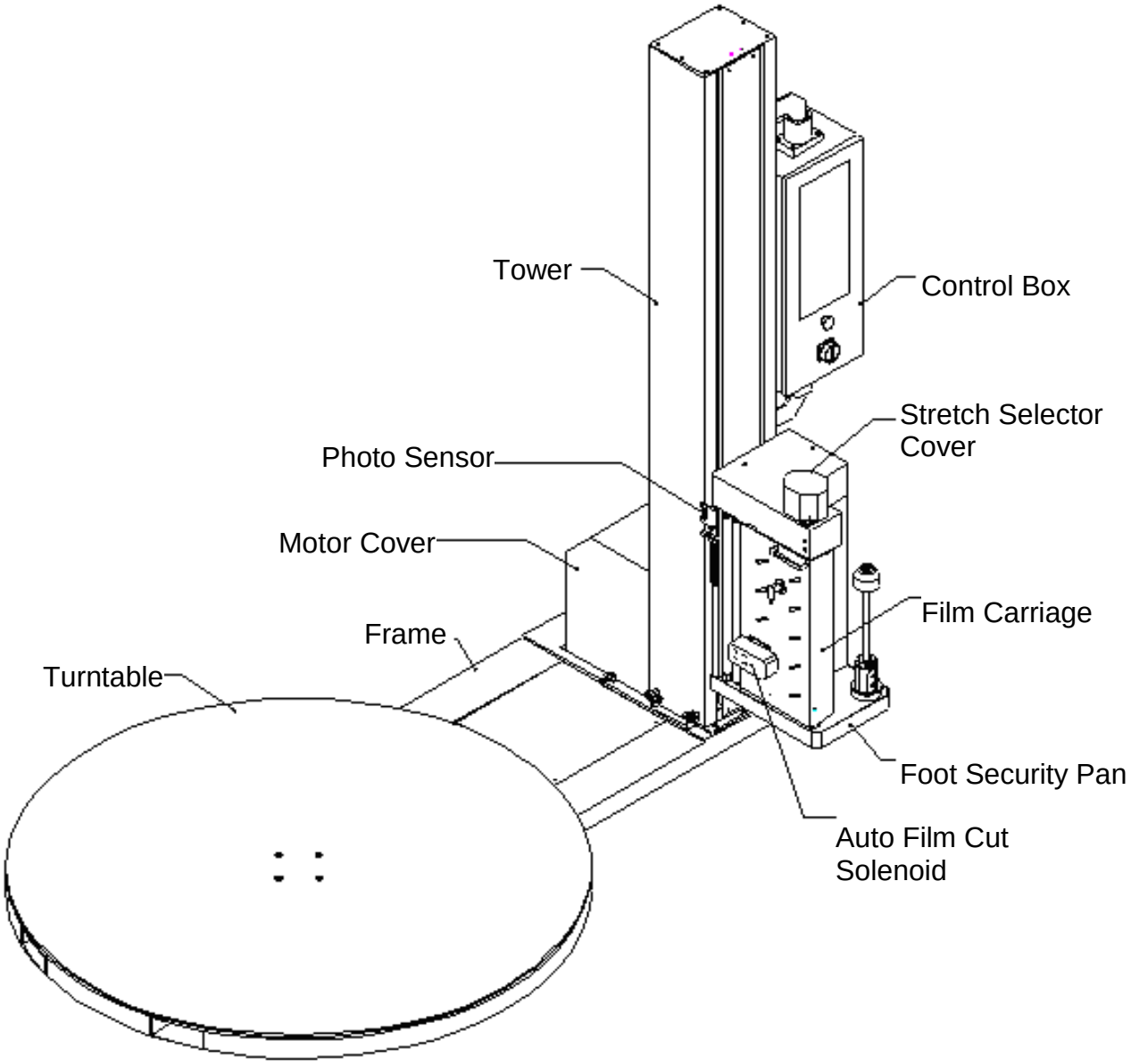


Figure 3: Predator XS Low Profile Machine Description

3

Highlight Industries, Inc.

Predator XS Turntable Stretch Wrapper Operation Manual

Installation & Adjustments

Machine Placement

Receiving and Inspections

The Predator XS Turntable Stretch Wrapper has gone through quality control tests at the factory before shipment. Upon receiving, please do the following:

1. Inspect the entire machine for visual damage during shipment. If found, immediately report this damage to the trucking line. *Highlight Industries, Inc.* has taken every precaution during the packaging and loading of this equipment, however, it is YOUR RESPONSIBILITY to inspect for damage before installation.

2. Make sure the part or serial number indicated on the machine corresponds with the part number of your order.

Positioning of the Machine

Place the Predator XS Turntable Stretch Wrapper close to an area where you will be wrapping your loads. Make sure that there is sufficient room to load/unload the machine and that you do not stretch the power cable. Remember, you will need to plug the machine in to a 120VAC, 15-Amp outlet.

Floor Weight Bearing/Stress Tolerance

The floor must be able to bear the weight of the machine, the weight of the maximum load, plus a safety factor. The floor must also be able to tolerate the stress of the machine's operation. If the fork trucks will operate on the same weight bearing area, add the weight of the trucks to the weight bearing stress tolerance requirements.

The Predator XS can be installed on any type of floor constructions that meets the weight bearing and stress tolerance requirements.

Warning!
The Predator XS must be anchored securely to the floor, using the type of anchor recommended for your floor.

Machine Set-Up

Unpacking and Moving the Machine

It is very important to read all instructions before undertaking any of these steps. The following steps should help achieving a safe and quick machine set-up.

1. Place the skidded machine close to the designated wrap area. Remove all shipping fasteners holding the machine to the pallet.
2. Place the forks of the forklift through the tubes provided on the base of the machine, remove the machine from the shipping skids, and place it in the designated wrap area.
3. If the OPTIONAL ramp (Part Number #600086) is purchased: Select a ramp position as illustrated below. The ramp can be positioned anywhere in a 180° rotation around the front of the turntable. There should be a ¼" gap between the turntable and the ramp. The ramp should be fully supported by the floor. Both the ramp and the machine should be lagged to the floor.

Warning!
It is very important that the machine be leveled. Uneven floors will cause premature turntable support roller failure.

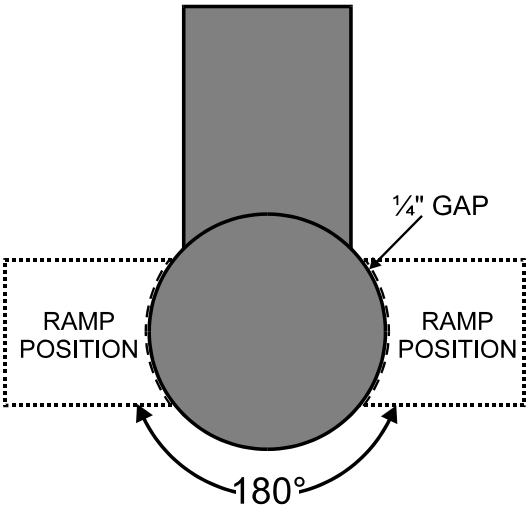


Figure 4: Ramp Positioning for Predator XS Low Profile

Power and Control Wiring Checks

1. Using a voltmeter, check the AC voltage coming to the machine and insure the proper voltage is present.

2. Make sure the Emergency Stop button on the operator panel is fully pressed in. Turn the disconnect switch to the ON position.

3. Pull the Emergency Stop button out. Power should now be applied to the AC frequency drives, PLC, photo-electric sensors, switches, and LED's. Press the Emergency Stop button again and ensure that power to the Frequency Drives is removed.

4. Open the film carriage door. Make sure all machine power is completely removed when the carriage door is open. Close the film carriage door to resume.

5. Open the electrical control box. Make sure all machine power is completely removed when the electrical control box is open. Close the electrical control box to resume.

6. Trip the carriage foot security bar. Make sure all machine power is completely removed when the carriage foot security bar is tripped. Clear the bar to resume.

PLC Input Checks

1. Open the electrical control box, and insert the key latch onto the safety door switch.

2. Depress push buttons and activate selector switches on the operator panel, check for each corresponding input lights on the front face of PLC.

3. Block the "Product Height Detection" photoelectric sensor (located on the film carriage), check for corresponding input light on the front face of PLC.

4. Trigger magnetic proximity and limit switch sensors, check each corresponding input lights on the front face of the PLC.

5. Remove the key latch, and close the electrical control box to resume.

Warning!
Do NOT remove or modify the fixed upper and lower Film Carriage limit switch stops.

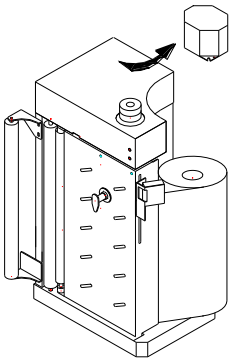
Pre-Stretch Adjustment

Pre-Stretch Percentage Change

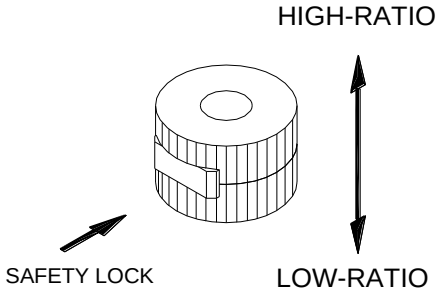
To change the pre-stretch percentage, follow the procedure below:

1. Turn the main disconnect switch off.

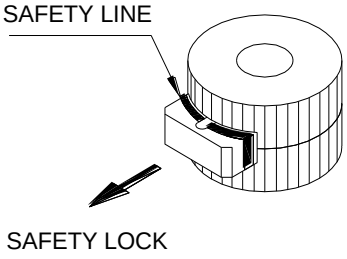
2. Remove the knob cover on the film carriage.



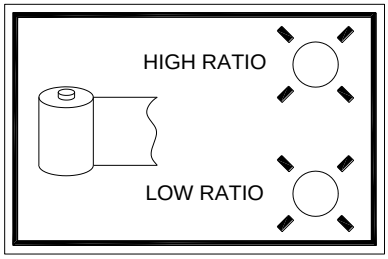
3. Push the safety lock and slide the knob to change the pre-stretch percentage. Lift the knob for the high percentage, or lower the knob for low percentage. Standard percentages are 200% (low) and 250% (high).



4. To insure safety and correct operation of the stretch gears, check the following items:
    a. The safety line is back to its home position following the profile of the knob.



b. The light indicates the selected pre-stretch percentage.



Replacing Pre-Stretch Percentage Gear Set

To replace the pre-stretch percentage gear set, follow the illustration below:

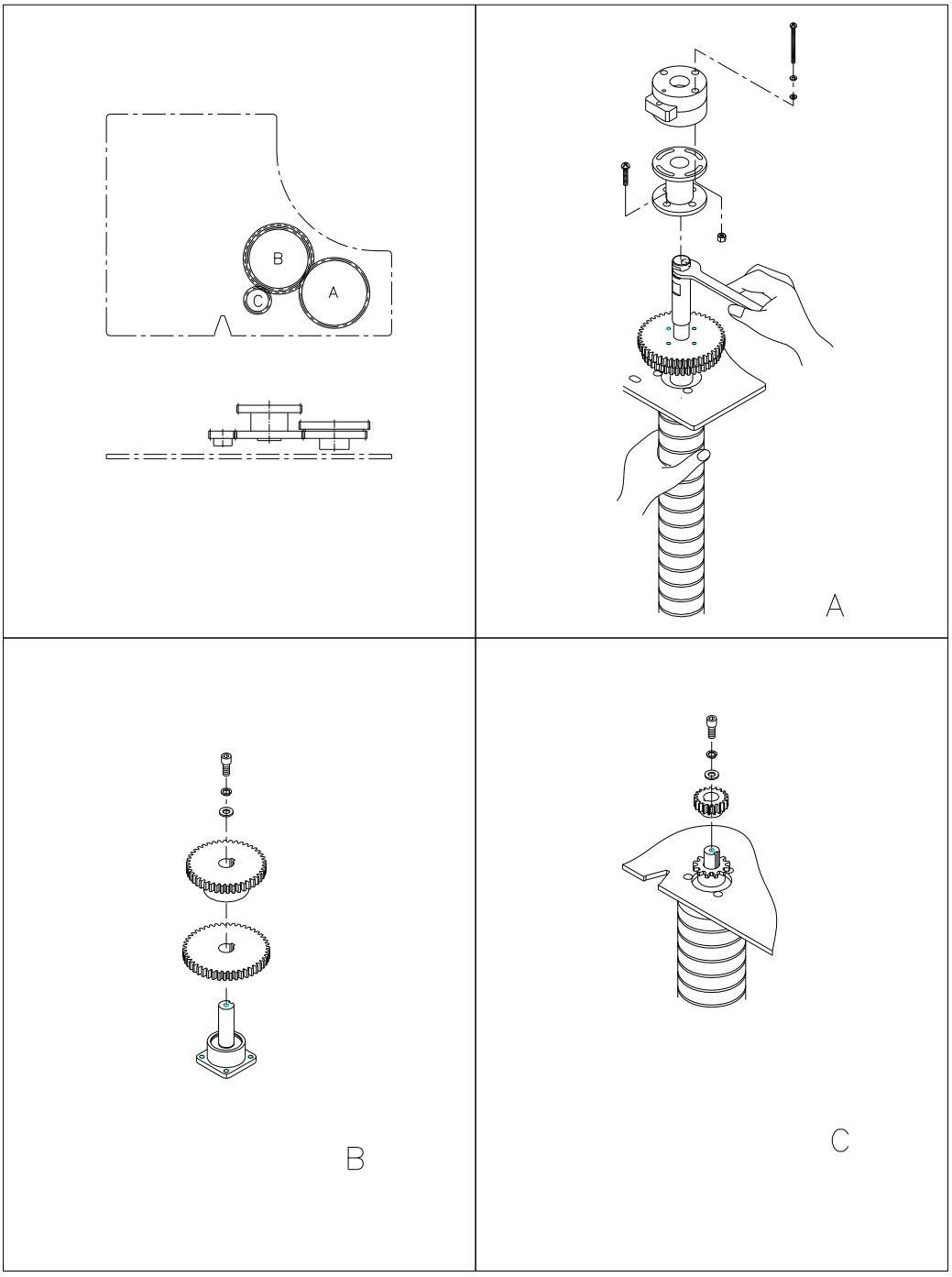


Figure 5: Pre-Stretch Percentage Gear Set Swap

Frequency Drive Adjustments

An AC Frequency Drive is a device that controls the 3-phase AC motor's speed by varying the frequency and voltage sent to the motor. The Predator XS Turntable Stretch Wrapper uses Schneider Electric Altivar 12 Adjustable Frequency Drives. Refer to the Electrical Schematic Drive Parameters Technical References section for detailed drive parameter settings. Refer to the drive manufacturer's manual for more detailed drive information.

Altivar 12 Digital Keypad Description

The digital keypad includes the displays panel and the keypad. The display panel provides the parameter display and shows the operation status of the AC drive. The keypad provides programming and control interface.

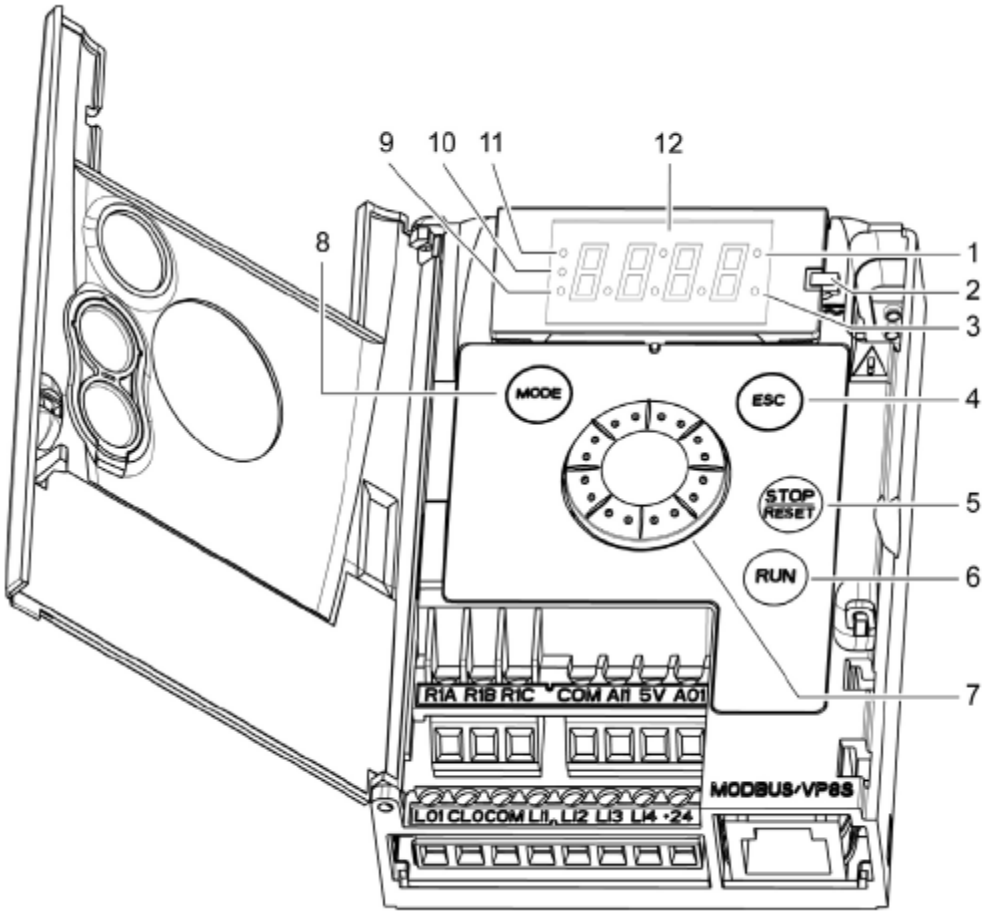


Figure 6: Altivar 12 AC Drive Keypad

Keypad Description:

1. Value LED. When illuminated it indicates when a numeric value is being displayed.

2. Charge LED. When illuminated it indicates when drive capacitors are fully charged.
3. Unit LED. When illuminated it indicates when a unit, such as AMPS, is being displayed.

4. ESC button. Exits a menu or parameter, or aborts the displayed value and returns to the previous value in the memory.

5. STOP button. Stops the motor. The run command will have to be cycled before the motor will be allowed to run again.

6. RUN button. Starts running the motor, if the drive is configured for control by the drive keypad.

7. Jog Dial. Used for navigation of the menus. Turn clockwise or counterclockwise to scroll through the menu list and is used for selection/validation when the dial is pressed.

8. MODE button. Switches between the control/programming modes.

9. CONFIGURATION mode LED. When illuminated it indicates when a value can be changed.

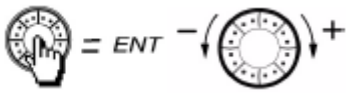
10. MONITORING mode LED. When illuminated it indicates when the display is monitoring the current status of the drive.

11. REFERENCE mode LED. When illuminated it indicates when the display is showing the speed reference value.

12. Four 7-Segment displays. The display of the drive for menus and settings.

Menu Structure

To access the monitoring parameters, press the wheel on the face of the frequency drive. Using the wheel, scroll through the menu until the display shows Non (Mon) for monitoring mode. This gives the user access to all the monitoring parameters.



To access the complete set of drive parameters first press the wheel to access different modes. Using the wheel, scroll to “COnF” and press the wheel again; this will access different sets of parameters. Using the wheel, scroll to “FULL” and press the wheel; this will give the user access to the complete parameter set.

Monitoring Parameters

Code	Name/Description	Unit
LFr	External reference value: External keypad or local force mode configured. Forced local reference FLOC page 61 set to LCC and Forced local assignment FLO page 61 different to nO. Displays the speed reference coming from the remote keypad. This value is not visible in factory setting.	Hz
rFr	Output Frequency: This function provides the estimated motor speed. It corresponds to the estimated motor frequency (on the motor shaft). In Standard law the Output frequency rFr is equal to stator frequency. In Performance law the Output frequency rFr motor speed is equal to the estimated motor speed. Range: -400 to 400 Hz	Hz
LCr	Motor Current: Estimation of the effective motor current from phase current measurements with an accuracy of 5%. During DC injection, the current displayed is the maximum value of current injected in the motor.	A
ULn	Main Voltage: Line voltage from the point of view of the DC bus, motor running or stopped.	A
StAt	Product Status: rdY – Drive Ready rUn – Drive Running ACC – Acceleration in progress dEc – Deceleration in progress dCb – DC injection braking in progress CLi – Current limit nSt – Freewheel stop control Obr – Auto-Adapted deceleration CtL – Controlled stop on mains phase loss tUn – Auto-tuning in progress FSt – Fast stop active nLP – No line power	N/A

Programming Functions

All functions have been Highlight factory set and tested. The factory settings listed in this manual are the drive manufacturer's factory setting, not the Highlight Industries factory settings. Refer to the Electrical Schematic Drive Parameters page of the Technical References section for the Highlight factory settings. Some of the most commonly adjusted programmable functions (parameters) are listed below.

Note
Refer to the drive manufacturers Operation Manual or website for complete lists and explanations of the programming parameters.

I_O Menu

Code	Sub-Code	Name/Description	Factory Setting
tCC		Type of Control: 2C – 2-wire control 3C – 3-wire control	2C
AI1-	AI1t	Analog Input 1 Type: 5U – 0-5VDC input voltage 10U – 0-10VDC input voltage 0A – 0-20mA current input	5U
r1		Relay Output 1 Assignment: nO – Not assigned FLt – No error detected rUn – Drive run	FLt
AO1-	AO1	Analog Output 1 Assignment: nO – Not Assigned OCr – Motor current OFr – Output Frequency	nO
	AO1t	Analog Output 1 Type: 10U – 0-10VDC 0A – 0-20mA 4A – 4-20mA	0A

drC Menu

Code	Sub-Code	Name/Description	Adjustment Range	Factory Setting
bFr		Standard Motor Frequency	50/60	50 Hz
nPr		Rated Motor Power (% of drive rated HP)	0.5-1.2	1
UnS		Rated Motor Voltage	100-480V	230V
nCr		Rated Motor Current	plate	Varies
FrS		Rated Motor Frequency	10-400Hz	50 Hz
nSP		Rated Motor Speed	0-24000rpM	Varies
tFr		Maximum Frequency	10-400Hz	72 Hz
Ctt		Motor Control Type: PErF – Performance, Sensorless Vector Std – Standard, Volts/Hertz PUNP – Pump, low torque		Std
UFr		IR Compensation: Optimizes torque at very low speeds	25-200%	100%
SLP		Slip Compensation	0-150%	100%
StA		Frequency Loop Stability: Adjusts overshoots and oscillations at the end of acceleration or deceleration. A higher number decreases oscillations	0-100%	20%
FLG		Frequency Loop Gain: Adjusts the slope of the speed increase. A lower number decreases oscillations.	0-100%	20%
tUn		Motor Auto Tuning: Automatically tunes the drive to the motor profile	nO/YES/dOnE	nO

CtL Menu

Code	Sub-Code	Name/Description	Factory Setting
Fr1		Speed Reference Channel 1: AI1 – Terminal analog input LCC – Remote Display Ndb – Modbus AIU1 – Jog dial (wheel) on drive	AI1
CHCF		Channel Configuration: SIN – Not separate mode. Speed and run commands from the same source. SEP – Separate mode. Speed and run commands from different sources.	SIM
Cd1		Command Channel 1 (run fwd/rev, stop): Only appears if CHCF is set to SEP. tEr – terminals LOC – Local LCC – Remote display Ndb – Modbus	tEr

FUn Menu

Code	Sub-Code	Name/Description	Adjustment Range	Factory Setting
rPt-	ACC	Acceleration Time (seconds)	0.0-999.9 s	3.0 s
	dEC	Deceleration Time (seconds)	0.0-999.9 s	3.0 s
	brA	Decel Ramp Adaptation Assignment: nO – Function inactive. (Used with dynamic braking) YES – Automatically increases the deceleration time to prevent a DC bus overvoltage dYnA – Most rapid deceleration possible without a dynamic braking resistor.		YES
Stt-	Stt	Type of Stop: rNP – Ramp Stop FSt – Fast Stop nSt - Freewheel		rNP
rrS		Reverse Direction Assignment: nO – Function inactive L1H – Input L1 active high		nO

		L2H – Input L2 active high L3H – Input L3 active high L4H – Input L4 active high		
AdC-	AdC	Automatic DC Injection: nO – function inactive YES – Time limited DC injection Ct – Continuous DC injection		YES
	SdC1	Automatic DC Injection Current	0-120% if nCr	70%
	tdC1	Automatic DC Injection Time (seconds)	0.1-30 s	0.5 s
PSS-	PS2	Second Preset Speed Assignment: nO – Function inactive L1H – Input L1 active high L2H – Input L2 active high L3H – Input L3 active high L4H – Input L4 active high		nO
	SP2	Second Preset Speed Reference	0-400 Hz	10 Hz
CLI-	CL1	Current Limitation	0.25-1.5 plate	varies
SPL-	LSP	Low Speed Setting (Hz)	0-HSP	0 Hz
	HSP	High Speed Setting (Hz)	LSP-tFr	60 Hz

FLt Menu

Code	Sub-Code	Name/Description	Factory Setting
rSF		Fault Reset Assignment: nO – Function inactive L1H – Input L1 active high L2H – Input L2 active high L3H – Input L3 active high L4H – Input L4 active high	nO
Atr-	Atr	Automatic Restart: nO – Function inactive YES – Automatic drive restart after fault condition	nO
	tAr	Max automatic restart time	5 min
FLr		Flying Restart (Catch on the fly): Restarts the motor at the estimated speed the motor is already going. nO – Function inactive YES – Function active	nO
tHt-	ItH	Motor Thermal Current	varies

Fault Detection

The AC drive has a comprehensive fault diagnostic system that includes several different alarms and fault messages. Once a fault is detected, the corresponding protective functions will be activated. The following faults are displayed as shown on the AC drive digital keypad display.

Note

Not all faults can be cleared by resetting from the drive keypad. Some faults can only be cleared by cycling power on the drive, and some faults cannot be reset at all.

Code	Name	Possible Cause	Remedy
CrF1	Precharge	Charging relay control fault or charging resistor damaged	• Turn the drive off and then back on again • Check the connections • Check the stability of the main supply • Contact your local Schneider Electric • representative
InFI	Unknown drive rating	The power card is different from the card stored	Contact your local Schneider Electric representative
InF2	Unknown or incompatible power board	The power card is incompatible with the control card	Contact your local Schneider Electric representative
InF3	Internal serial link	Communication interruption between the internal cards	Contact your local Schneider Electric representative
InF4	Invalid industrialization zone	Inconsistent internal data	Contact your local Schneider Electric representative
InF9	Current measurement circuit	Current measurement is not correct due to hardware circuit	Contact your local Schneider Electric representative
----	Problem of application Firmware	Invalid application firmware update using the Multi-Loader tool	Flash again the application firmware of the product
InFb	Internal thermal sensor detected fault	• The drive temperature sensor is not operating correctly • The drive is in short circuit or open	Contact your local Schneider Electric representative
InFE	Internal CPU	Internal microprocessor	• Turn the drive off and then back on again • Contact your local Schneider Electric representative
OCF	Overcurrent	• Parameters in the Motor Control menu (drC) are not set properly • Inertia or load too high • Mechanical locking	• Check the parameters • Check the size of the motor/drive/load • Check the state of the mechanism • Connect line chokes • Reduce the Switching Frequencies (SFr) • Check the ground connection of drive, motor cable, and motor insulation

OCF SCF1	Motor short circuit Ground short circuit	• Short-circuit or grounding at the drive output • Ground fault during running status • Commutation of motors during running status • Significant current leakage to ground if several motors are in parallel	• Check the cables connecting the drive to the motor, and the motor insulation • Connect motor chokes
SCF4	IGBT short circuit	Internal power component short circuit detected at power on	Contact your local Schneider Electric representative
SOF	Over-speed	Instability or over-speed associated with the inertia of the application	• Check the motor • Over-speed is 10% more than the maximum frequency (tFr). Adjust this parameter if necessary • Add a braking resistor • Check the size of the motor/drive/load • Check the parameters of the speed loop (gain and stability)
tnF	Auto-Tuning	• Motor not connected to the drive • One motor phase loss • Special motor • Motor is rotating	• Check that the motor/drive are compatible • Check that the motor is present during auto-tuning • If an output contactor is being used, close it during auto-tuning • Check that the motor is completely stopped
LFFI	AI current lost fault	Detection if: • Analog input AI1 is configured as current • AI1 current scaling parameter of 0% is greater than 3mA • Analog input current is lower than 2mA	Check the terminal connections
ObF	Over-braking	Braking too sudden or driving load	• Increase the deceleration time • Install a module unit with a braking resistor if necessary • Check the line supply voltage to be sure it is under the maximum
OHF	Drive overheat	Drive temperature too high	Check the motor load, the drive ventilation, and the ambient temperature. Wait for the drive to cool down before restarting.
OLC	Process overload	Process overload	Check the process and the parameters of the drive to be in phase
OLF	Motor overload	Triggered by excessive motor current	Check the setting of the motor thermal protection, check the motor load

OPF1	1 output phase loss	Loss of one phase at drive output	• Check the connections from the drive to the motor • In case of downstream contactor, check the right connection, cable, and contactor
OPF2	3 output phase loss	• Motor not connected • Motor power too low, below 6% of the drive nominal current • Output contactor open • Instantaneous instability in the motor current	• Check the connections from the drive to the motor • Test on a low power motor or without a motor: In factory settings mode, motor phase loss detection is active Output Phase loss detection OPL = YES to check the drive in a test or maintenance environment, without having to use a motor with the same rating as the drive, deactivate motor phase loss detection Output Phase loss detection OPL = nO • Check and optimize the following parameters: IR compensation (law U/F) UFr , Rated motor voltage UnS and Rated motor current nCr and perform an Auto-tuning tUn
OSF	Main overvoltage	• Line voltage too high • Disturbed line supply	Check the line voltage
PHF	Input phase loss	• Drive incorrectly supplied or a fuse blown • Failure of one phase • 3-phase ATV12 used on a single-phase line supply • Unbalanced load • This protection only operates with the drive on load	• Check the power connection and the fuses. • Use a 3-phase line supply. • Disable the fault by setting Input Phase loss detection IPL
SCF5	Load short circuit	• Short-circuit at drive output • Short circuit detection at the run order or DC injection order if parameter IGBT test Strt is set to YES	Check the cables connecting the drive to the motor, and the motor's insulation
SLF1	Modbus Communication	Interruption in communication on the Modbus network	• Check the connections of communication bus. • Check the time-out (Modbus time out ttO parameter • Refer to the Modbus user manual
SLF2	SoMove Communication	Communication interruption with SoMove	• Check the SoMove connecting cable. • Check the time-out
SLF3	HMI Communication	Communication interruption with the external display terminal	Check the terminal connection

SPIF	PI Feedback detected fault	PID feedback below lower limit	• Check the PID function feedback • Check the PI feedback supervision threshold LPI and time delay tPI
ULF	Process underload fault	• Process underload • Motor current below the Application Underload threshold LUL parameter during a period set by Application underload time delay ULt parameter to protect the application.	Check the process and the parameters of the drive to be in phase
tJF	IGBT overheat	• Drive overheated • IGBT internal temperature is too high according to ambient temperature and load	• Check the size of the load/motor/drive. • Reduce the Switching frequency SFr. • Wait for the drive to cool before restarting
CFF	Incorrect configuration	• HMI block replaced by an HMI block configured on a drive with a different rating • The current configuration of customer parameters is inconsistent	• Return to factory settings or retrieve the backup configuration, if it is valid. • If the fault remains after reverting to the factory settings, contact your local Schneider Electric representative
CFI	Invalid configuration	Invalid configuration The configuration loaded in the drive via the bus or communication network is inconsistent. The configuration upload has been interrupted or is not fully finished.	• Check the configuration loaded previously. • Load a compatible configuration
CHI2	Download invalid configuration	Interruption of download operation with Loader or SoMove	• Check connection with Loader or SoMove. • To reset the default re-start the download operation or restore the factory setting
USF	Undervoltage	• Line supply too low • Transient voltage dip	Check the voltage and the parameters of Undervoltage Phase Loss Menu USb

Optional Height Detection Sensor

The optional advanced sensor may be purchased to replace the standard height detection photoelectric sensor.

Advanced Sensing Concept

Long ranges, fast and easy assembly are the highlights of the advanced sensor. The further prominent features are precise background suppression and insensitivity to ambient light. Useful features increase the selectable light-/dark-switching and NPN/PNP switching. Unlike the basic infrared photoelectric sensor, which is just based on an object's opacity or reflectivity to light, the advanced sensor's precise background suppression and insensitivity to ambient light makes it practical for detection of clear or black materials and other objects that are difficult to detect with the basic photoelectric sensors.

For Predator XS operation, ensure the photo eye is set to D and NPN. Use the trim pot to adjust sensitivity, the amber light on the photo eye indicates whether an object is present or not. If the light is on, the object is present.

② Receive indicator
⑨ Sensing range adjustment
⑩ Light/dark selector
⑪ NPN/ PNP selector

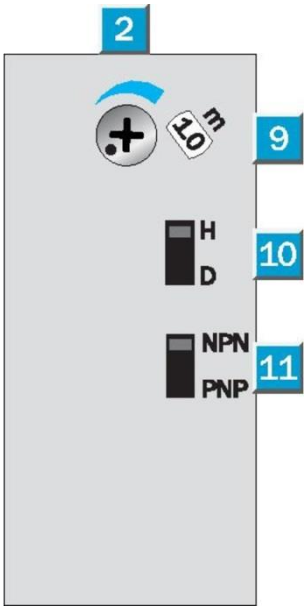


Figure 7: Advanced Sensor Config. Layout

Load Compression Testing

Load compression tests were designed to allow you to measure the force of the film against your product. These tests will allow you to fine tune the machine for the most secure products.

1. Place a product in the center of the wrap area.

2. Attach the film to the product.

3. Set the Film Force potentiometer dial to about 50%.

4. Initiate a wrapping cycle by pressing the Start button on the operator panel. To test the load compression, allow the machine to complete one full cycle.

5. Using the tape measure provided in the optional *Highlight Field Test Kit FTK-4000*, determine as close as possible the center of one side of the product.

6. Attach the scale provided in the *Highlight Field Test Kit FTK-4000* kit to the center of the package by pushing the pointed end of the hook all the way through the stretch film. Grasp the other end of the scale, and pull it two inches away from the product.

7. Record the reading on the scale and the reference number on the Film Force potentiometer. To increase the load compression, rotate the dial clockwise to a higher reference number, or rotate counter-clockwise to decrease the load compression.

8. Remove all the stretch film from the product.

9. Repeat the above steps if additional adjustments are needed.

The final setting which best suits your load will remain the same until you change the Film Force setting or stretch level.

Optional Scale Package

The optional scale package allows the user to quickly measure the weight of a package placed on the machine. To operate correctly and efficiently the scale needs to be configured with the correct settings. Below are instructions on how to re-configure the scale and the settings that have been pre-programmed. Re-configuring the scale is not required unless there is a problem with the existing scale or a new scale is added to the machine. Refer to the scale manual for more information.

Note
Changing the scale parameters to values other than the Highlight recommended values may result in poor scale operation.

Navigating the Scale Menu

Step 1: Turn the scale display over so you are looking from above down at the back side of the scale and turn off the scale power.

Step 2: Remove the two small screws holding a small plate on the back of the scale.

Step 3: Looking down at the scale, move the switch under the plate to the right.

Step 4: Turn the scale power back on.

Step 5: Press the “PRINT / >>” button until the desired setting appears on the screen.

Step 6: Press the “ZERO” button to enter the parameter set-up.

Step 7: Press the “PRINT / >>” button until the display reads the correct setting and press the “SET / NET” button.

Step 8: Turn the power back off, move the switch under the plate to the left, and turn the power back on.

Step 9: Replace the screws on the back cover and retighten the scale swivel grips on the side.

Step 10: The scale is now ready to use.

Highlight Recommended Configuration Values

Note
Changing the scale parameters to values other than the Highlight recommended values may result in poor scale operation.

Name/Code	Description	Highlight Suggested Value
F1: Graduations	Specifies the number of full-scale graduations. Value should be consistent with legal requirements and environmental limits on the useful system resolution.	5000
F2: Span Gain	Span Gain is related to A/D integration time. The larger the span gain, the higher the internal resolution, but the slower the update speed. Note that the scale must be re-calibrated whenever this parameter is altered. See Appendix C in the scales manual for more information.	100
F3: Zero Track Band	Selects the range within which the scale will automatically zero. Note that the scale must be in a standstill to zero the scale.	3
F4: Zero Range	Selects the range within which the scale may be zeroed. Note that the indicator must be in standstill to zero the scale.	100
F5: Motion Band	Sets the level at which motion is detected by comparing the present display update with the previous one. If motion is not detected for two seconds or more, scale is in standstill and can process a Print or Zero command. Maximum value varies depending on local regulations	1
F6: Digital Filter	Averages weight readings to produce higher stability but the slower the indicator's response time. Choose 8 unless a very fast response is needed.	8
F7:Overload Limit	Selects the desired formula which determines the point at which the indicator shows overload. All selections are based on the primary unit selected in F8.	2%
F8: Calibration Unit	Selects the primary base unit to be used in the calibration process. Also the default unit for normal operation. 1 = pounds, 2 = kilograms.	1
F9: Display Divisions	Determines the desired weight increments. Value should be consistent with legal requirements.	1
F10: Decimal Point	Determines the location of the decimal point.	0
F16:Zero Calibration	Places the scale in a Zero Calibration routine. See below.	See below.
F17: Span Calibration	Places the scale in a Span Calibration routine. See below.	See below.

Scale Calibrating Procedure

Note
Highlight Industries, Inc. calibrates the scale before shipment using known weights. The values stored in these settings are custom per scale and machine. Do not change these values unless directed to do so by Highlight personnel.

Step 1: Navigate the scale menu to parameter “F 16.”

Step 2: Press the “ZERO” button ONCE. This enters the Zero Calibration Menu. The display will momentarily show “C 0” followed by a value.

Step 3: After making sure that there are no test weights on the machine press the “ZERO” button again. The display will zero.

Step 4: Press the “SET / NET” button to save the zero point value. The display will show “EndC0” momentarily then revert to parameter F16.

Step 5: Navigate to parameter “F 17.”

Step 6: Press the “ZERO” button ONCE. This enters the Span Calibration Menu. The display will momentarily show “C 1” followed by a value with one flashing digit. This value will be zero with the decimal point parameter selected in F10.

Step 7: Place a known weight on the machine. Ensure that the test weight is below the maximum capacity of the scale and above 1% of the maximum capacity of the scale.

Step 8: Key in the weight of the test weight using the buttons on the screen. Press the “TARE / <<” button to select the digit to the left of the current position. Press “PRINT / >>” to select the digit to the right of the current position. Press “UNITS” to increase the value of the digit and press “ZERO” to decrease the value of a digit.

Step 9: Once the weight of the test weight is keyed in exactly, press the “SET / NET” button to save the value. If the calibration was successful the display will read “EndC1” momentarily, and then revert back to “F17”. If “Err0” is displayed the test weight is larger than the full capacity of the scale. If “Err1” is displayed the test weight is below 1% of the full capacity of the scale. If “Err2” is displayed the internal resolution of the scale is not high enough to accept the calibration value.

4

Highlight Industries, Inc.

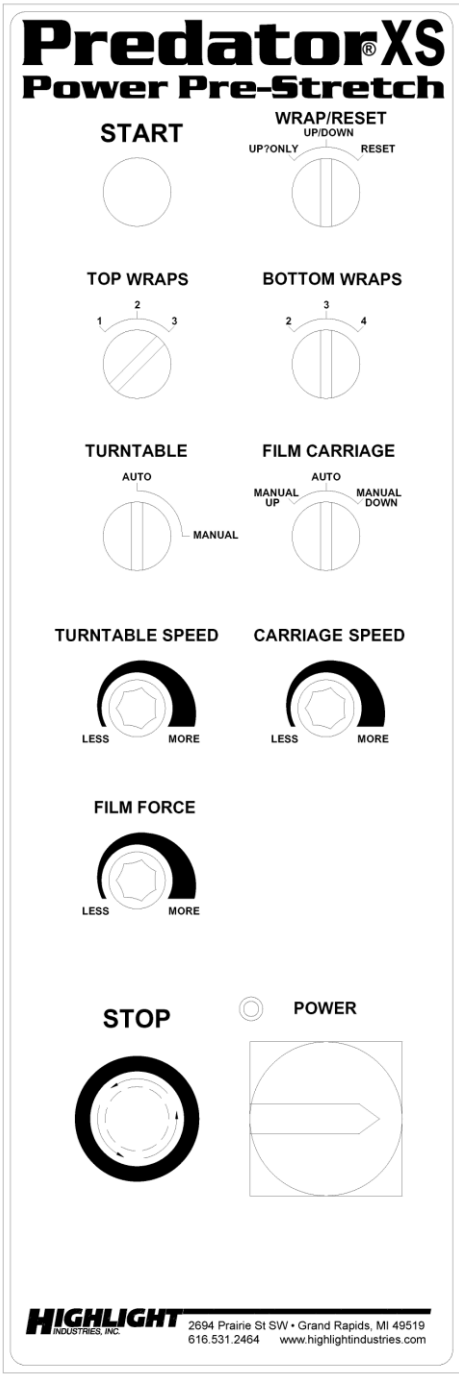
Predator XS Turntable Stretch Wrapper Operation Manual

Operation Instructions

Operator Controls

Warning!
If the Emergency Stop button is pressed while the turntable is rotating, the turntable will NOT stop immediately, but rather it will decelerate and possibly coast to a stop.

Operator Panel Button Controls



Start
The “Start” button initiates all operations, in automatic or manual modes. When the system is in automatic mode, the button LED stays on until the wrapping cycle is complete. In manual mode, the button LED flashes until the operation is stopped.

Wrap/Reset
Switch to “Reset” and press the “Start” button to clear any operation. The film carriage will lower to the bottom limit switch and the turntable will return to its home position.

Switch to “Up Only” to select automatic single wrap mode. Press the “Start” button to begin cycle. The film carriage will begin applying the bottom wraps, travel upwards to top of the product, apply top wraps, and then stops. Press the “Start” button again to lower the film carriage to the bottom limit switch.

Switch to “Up/Down” to select automatic double wrap mode. Press the “Start” button to begin cycle. The film carriage will begin applying the bottom wraps, travel upwards to top of the package, apply top wraps, and travel downwards to finish cycle.

Top Wraps
Switch to the desired number of rotations for applying wraps to the top of the product.

Bottom Wraps
Switch to the desired number of rotations for applying wraps to the bottom of the product.

Turntable
To run an automatic mode, switch to “Auto” and press the “Start” button. To jog the turntable manually, switch

to “Manual” and press the “Start” button. To stop the turntable, switch to “Auto”, or press the “Stop” button.

Film Carriage
To run an automatic mode, switch to “Auto” and press the “Start” button. To raise or lower the film carriage manually, switch to “Manual Up” or “Manual Down”, and press the “Start” button. To stop, switch to “Auto”, or press the “Stop” button.

Turntable Speed
The “Turntable Speed” potentiometer dial determines the speed of the turntable in both automatic and manual modes. Turn clockwise to increase, counter-clockwise to decrease. Adjusting this will affect the film overlap. The maximum turntable speed is 12 rotations-per-minute (RPM).

Carriage Speed
The “Carriage Speed” potentiometer dial determines the speed of the turntable in both automatic and manual modes. Turn clockwise to increase, counter-clockwise to decrease. Adjusting this will affect the film overlap.

Film Force
The “Film Force” potentiometer dial determines the amount of film tension applied to the load in a wrapping cycle. Turn clockwise to increase, counter-clockwise to decrease. The best product wrapping and proper dancer bar response is achieved when the dancer bar is set to between half and two thirds of its full extension. This gives the proper force to load setting and allows a good proportion of the spring return travel on the dancer bar to be used when the turntable slows down at the end of cycle.

Stop
The “STOP” button cuts machine operation and removes power to frequency drives. In the event this button is pressed during the course of operation, it is necessary to pull this button fully out to reset the machine.

Power Indicator Light
The LED indicates that power is supplied to the machine.

Film Loading

Follow the procedure below to thread the film onto the Film Carriage.

Warning!
Be sure the Emergency Stop button is pressed before threading the film and while the film is being threaded.

1. Rotate the handle and open the film carriage.
2. Pull six (6) feet of film off the film roll.
3. Follow the diagram below and “thread” the 6-foot film tail all the way through the rollers.
4. Close the film carriage and rotate the handle in the opposite direction to lock.
5. Attach the film securely to the pallet. Tying the end of the film in a knot often helps to secure the film to the pallet.

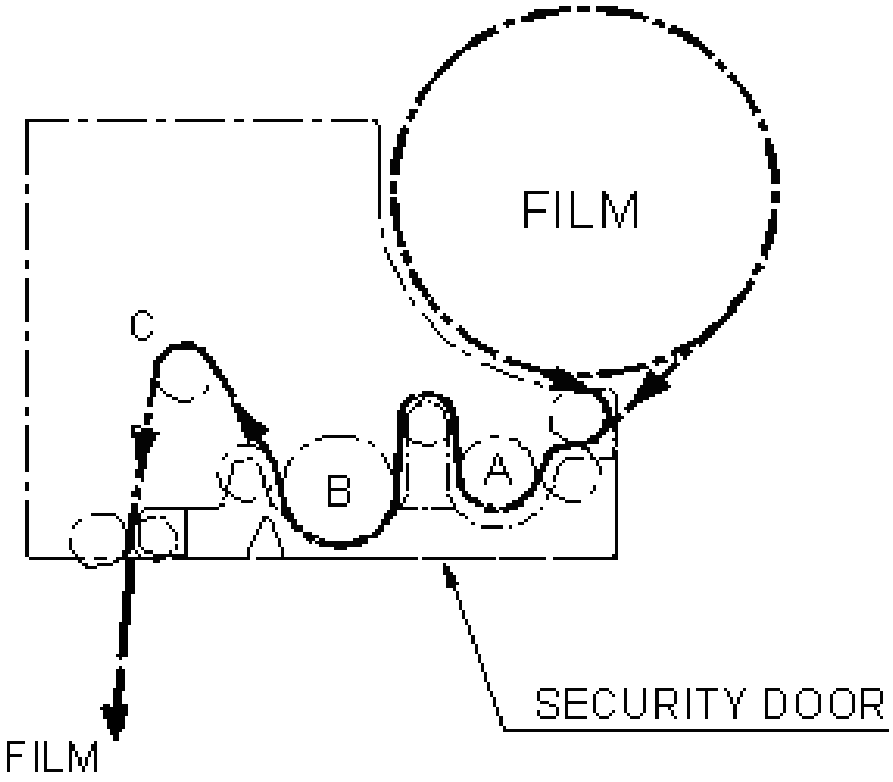


Figure 8: Film Loading/Threading Diagram

Machine Operating Instructions

Running a Wrap Cycle

1. To start a new wrap cycle, first place the product to be wrapped on the turntable, thread the film through the carriage, and attach the film to the product.

2. Ensure that the turntable and film carriage are at their home positions.

3. Set the desired number of Top and Bottom wraps.

4. Select the desired Wrap Mode to be applied to the product.

5. Turn the Turntable and Film Carriage selector switches to the Auto position.

6. Press the Cycle Start button on the operator panel to initiate the wrap cycle.

Emergency Stop

If there is a need to press the emergency stop button, all motive power will be removed. The turntable will attempt to stop as fast as possible, but may coast to a stop. Pull the E-Stop button out to restore power, and then start a new cycle following the Running a Wrap Cycle steps.

Film Out

A film out condition is detected when the dancer bar is relaxed and the dancer bar switch is off for a period of three seconds. Once a film out is detected, the turntable and the film carriage will return to their home positions and stop. An operator is now able to reload the film into the carriage. Simply pressing the start button again will cause the wrap sequence to re-start.

Applying Reinforcement Wraps

Automatic operation can be paused in order to apply reinforcement wraps to an additional top sheet or corner boards on the product. Follow the procedure below.

1. Press the “Start” button as normal to initiate cycle.

2. As the carriage travels up, switch the “Turntable” selector from Auto to Manual. Both the turntable and the film carriage will pause.

3. Apply the top sheet or corner boards to the product.

4. Press the “Start” button to resume cycle. Leave the “Turntable” selector switch in Manual position. The turntable will now rotate in Manual mode.

5. Once the reinforcement wraps have been applied, switch the “Turntable” selector switch from Manual to Auto. The turntable will pause.

6. Press the “Start” button again to complete the automatic operation.

If the “Turntable” selector is switched from Auto to Manual while the carriage is traveling down, the carriage will travel back up and apply the top wraps before completing the wrap cycle. This to ensure the top sheet applied during the manual operation is properly wrapped into the product.

Automatic Film Cutting

The automatic film cut feature is always enabled in the automatic mode. On the last wrap revolution, the puncture solenoid, located on the film carriage, engages, tearing a small hole in the film. The powered film feed motor stops to allow the film force-to-load to increase the turntable rotates to its home position. The punctured film is stretched, until eventually cut.

5

Highlight Industries, Inc.

Predator XS Turntable Stretch Wrapper Operation Manual

Maintenance

Preventative Maintenance

As with all machinery, proper attention and maintenance is the key to long component life, maximum performance, and safe operation. By spending a few minutes reading and following these preventive measures, you should reduce the downtime and prolong the life of your system.

It is important to understand that these maintenance schedules are minimum recommendations. *Highlight Industries, Inc.* cannot possibly know, evaluate, or advise the various trades in all schedules of periodic maintenance. Accordingly, anyone who maintains or services a stretch wrap machine must first satisfy himself/herself as to the schedules of preventive maintenance based on cycling operation and environmental locations.

Warning!
All maintenance operations require the equipment to be powered down and locked out for personnel safety.

Lock-out/ Tag-out Procedures

Be sure that anyone performing any type of maintenance on this equipment is familiar with and is adhering to the lock-out/tag-out procedures set forth by the General OSHA or the State OSHA guidelines.

Visual Checks

Visual checks should be conducted at least once per month:

1. Keep the machine and surrounding area as clean as possible, especially near moving components.

2. Check for loose hardware, especially set screws located in: sprocket hubs, bearing hubs, and flanges.

3. Check for loose cotter pins.

4. Check for oil leaks around the speed reducers.

5. Check for dry seals at the bearings.

6. Check for chain wear and proper tension on the power roller stretch sprockets. The correct amount of chain tension can be checked by pulling the chain taut and having 3/8” slack.

7. Check for fraying lift belts on the film carriage lift system.

8. Check for loose electrical connections and for frayed cords and cables. Replace immediately any damaged cords and cables.

Turntable Belt Adjustment

Refer to figure below to adjust the turntable belt. First, loosen the four motor flange (M10) screws. Turn the (M10) bolt on the adjuster tab until the belt is tensioned. Retighten the four motor flange screws.

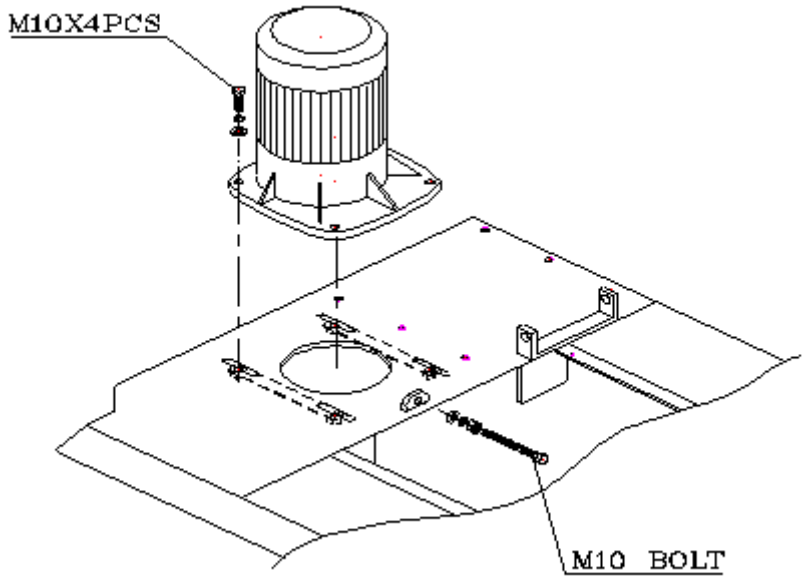


Figure 9: Turntable Belt Adjustment

Film Carriage Lift Chain Adjustment

Refer to figure below to adjust the film carriage lift chain. First, loosen nut (M12) on the adjustment bracket. Turn the bottom bolt until desired tension is achieved. Retighten nut (M12). Note that the driving chain and adjustment bracket should be parallel with the moveable pulley base.

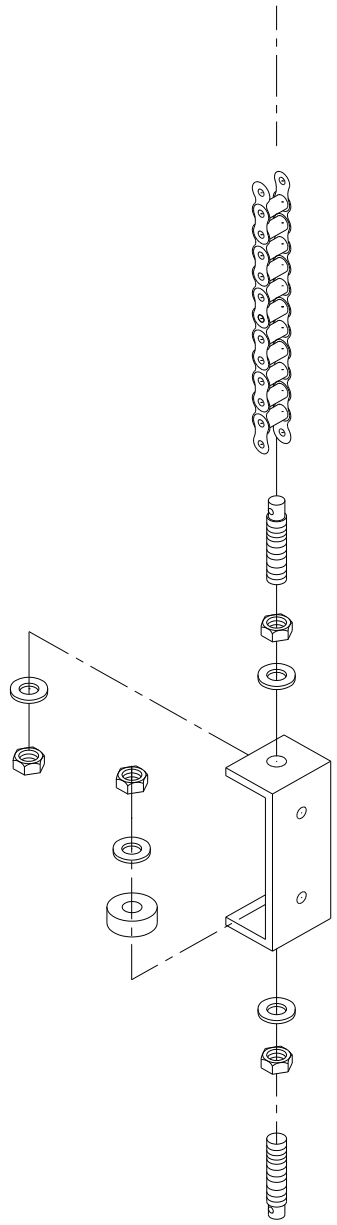


Figure 10: Film Carriage Lift Chain Adjustment

Sprockets and Chains

All sprockets should be inspected for wear, and chains should be checked for proper tension and lubrication on a periodic basis. Failure to do so will lead to premature sprocket failure. Any general-purpose chain lube should be sufficient for lubrication. Replace chain guards when preventative maintenance is complete.

Maintenance Schedule

Part	Schedule	Service With
Turntable Reducer	Sealed, lubricated with premium lubricant. No maintenance required.	Follow manufacturer's recommendations.
Film Carriage Reducer	Sealed, lubricated with premium lubricant. No maintenance required.	Follow manufacturer's recommendations.
Film Delivery Reducer	Sealed, lubricated with premium lubricant. No maintenance required.	Follow manufacturer's recommendations.
All pivot bearings	Initially first 1,000 cycles; every 10,000 cycles thereafter.	Mobil EP-2 grease.
Turntable Drive Belt	Check tension of belt. Adjust as necessary.	
Carriage Lift Chain	Check and tighten every six months.	

Note
For additional maintenance information about specific components on the machine, refer to the components operation manuals shipped inside the main enclosure.

6

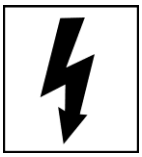
Highlight Industries, Inc.

Predator XS Turntable Stretch Wrapper Operation Manual

Trouble-shooting

Troubleshooting Guide

Warning!
Make sure that only qualified personnel will perform inspection, troubleshooting, and part replacement.



High Voltage!
Disconnect all power including external control power that may be present before servicing the frequency drive controllers. Wait three (3) minutes for the DC bus capacitors to discharge. The frequency drive controller display and/or LED's are not accurate indicators of the absence of DC bus voltage.

Before You Start

The diagrams in this section will guide you in identifying typical problems while operating the Predator XS Turntable Stretch Wrapper, and provide you with corresponding solution(s). Problems are divided in reference to the machine functions: power, turntable, film carriage, and film delivery.

If further assistance is required, contact the distributor from whom you have purchased the equipment, or call the number listed on the bottom page of this manual. To receive quick and proper technical support, please be prepared to provide the following information:

1. Machine serial number
2. Date of purchase
3. Symptoms of any problems

General Troubleshooting Practices

1. Always adhere to the General OSHA or the State OSHA guidelines.
2. When working with machine wiring, take precautions to prevent contact with live wires.
3. Ensure that all wiring is securely fastened and that all terminals are tightened down properly.
4. Have a multi-meter nearby to be able to check for voltages and continuity on different portions of the machine circuitry.
5. Use the schematics provided in this manual to trace wiring and find components on the sub panel.

Power Problems

Problem	Possible Cause	Possible Solution
The machine does not power up.	The Emergency Stop button is pressed.	Pull the Emergency Stop button fully out, then release to restore power.
	The film carriage foot safety switch on the bottom of the carriage is tripped.	Clear any obstructions under the film carriage. Ensure the pan can move freely up and down.
	The control box door is open.	Close the control box door.
	The film carriage door is open.	Close the film carriage door.
	The machine is not plugged in.	Plug the machine into a 120VAC, 15A outlet.
	The Main Disconnect is turned off.	Turn the Main Disconnect on.
	The main circuit breaker is tripped or off.	Turn the breaker back on, or replace if necessary.
	The 24VDC supply is off or malfunctioned.	Ensure the circuit breakers before and after the DC power supply are on.
		Use a voltmeter to check that the power supply is receiving 120VAC and supplying 24VDC. Replace if necessary.
	The main contactor has malfunctioned.	Check wiring to the contactor, or replace if necessary.
The display on a Frequency Drive is not on.	The machine is not powered up.	See above solutions.
	The drive has malfunctioned.	Check wiring to the Frequency Drive, or replace if necessary.

Turntable Problems

Problem	Possible Cause	Possible Solution
The turntable does not rotate manually.	The Frequency Drive is not on (the drive display is off).	See the Power Problems section.
	The turntable speed is not set high enough.	Adjust Turntable Speed potentiometer towards 100%.
	The turntable speed potentiometer has malfunctioned.	Use a multi-meter to check is the potentiometer is working correctly. Replace as necessary.
	The Frequency Drive is faulted.	Record the fault code on the drive display and refer to the Frequency Drive Adjustments section of this manual or the drive manufacturer's manual.
	The turntable is mechanically restricted.	Check the condition of the motor, chain, and rollers under the turntable. Replace as necessary.
	The turntable motor is not wired correctly.	Check connections between the Frequency drive and the motor. Ensure the motor is wired for the correct voltage. Replace the motor as necessary.
	The PLC has malfunctioned	Check wiring to the PLC and replace as necessary.
	The Frequency Drive has malfunctioned.	Check wiring to the Frequency Drive and replace as necessary.
	The parameters in the Frequency Drive are not set properly.	Refer to the Electrical Schematics in the Technical References section of this manual for Highlight Industries, Inc. factory drive settings.

Problem	Possible Cause	Possible Solution
The table does not rotate during the wrap cycle.	The Frequency Drive is not on (the drive display is off).	See the Power Problems section.
	The Frequency Drive is faulted.	Record the fault code on the drive display and refer to the Frequency Drive Adjustments section of this manual or the drive manufacturer's manual.
	The turntable is mechanically restricted.	Check the condition of the motor, chain, and rollers under the turntable. Replace as necessary.
	The turntable motor is not wired correctly.	Check connections between the Frequency drive and the motor. Ensure the motor is wired for the correct voltage. Replace the motor as necessary.
	The turntable speed is not set high enough.	Adjust Turntable Speed potentiometer towards 100%.
	The Cycle Start button has malfunctioned.	Check wiring to the button and replace as necessary.
	The PLC has malfunctioned	Check wiring to the PLC and replace as necessary.
	The Frequency Drive has malfunctioned.	Check wiring to the Frequency Drive and replace as necessary.
	The parameters in the Frequency Drive are not set properly.	Refer to the Electrical Schematics in the Technical References section of this manual for Highlight Industries, Inc. factory drive settings.
The turntable does not stop at home.	The Turntable Deceleration Delay is set too long.	Decrease the Turntable Deceleration Delay. See the Pre-Operation Adjustment section of this manual for instructions.
	The Turntable Home proximity switch is malfunctioning.	Check the wiring to the proximity switch and that it is adjusted properly (only 8mm sensing range). Replace as necessary.
	The Frequency Drive deceleration parameter (DEC) is set too low or too high.	If the setting is too high, it may pass the home position before stopping. Refer to the Electrical Schematics in the Technical References section of this manual for Highlight Industries, Inc. factory settings.

Film Carriage Problems

Problem	Possible Cause	Possible Solution
The Film Carriage does not Raise or Lower manually or in the wrap cycle.	The Carriage speed is set too low.	Adjust the carriage speed potentiometer towards 100%.
	The carriage speed potentiometer has malfunctioned.	Use a multi-meter to check is the potentiometer is working correctly. Replace as necessary.
	The Film Carriage Raised/Lowered limit switch is malfunctioning.	Ensure that the carriage limit switch is clear of any obstruction and moves smoothly. Check wiring to the limit switch and replace as necessary.
	The Frequency Drive is not on (the drive display is off).	See the Power Problems section.
	The Frequency Drive is faulted.	Record the fault code on the drive display and refer to the Frequency Drive Adjustments section of this manual or the drive manufacturer's manual.
	The Carriage is mechanically restricted.	Check the condition of the motor and belts. Replace as necessary.
	The Carriage motor is not wired correctly.	Check connections between the Frequency drive and the motor. Ensure the motor is wired for the correct voltage. Replace the motor as necessary.
	The PLC has malfunctioned.	Check wiring to the PLC and replace as necessary.
	The Frequency Drive has malfunctioned.	Check wiring to the Frequency Drive and replace as necessary.
	The parameters in the Frequency Drive are not set properly.	Refer to the Electrical Schematics in the Technical References section of this manual for Highlight Industries, Inc. factory drive settings.
	The Turntable Home proximity switch is malfunctioning.	Check the wiring to the proximity switch and that it is adjusted properly (only 8mm sensing range). Replace as necessary.

Problem	Possible Cause	Possible Solution
The Film Carriage raises some, but does not rise to the top of the package.	The Product Height Detection photo eye is positioned too high.	Slide the Product Height Detection photo eye lower.
	The Product Height Detection photo eye does not see the load.	Black or clear loads may require an optional Advanced Sensor instead of the standard diffuse sensor.
		Check wiring to the sensor.
		Replace the sensor as necessary.
	The Package Height Detection Delay is set too low. The sensor may not see the load at all times. Use this setting to filter out these dead spots.	Increase the package height detection delay using the Pot 0 (right pot) on the PLC itself.
	The Product Height Detection photo eye is not adjusted properly.	Adjust position or sensitivity of the sensor (see the Photo Sensor Adjustments and/or Pre-Operation Adjustments section).
The Film Carriage rises too far above the package.	The Product Height Detection photo eye is positioned too low.	Slide the Product Height Detection photo eye higher.
	The Product Height Detection photo eye is not adjusted properly and always sees a ’package’.	Adjust the sensitivity of the sensor (see the Photo Sensor Adjustments and/or Pre-Operation Adjustments section).
	The Package Height Detection Delay is set too high.	Decrease the package height detection delay using the Pot 0 (right pot) on the PLC itself.

Film Delivery Problems

Problem	Possible Cause	Possible Solution
The Film Delivery motor does not run manually or during a wrap cycle.	The Film Carriage Door is open.	Ensure door is closed and that the door limit switch is operating correctly.
	The Film Force potentiometer is set too high.	Turn the potentiometer counter-clockwise (to a lower number) to decrease the force and increase film delivery speed.
	The film force potentiometer has malfunctioned.	Use a multi-meter to check is the potentiometer is working correctly. Replace as necessary.
	The Frequency Drive is not on (the drive display is off).	See the Power Problems section.
	The Frequency Drive is faulted.	Record the fault code on the drive display and refer to the Frequency Drive Adjustments section of this manual or the drive manufacturer's manual.
	The motor is mechanically restricted.	Check the condition of the motor, chain, and rollers/mandrels on the Film Carriage. Replace as necessary.
	The PLC has malfunctioned.	Check wiring to the PLC and replace as necessary.
	The Frequency Drive has malfunctioned.	Check wiring to the Frequency Drive and replace as necessary.
	The parameters in the Frequency Drive are not set properly.	Refer to the Electrical Schematics in the Technical References section of this manual for Highlight Industries, Inc. factory drive settings.
	The Dancer Bar limit switch does not get tripped when the Dancer Bar is extended.	Adjust the switch so that it trips when the Dancer bar is pulled.
		Check wiring to the switch and replace as necessary.
The film breaks at the start of the wrap cycle.	The film is not threaded properly.	Use the Film Loading Diagram located on the carriage to thread the film correctly.
	The film Quality is too low.	Use films that are free of holes or snags.
	The Pre-Stretch level is set too high.	Decrease the film Pre-Stretch level following the Pre-Stretch Percentage Change instructions.

Problem	Possible Cause	Possible Solution
The Film Delivery motor does not run during a wrap cycle.	The Film Force Potentiometer is set too high.	Turn the potentiometer counter-clockwise (to a lower number) to decrease the force and increase film delivery speed.
The film breaks during the wrap cycle.	The Film Force Potentiometer is set too high.	Turn the potentiometer counter-clockwise (to a lower number) to decrease the force and increase film delivery speed.
	The Film Force Potentiometer is malfunctioning.	Check wiring to the Film Force Potentiometer and replace as necessary.
	The film is not threaded properly.	Use the Film Loading Diagram located on the carriage to thread the film correctly.
	The film Quality is too low.	Use films that are free of holes or snags.
	The Pre-Stretch level is set too high.	Decrease the film Pre-Stretch level following the Pre-Stretch Percentage Change instructions.
The film is not being stretched during the wrap cycle.	The Pre-Stretch level is set too low.	Increase the film Pre-Stretch level following the Pre-Stretch Percentage Change instructions.
	The film is not threaded properly.	Use the Film Loading Diagram located on the carriage to thread the film correctly.
	The film is slipping on the stretch rollers	Ensure the film cling will be on the package side as the film is wrapped around the package.
		Ensure the main film mandrel provides drag on the film. Tighten the mandrel if it is too loose.
The film is being stretched too much during the wrap cycle.	The Pre-Stretch level is set too high.	Increase the film Pre-Stretch level following the Pre-Stretch Percentage Change instructions.
	The film is not threaded properly.	Use the Film Loading Diagram located on the carriage to thread the film correctly.
	The Film Force Potentiometer is set too high.	Turn the potentiometer counter-clockwise (to a lower number) to decrease the force and increase film delivery speed.

Problem	Possible Cause	Possible Solution
The Film Delivery Motor does not shut off.	The dancer bar limit switch is not adjusted properly.	Adjust the switch so that it trips when the Dancer bar is pulled.
		Check wiring to the switch and replace as necessary.
	The PLC has malfunctioned.	Replace the PLC.

7

Highlight Industries, Inc.

Predator XS Turntable Stretch Wrapper Operation Manual

Technical References

Recommended Spare Parts

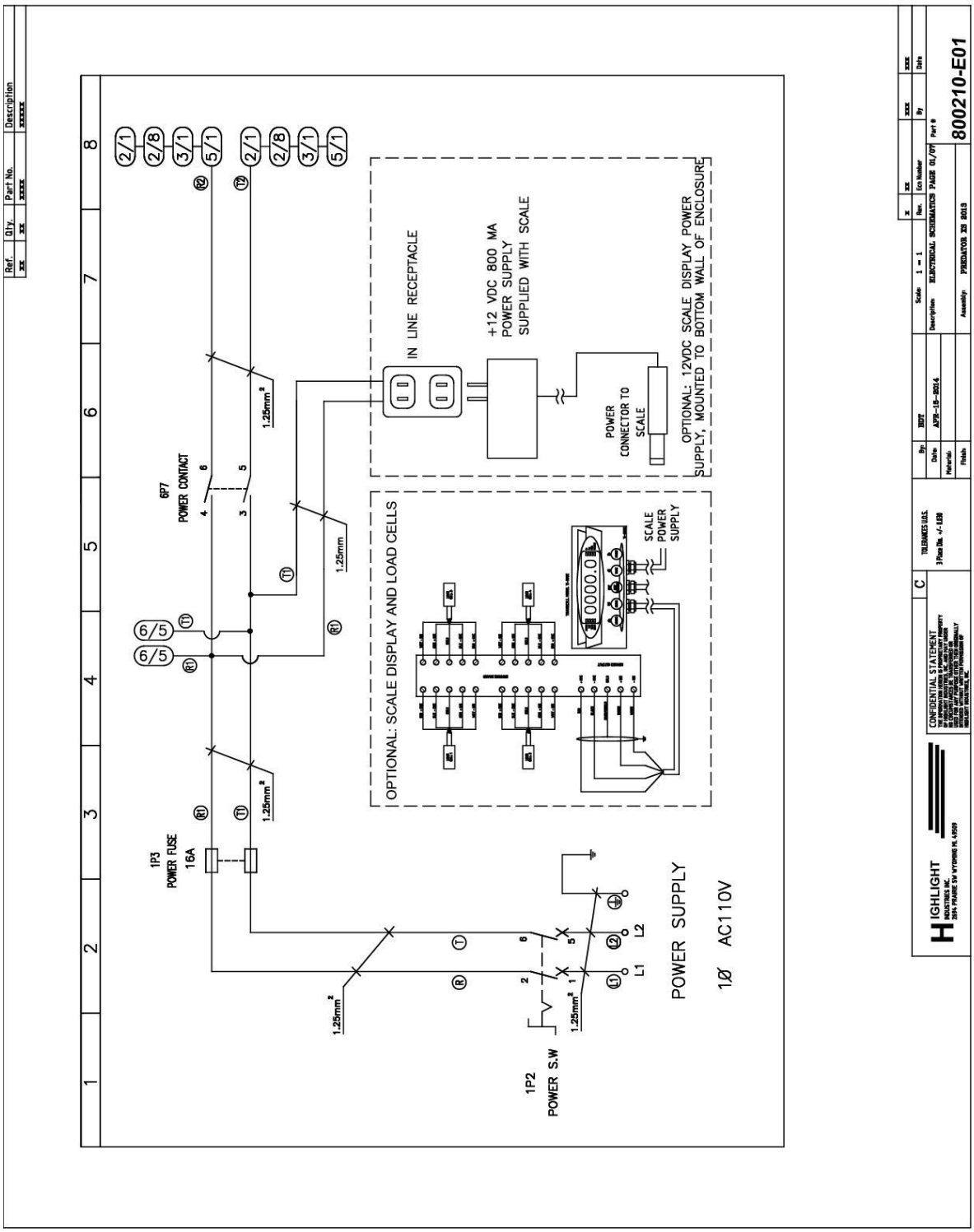
The table below provides the recommended spare parts list for the Predator XS Turntable Stretch Wrapper.

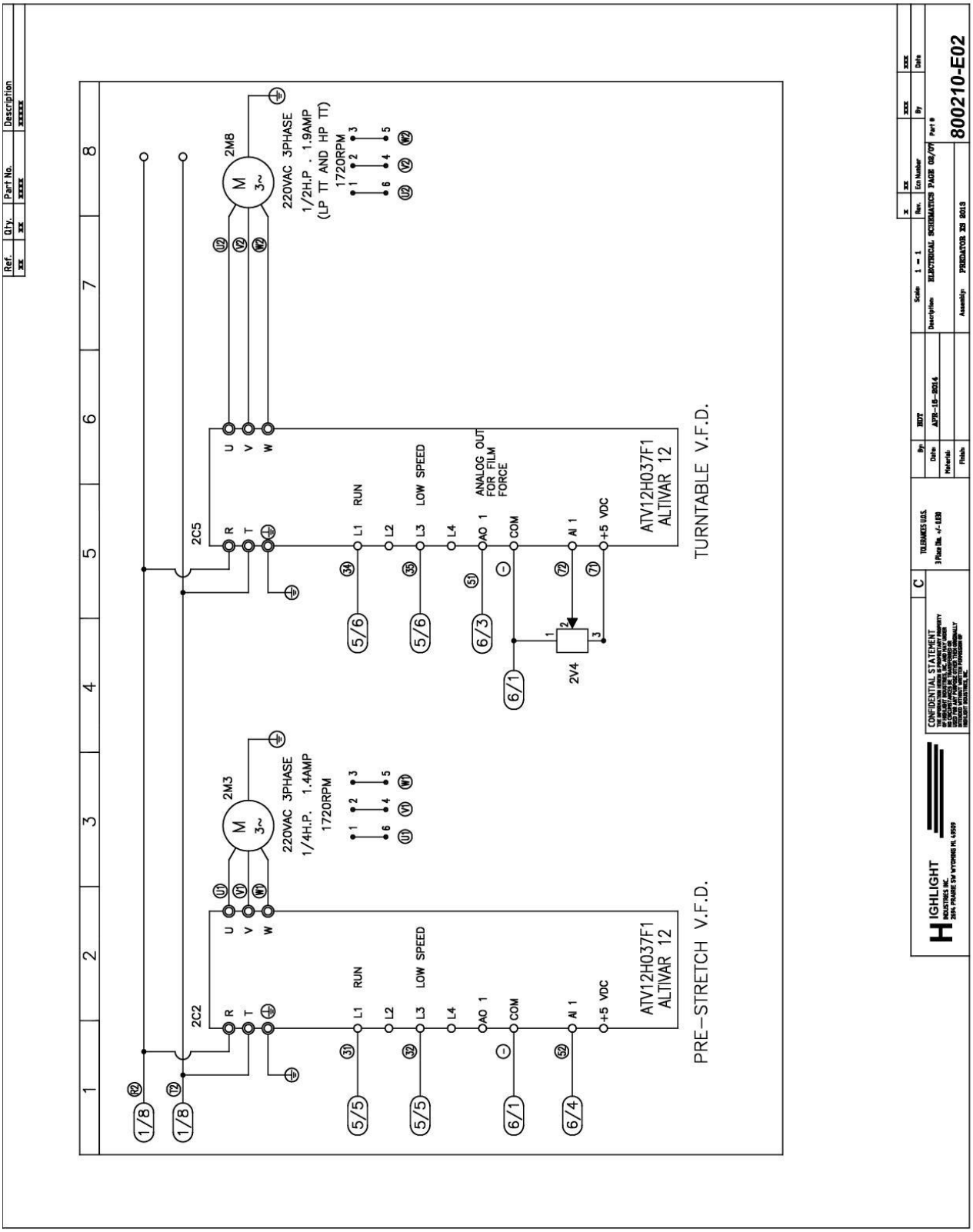
HLI Part Number	Item Description	Qty
300772	DRIVE BELT, 154”	1
403556	T.T. HOME & STRETCH % PROX.	1
700060	T.T. CAM FOLLOWER ASS’Y	6
400637	CARRIAGE DOOR SWITCH – PLUNGER STYLE	1
400671	CARRIAGE SAFETY SWITCH – ARM STYLE	1
400639	CARR. UPPER/LOWER LIMIT SWITCH	1
300719	AUTO PUNCTURE SOLENOID	1
400643	LOAD HT. DETECTION PHOTO EYE	1
400644	CONTROL BOX SAFETY SWITCH	1
500080	CONTROL BOX SAFETY KEY	1
400618	SELECTOR SWITCH, 2 POSITION	1
400619	SELECTOR SWITCH, 3 POSITION	1
400620	POTENTIOMETER KNOB	1
400649	POTENTIOMETER, 5K	1
400613	E. STOP SWITCH	1
400621	MAIN DISCONNECT SWITCH	1
403172	CONTACTOR	1
408467	AC DRIVE ATV12 ½ HP	1
300773	GEARMOTOR, TURNTABLE DRIVE	1
300774	GEARMOTOR, CARRIAGE LIFT	1
301358	GEARMOTOR, SV-A10	1
304086	DANCER BAR SPRING	1
303831*	GEARMOTOR, 1/2HP	1
305285.2*	DRIVE CASTER	1
301869*	SWIVEL CASTER	1
404168*	PROX SWITCH	1

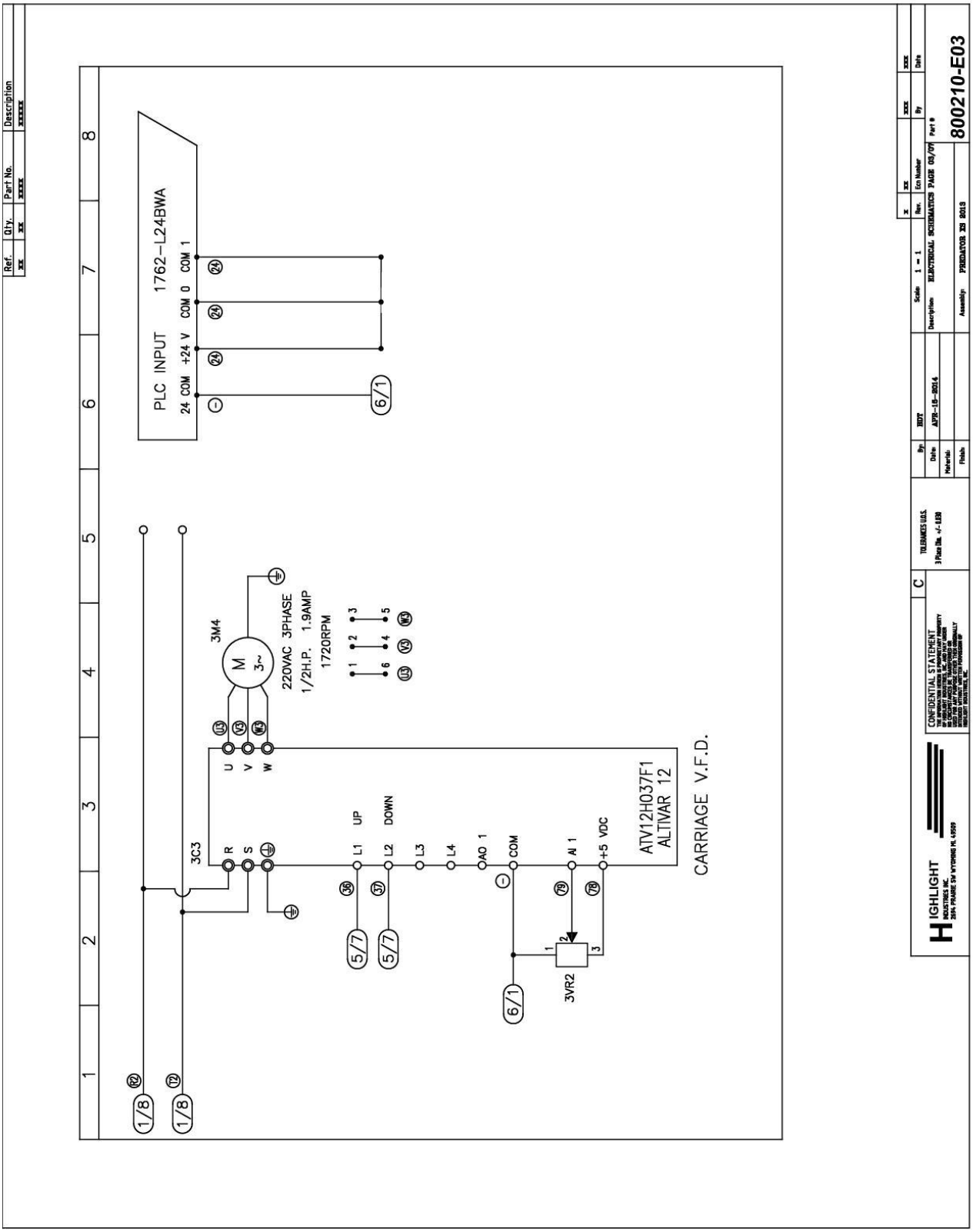
*For Optional High Profile Turntable Only

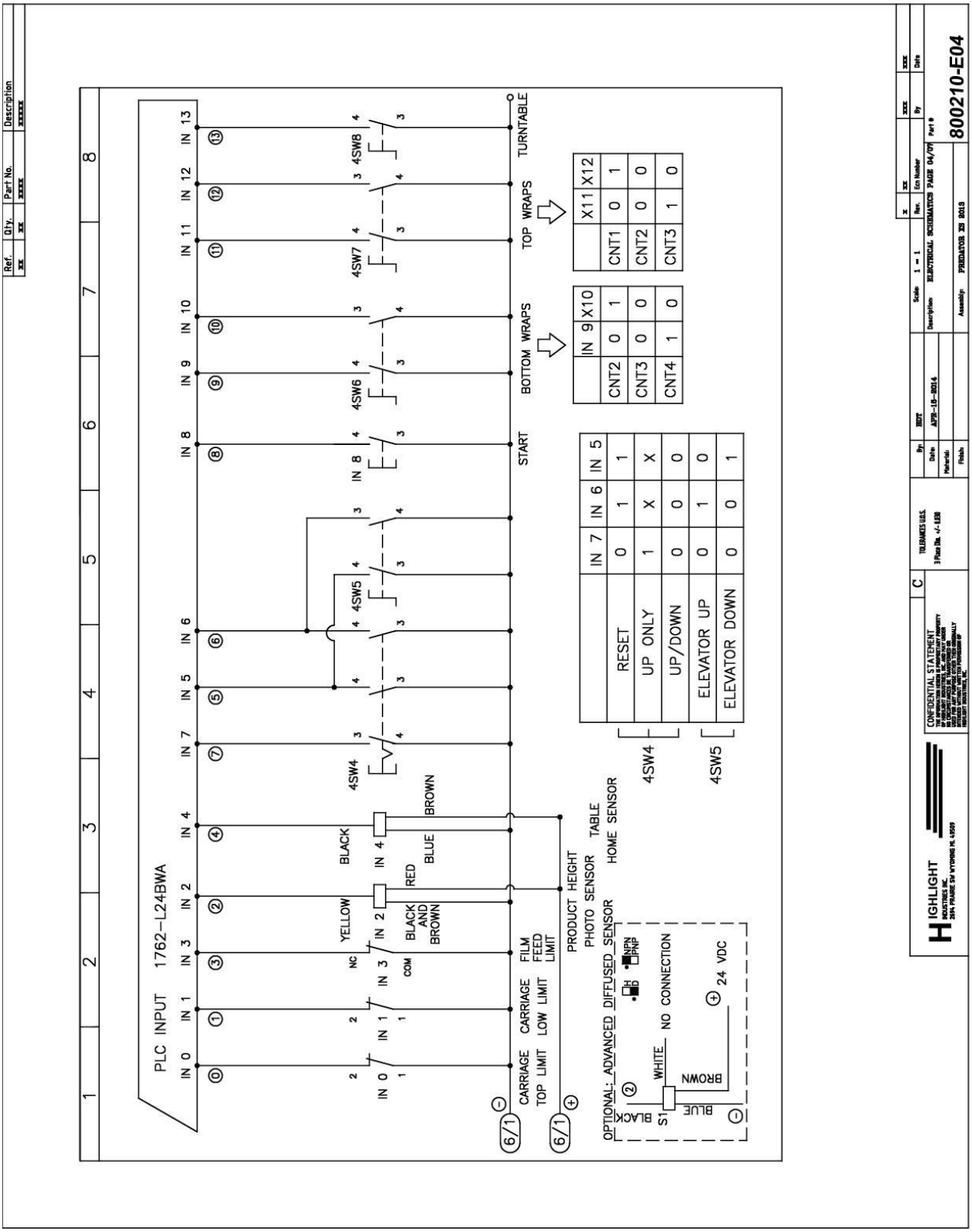
Electrical Drawings

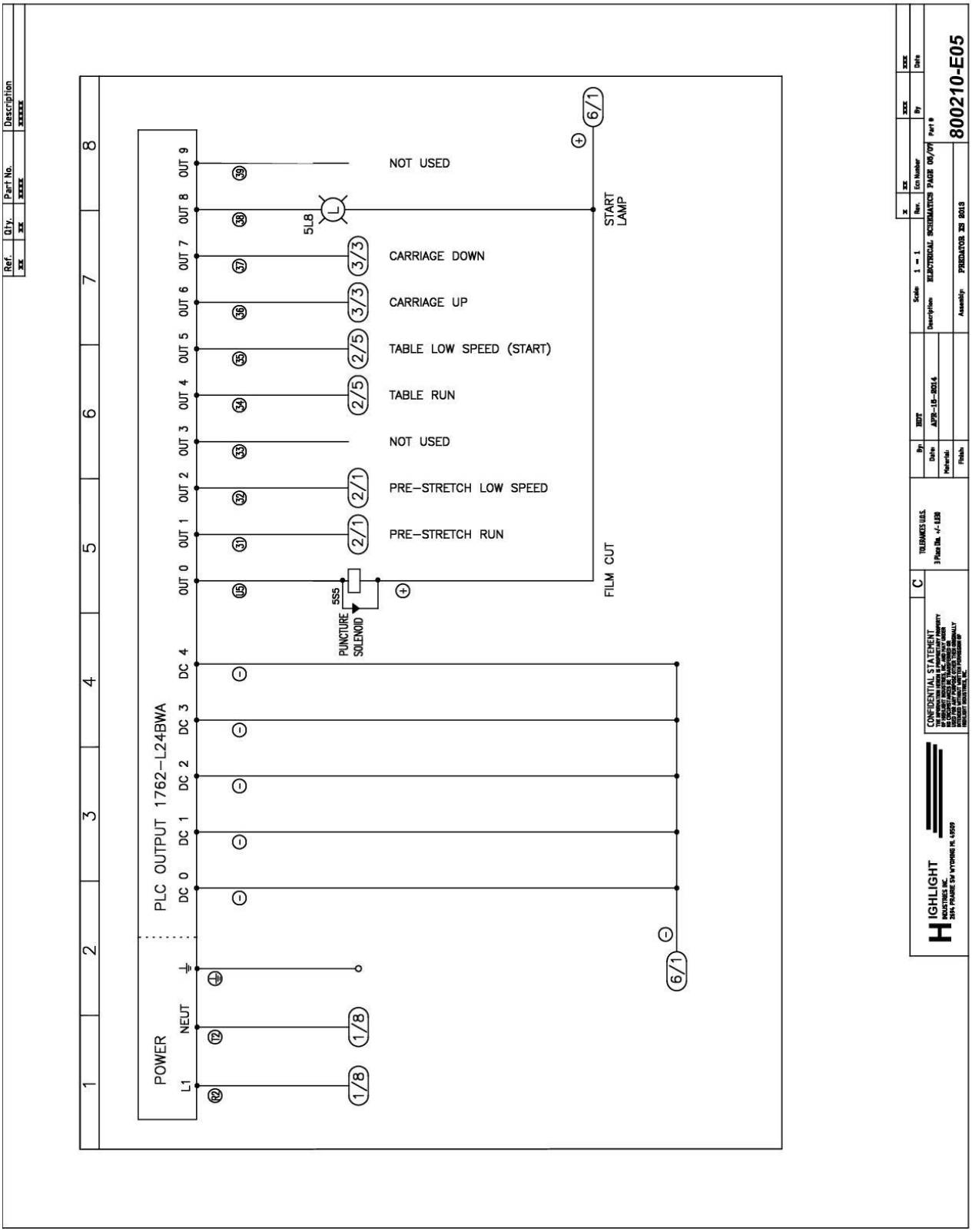
Electrical Schematics

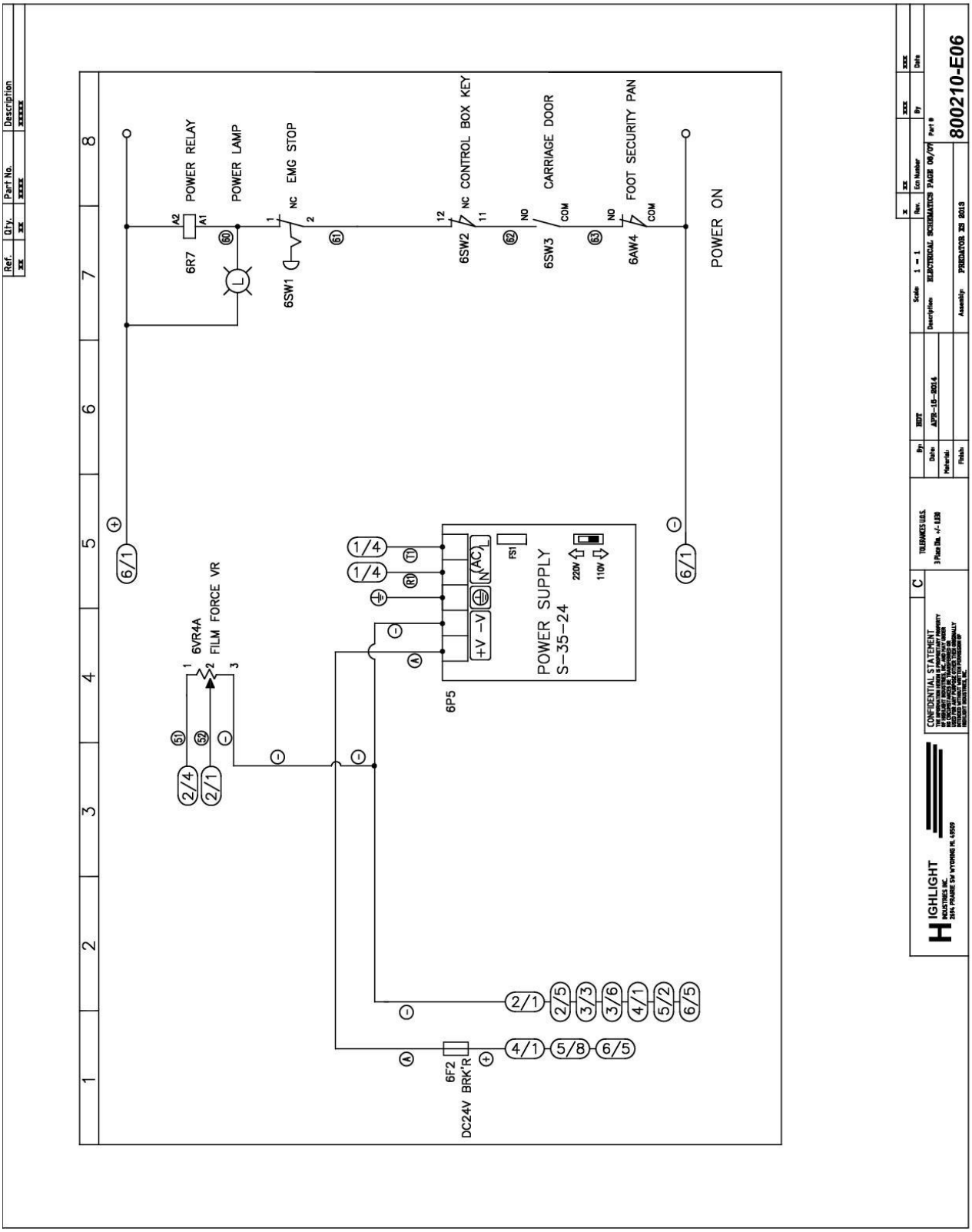



800210-E02
PRE-STRETCH V.F.D.
TURNTABLE V.F.D.
ATV12H037F1
ALTIVAR 12
220VAC 3PHASE
1/4H.P. 1.4AMP
1720RPM
220VAC 3PHASE
1/2H.P . 1.9AMP
(LP TT AND HP TT)
1720RPM
2M3
2M8
2C2
2C5
2V4
RUN
LOW SPEED
ANALOG OUT
FOR FILM
FORCE
+5 VDC
HIGHLIGHT
INDUSTRIES INC.
2694 PRAIRIE SW WYOMING MI 49519
CONFIDENTIAL STATEMENT


PLC INPUT 1762-L24BWA
24 COM +24 V COM 0 COM 1
220VAC 3PHASE
1/2H.P. 1.9AMP
1720RPM
3M4
3C3
ATV12H037F1
ALTIVAR 12
CARRIAGE V.F.D.
UP
DOWN
3VR2
800210-E03


800210-E04
PLC INPUT 1762-L24BWA
IN 0
IN 1
IN 2
IN 3
IN 4
IN 5
IN 6
IN 7
IN 8
IN 9
IN 10
IN 11
IN 12
IN 13
CARRIAGE TOP LIMIT
CARRIAGE LOW LIMIT
FILM FEED LIMIT
PRODUCT HEIGHT PHOTO SENSOR
TABLE HOME SENSOR
START
BOTTOM WRAPS
TOP WRAPS
TURNTABLE
4SW4
4SW5
4SW6
4SW7
4SW8
BLACK
YELLOW
RED
BLACK AND BROWN
BLUE
BROWN
NC
COM
OPTIONAL: ADVANCED DIFFUSED SENSOR
NPN
PNP
WHITE
NO CONNECTION
24 VDC
S1
6/1
RESET
UP ONLY
UP/DOWN
ELEVATOR UP
ELEVATOR DOWN
IN 7
IN 6
IN 5
CNT1
CNT2
CNT3
CNT4
X11
X12
IN 9
X10
HIGHLIGHT INDUSTRIES INC
CONFIDENTIAL STATEMENT

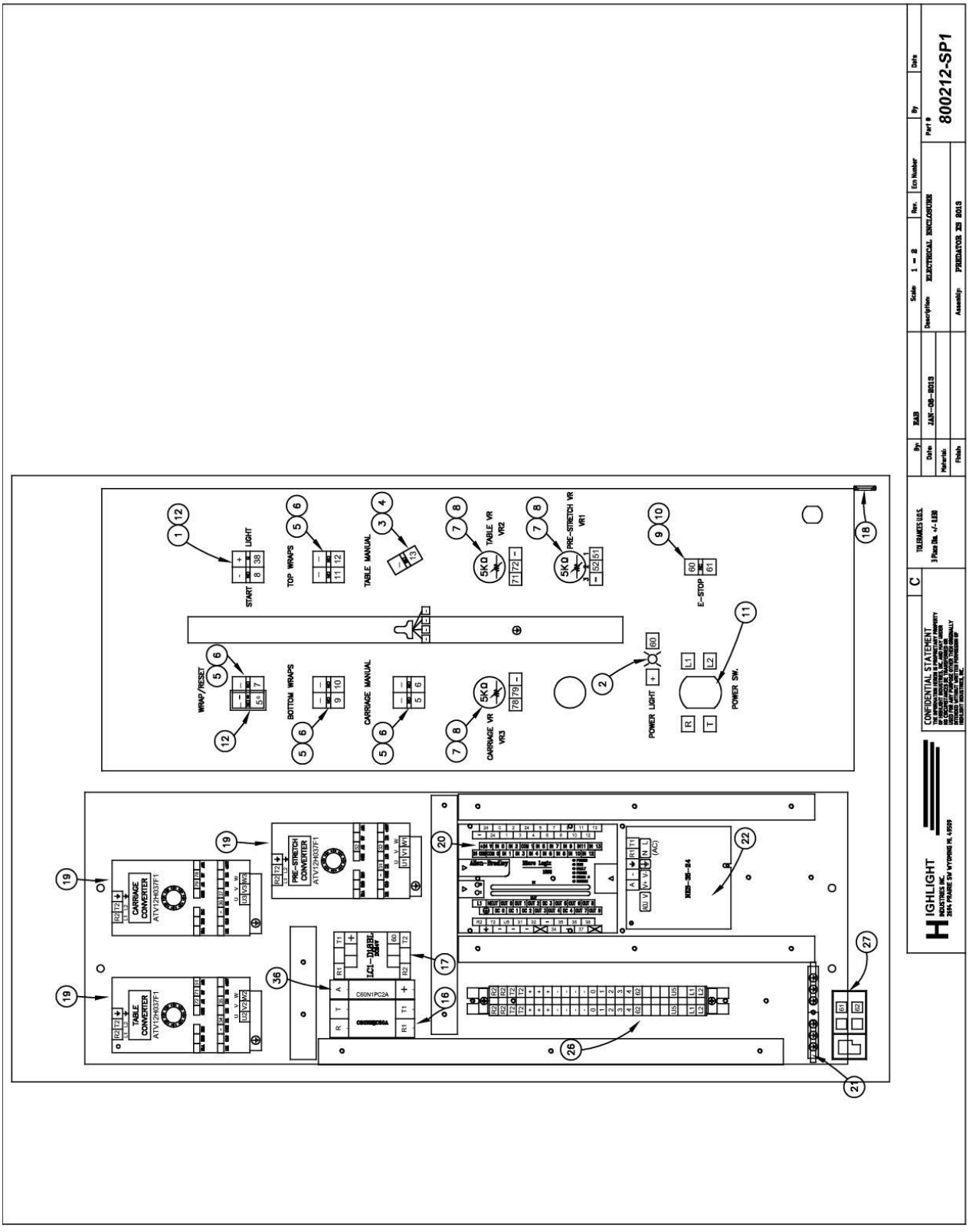

POWER
L1
NEUT
PLC OUTPUT 1762-L24BWA
DC 0
DC 1
DC 2
DC 3
DC 4
OUT 0
OUT 1
OUT 2
OUT 3
OUT 4
OUT 5
OUT 6
OUT 7
OUT 8
OUT 9
NOT USED
5L8
START LAMP
CARRIAGE DOWN
CARRIAGE UP
TABLE LOW SPEED (START)
TABLE RUN
NOT USED
PRE-STRETCH LOW SPEED
PRE-STRETCH RUN
FILM CUT
5S5
PUNCTURE SOLENOID
800210-E05


POWER RELAY
POWER LAMP
EMG STOP
CONTROL BOX KEY
CARRIAGE DOOR
FOOT SECURITY PAN
POWER ON
6R7
6SW1
6SW2
6SW3
6AW4
6VR4A
FILM FORCE VR
6P5
POWER SUPPLY
S-35-24
6F2
DC24V BRK'R
800210-E06

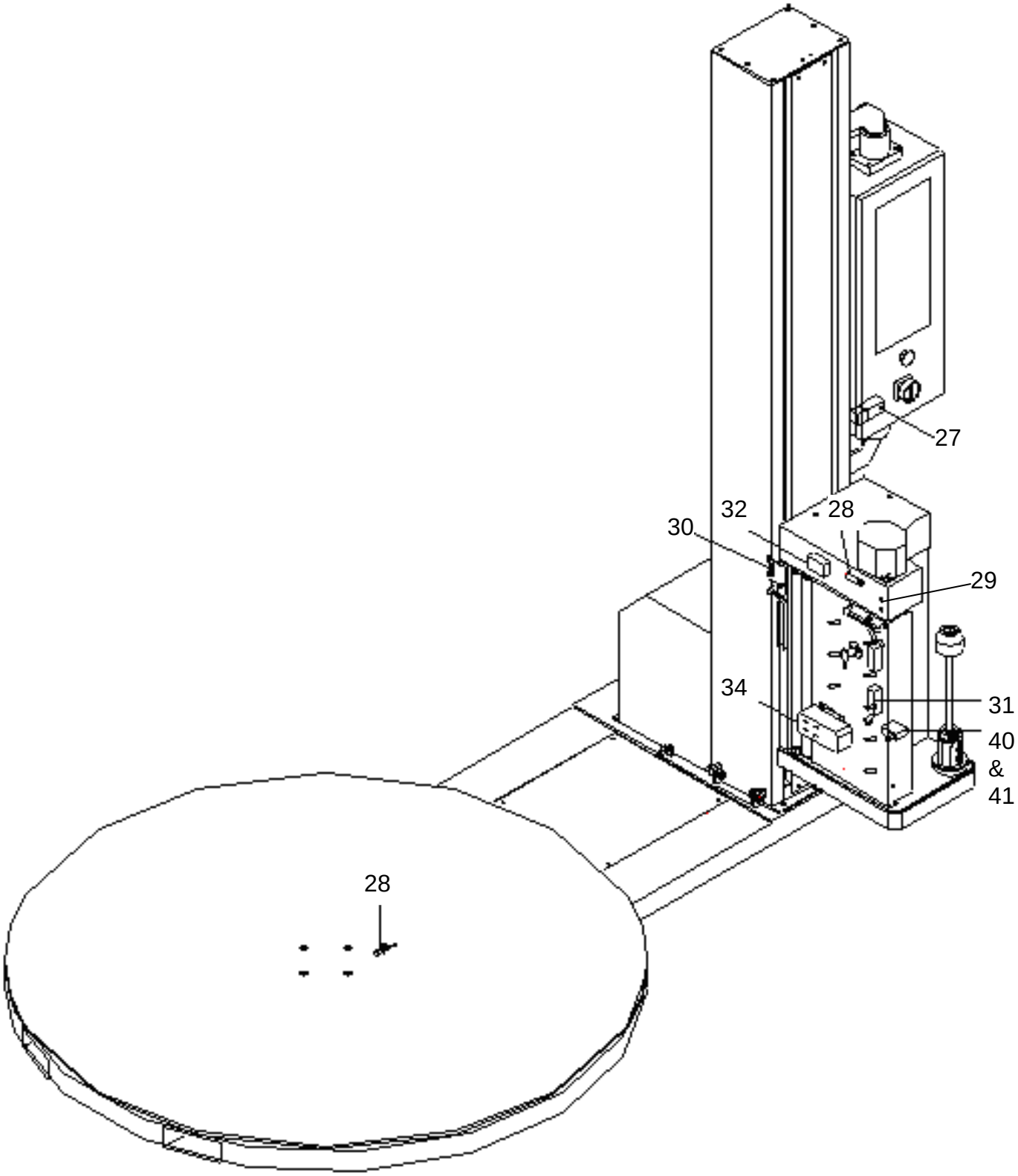
ALTIVAR 12 DRIVES PROGRAMMING PARAMETERS

Drive #					VFD-2C2	VFD-2C5	VFD-2C5	VFD-3C3
Function Controlled					Pre-Stretch	Low Profile Turntable	High Profile Turntable	Carriage
Drive/Motor HP					0.5/0.25	0.5/0.5	0.5/0.5	0.5/0.5
Full Menu	**Code**	**Code**	**Description**	**Default**	**Setting**	**Setting**	**Setting**	**Setting**
I/O	tCC		Type of control (2 wire)	2C	*	*	*	*
	nPL		Logic Inputs Type	POS	nEG	nEG	nEG	nEG
	AI1	AI1t	Analog Input Type	5U	10U	*	*	*
	r1		Relay Output r1	FLt	*	*	*	*
	tOL		Application Overload Time Delay	0 sec	*	*	*	*
	LOC		Application Overload Threshold (% of nCr)	90%	*	*	*	*
	Ftd		Motor Frequency Threshold	varies	*	*	*	*
	AO1	AO1	Analog Output Assignment	nO	*	Ofr	Ofr	*
		AO1t	Analog Output Type	0A	*	10U	10U	*
drC	bFr		Standard Motor Frequency	50 Hz	60 Hz	60 Hz	60 Hz	60 Hz
	nPr		Rated Motor Power	PLATE	0.5	0.5	0.5	0.5
	CoS		Rated Motor Cos Phi	PLATE	*	*	*	*
	UnS		Nominal Motor Voltage	230V	*	*	*	*
	nCr		Motor Plate Current Rating	PLATE	1.4	2.8	1.9	1.9
	FrS		Nominal Motor Frequency	50 Hz	60 Hz	60 Hz	60 Hz	60 Hz
	nSP		Motor Speed Rating	PLATE	1700	1700	1720	1700
	tFr		Maximum Output Frequency	72 Hz	80.0	*	*	*
	Ctt		Motor Control Type	Std	*	PErF	PErF	*
	UFr		IR Compensation	100%	*	*	*	*
	StA		Frequency Loop Stability	20%	*	*	*	*
	FLG		Frequency Loop Gain	20%	*	13	13	*
	tUn		Motor Auto Tuning	nO	YES→No	YES→No	YES→No	YES→No
CtL	Fr1		Speed Control Referece	AI1	*	*	*	*
	PSt		Stop Key Priority	YES	*	*	*	*
	CHCF		Motor Control/Channel Configuration	SIM	*	*	*	*
	Cd1		Command Channel 1	tEr	*	*	*	*
FUn	rPt	ACC	Acceleration Time (Seconds)	3	0.5	2.50	2.50	2.00
		dEC	Deceleration Time (Seconds)	3	0.5	2.50	2.50	0.20
		rPt	Ramp Shape Assignment	Lin	*	*	*	*
		brA	Decel Ramp Adaption Assignment	YES	*	dYnA	dYnA	*
	Stt	Stt	Type of Stop	rMP	*	*	*	*
	rrS		Reverse Direction	nO	*	*	*	L2H
	PSS	PS2	2 Preset Speeds	nO	L3H	L3H	L3H	*
		SP2	Preset Speed 2	10 Hz	20.0	15.0	15.0	*
	AdC	AdC	Automatic DC Injection	YES	*	Ct	Ct	*
		SdC1	Automatic DC Injection Current	70%	*	2.4	2.4	*
		tdC1	Automatic DC Injection Time	0.5 sec	1.0	*	*	1.0
	CL1	CL1	Current Limitation	1.5 In	*	*	*	*
	SPL	LSP	Low Speed (Min Hz)	0 Hz	20.0	*	*	*
		HSP	High Speed (Max Hz)	60 Hz	80.0	*	*	*
FLt	rSF		Detected Fault Reset Assignment	nO	*	*	*	*
	AtR	Atr	Automatic Restart	nO	*	*	*	*
		tAr	Max Automatic Restart Time	5 min	*	*	*	*
		FLr	Flying Restart	nO	*	*	*	*
	tHt	ItH	Motor Thermal Current	PLATE	3.6	3.6	3.6	3.6
	SLL		Modbus Communication Fault Management	YES	*	*	*	*
CON	ADD		Modbus Address	OFF	*	*	*	*
	tbr		Modbus Baud Rate	19.2	*	*	*	*
	tFO		Modbus Communication Format	8E1	*	*	*	*
	ttO		Modbus Communication Time Out	10s	*	*	*	*

Electrical Sub Panel Drawing

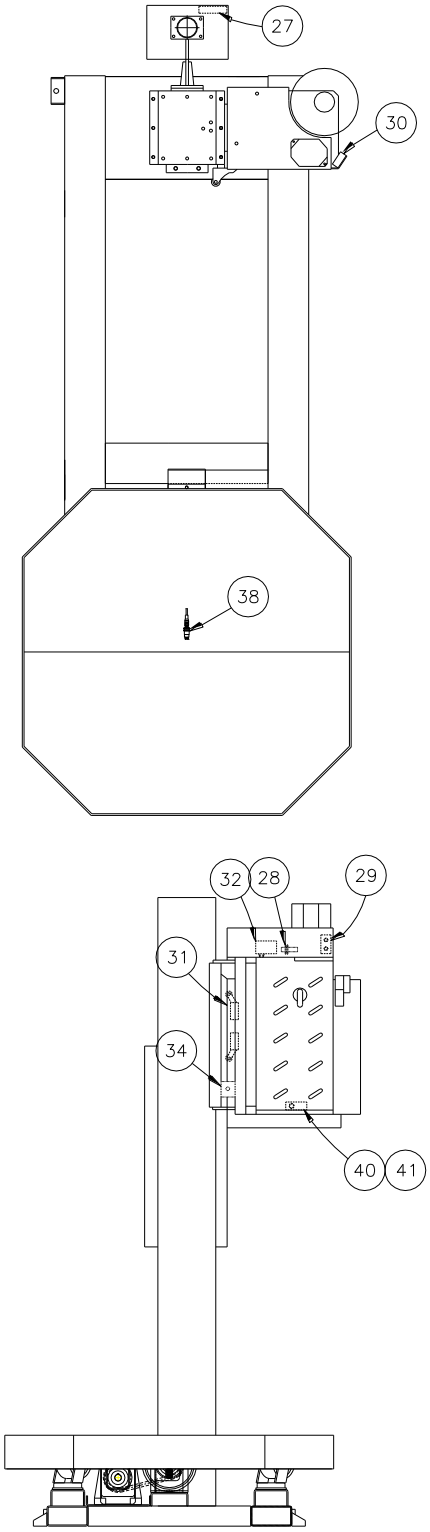


Electrical Sensor Layout



Electrical Sensors Layout for OPTIONAL High Profile Turntable

Electrical Sensor Layout for High Profile Turntable



Electrical Parts List

Note
Although all parts are shown in the part list, some may not be available individually. Selected parts must be purchased in assembly.

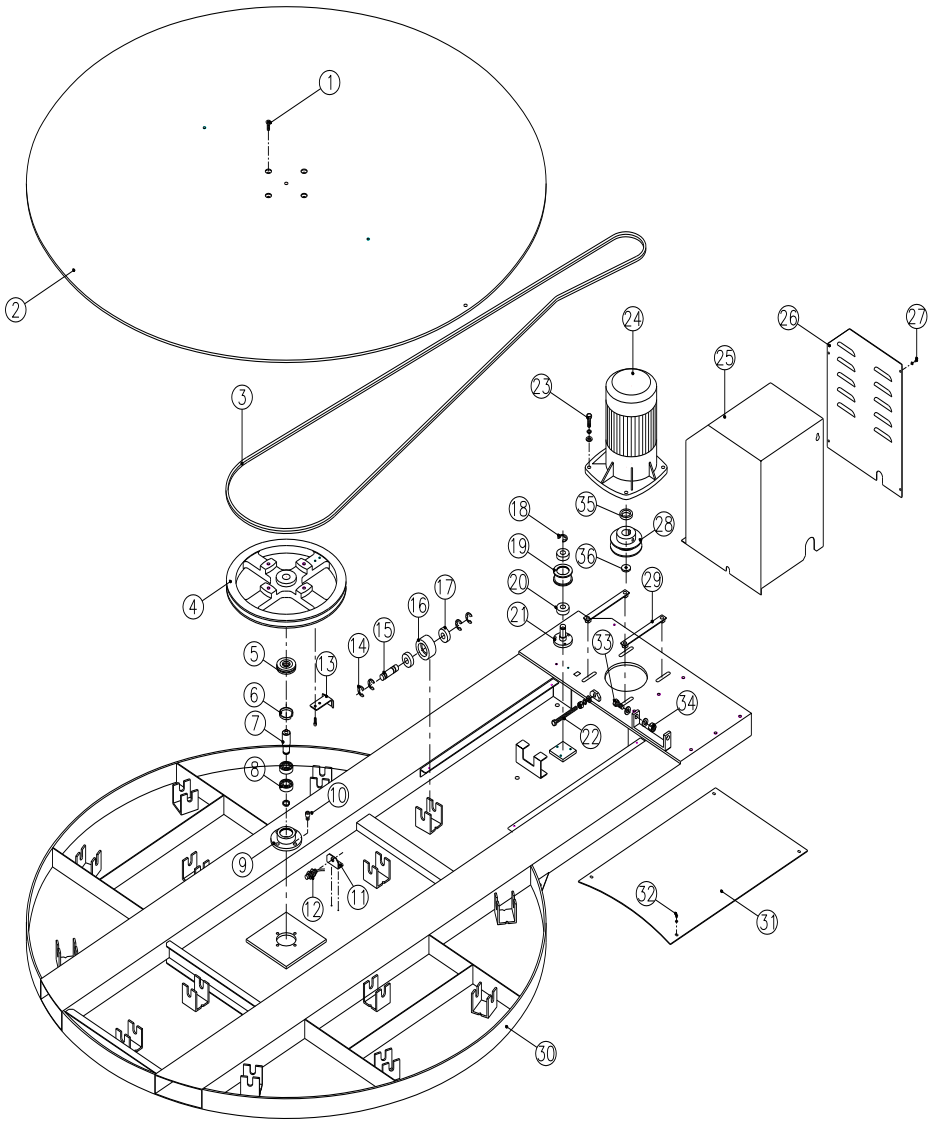
Parts available in inventory are highlighted. Non-highlighted parts may have longer lead times.

No.	Sub No.	Part Number	Description	Quantity
1a		400610	Auto RUN GREEN LAMP ~ BASE	1
1b		400611	Auto RUN GREEN LAMP ~ LAMP	1
1c		400609	Auto RUN GREEN LAMP ~ COVER	1
2		400608	POWER LAMP	1
3		400618	SELECTOR SWITCH, 2 POSITION	1
4		400615	CONTACT BLOCK, 1x NO	1
5		400619	SELECTOR SWITCH, 3 POSITION	4
6		400617	CONTACT BLOCK, 2x NO	4
7		400620	KNOB (BLACK)	3
8		400649	POTENTIOMETER, 5K	3
9		400613	EMERGENCY SWITCH	1
10		400616	CONTACT BLOCK, 1x NC	1
11		400621	DISCONNECT SWITCH	1
12		400614	CONTACT BLOCK, 1x NO	1
16		403561	BREAKER, C60A2PC16A	1
17		403172	CONTACTOR	2
18		500080	KEY FOR SAFETY SWITCH	1
19		408467	AC DRIVE ATV12 ½ HP	3
20		403103	PLC, A-B MICROLOGIX	1
21		403563	TERMINAL POST	1
22		403564	POWER SUPPLY, S-35-24 or (SUB 403133)	2
23		403565	AUX. CONTACT BLOCK	1
24		400630	RELAY LY2, DC24V	1
25		400628	RELAY BASE, LY2, PTF-08A	1
26		400607	TERMINAL STRIP, TB6P	1
27		400644	SECURITY SWITCH XCSPA791	1
28		403556	PROX SENSOR PM12-04N	2
29		403566	STRETCH % INDICATOR BOARD	1
30		400643	PHOTO SENSOR, A3R-2MX	1
30a		403867	IR EYE - OPTIONAL	1
30b		401904	SONIC EYE - OPTIONAL	1
31		400639	LIMIT SWITCH, TZ-8108	2
32		400637	LIMIT SWITCH, TZ-7110	3

34		300719	SOLENOID (TAU-1585 DC24V)	1
35		400608	GREEN LAMP 916L,DC24V	2
36		403559	BREAKER, C60N1PC2A	1
37		403560	RELAY R23 24V-2P	1
38				
39				
40		400671	MICRO SWITCH--LEVER ARM	1
41		400673	MICRO SWITCH BASE	1
N/S		404869	TT PROX WIRE, CONTROL-TO-TOWER	1

Mechanical Drawings

Turntable Frame Assembly



Turntable Frame Parts List

Note
Although all parts are shown in the part list, some may not be available individually. Selected parts must be purchased in assembly.

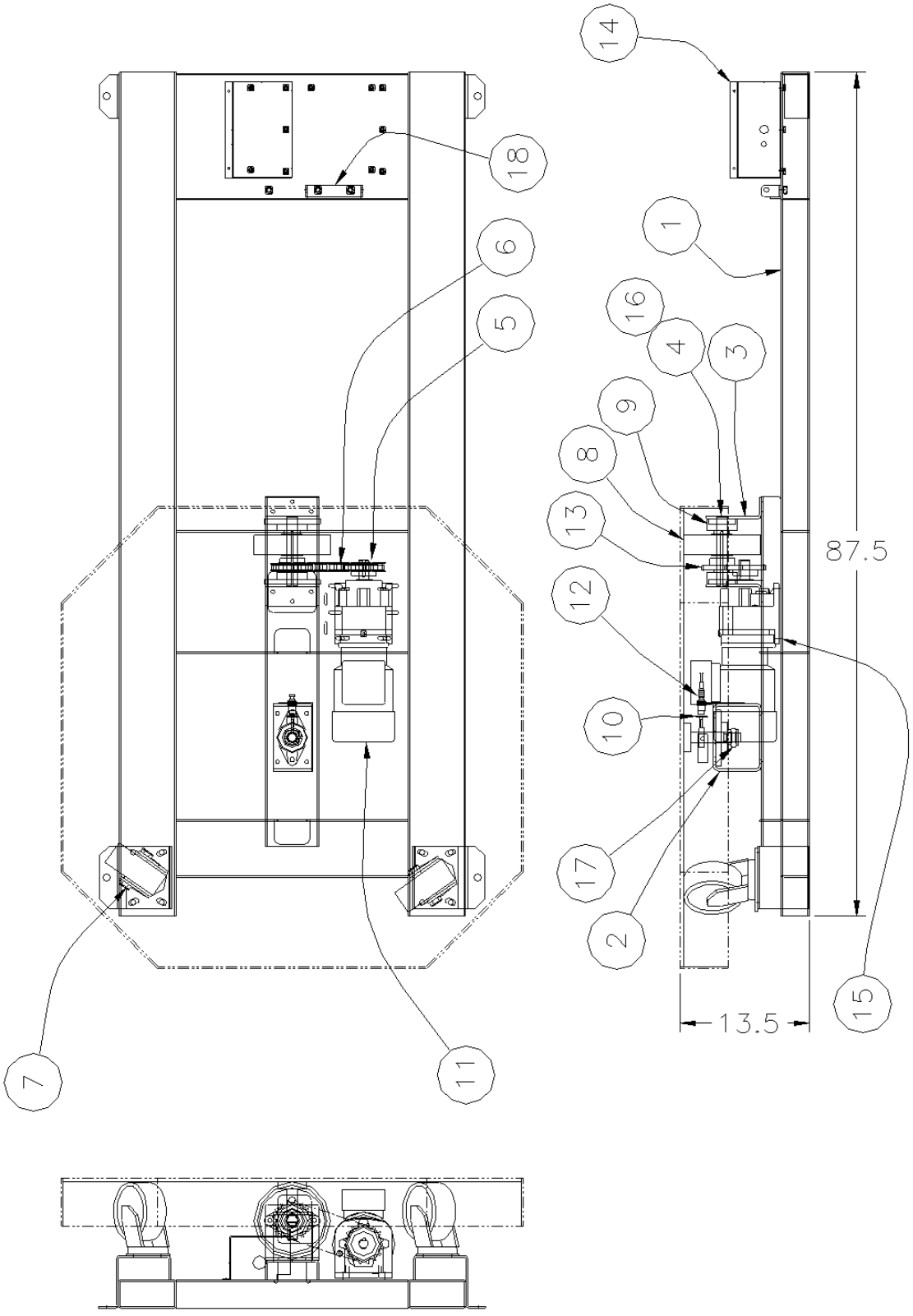
Parts available in inventory are highlighted. Non-highlighted parts may have longer lead times.

No.	Sub No.	Part Number	Description	Quantity
1		200627	FHCS, M10 x 20L	4
2		500460	TURNTABLE TOP, 65” DIA (1.65M)	1
3		300772	BELT, 154”	1
4		500752	CENTER PULLEY, NEW STYLE	1
5		303703	THRUST BEARING, BELT PULLEY	1
6A		700058	KING POST ASSEMBLY	1
6*		300012	SNAP RING, 42mm INTERNAL	
7*		500084	CENTER SHAFT, BELT PULLEY	
8*		304793	BEARING, 6004ZZ	
9*		500086	BEARING SEAT, BELT PULLEY	
10		200078	SHCS, M6 x 16L	4
11		500461	SENSOR SEAT	1
12		403556	PROXIMITY SENSOR, (PM12-04N)	1
13		500462.2	BRACKET, PROX DETECTION	1
14A		700060	CAM FOLLOWER ASSEMBLY	14
14*		300009	SNAP RING, 17mm EXTERNAL	
15*		500009	SHAFT , FOR CAM FOLLOWER	
16*		500010	PLASTIC HOUSING, FOR CAM FOLLOWER	
17*		305300	BEARING, 6203ZZ	
18A		700601	BELT RETURN ROLLER ASSEMBLY	1
18*		300009	SNAP RING, 17mm EXTERNAL	
19*		500370	BELT IDLER PULLEY	
20*		305300	BEARING, 6203ZZ	
21*		500371	SHAFT, BELT PULLEY	
22		200628	HEX HEAD TAP BOLT, M10 x 60L	1
23		200629	HHCS, M10 x 35L	4
24		300773	GEARMOTOR, TURNTABLE DRIVE	1
25		600088	MOTOR COVER (BOX) WELDMENT	1
26		500463	MOTOR BOX COVER PLATE	1
27		200851	PAN HEAD MACHINE SCREW, M4 x 10L	4
28		500464	PULLEY, TURNTABLE MOTOR DRIVE	1
28b		207303	PULLEY SET SCREW, M8 x 10L	2

29		600089	FIXED NUT WELDMENT	2
30		600090	TURNTABLE FRAME WELDMENT	1
31		500465	FRAME COVER PLATE	1
32		200154	PAN HEAD MACHINE SCREW, M4 x 6L	4
33		200630	HHCS, M12 x 35L	2
34		200140	NUT, M12	2
35		500759	SPACER, FOR TT MOTOR PULLEY	1
36		503768	WASHER	1

*****Part of an assembly

Optional High Profile Turntable Frame Assembly



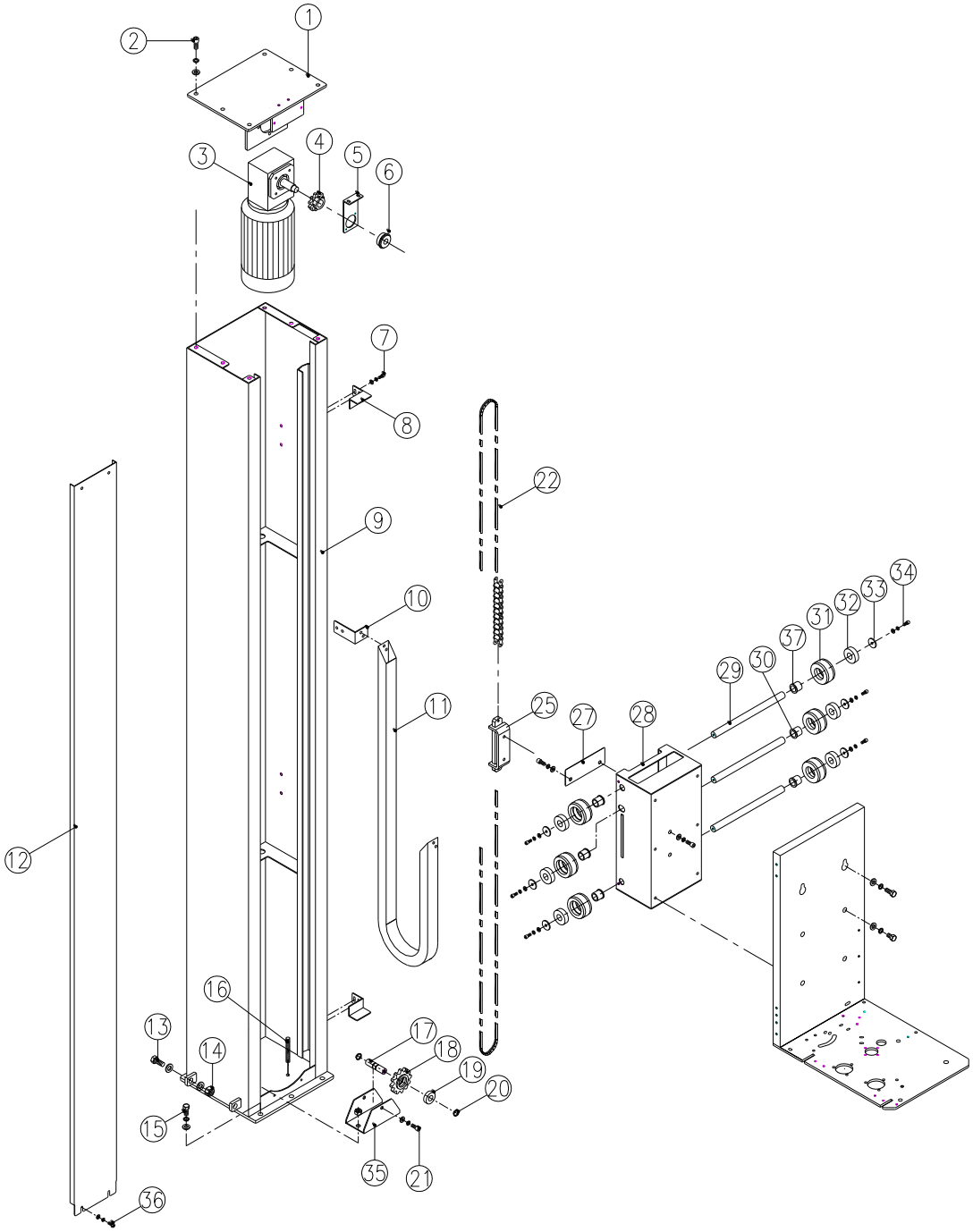
Optional High Profile Turntable Frame Parts List

Note
Although all parts are shown in the part list, some may not be available individually. Selected parts must be purchased in assembly.

Parts available in inventory are highlighted. Non-highlighted parts may have longer lead times.

No.	Sub No.	Part Number	Description	Quantity
1		640117	Frame Weldment	1
2		645414	Pivot Brace Weldment	1
3		535492.2	Support Bracket	2
4		525027	Drive Shaft, 1-3/16” Dia.	1
5		305683	Sprocket – 60B16 x 1	1
6		306921	HPTT Chain	2
7		301869	Swivel Caster	2
8		305285.2	Drive Caster	1
9		300506	Bearing, 2-Bolt Flange, 1-3/16”	3
10		645384	Proximity Sensor Trip Weldment	1
11		303831	Gearmotor, 1/2 HP	1
11a		404778	Male motor connector	1
11b		404779	Female motor connector	1
11c		404780	Male connector pin	4
11d		404781	Female connector pin	4
12		404168	Proximity Sensor	1
13		300505	Sprocket, 60BS16 x 1-3/16” Bore	1
14		600164	Electric cover	1
15		600337	Gearmotor ARD bracket	2
16		305637	Key - 1/4 x 3.5	1
17		200277	Nut, Jam, Nyloc, 1”	1
18		535237.2	Tilt Bracket (110” Tower Only)	1
N/S		645002	48” Square Turntable Top	1
N/S		645353	Optional: 60” Diameter Turntable Top	1

Tower Assembly



Tower Parts List

Note
Although all parts are shown in the part list, some may not be available individually. Selected parts must be purchased in assembly.

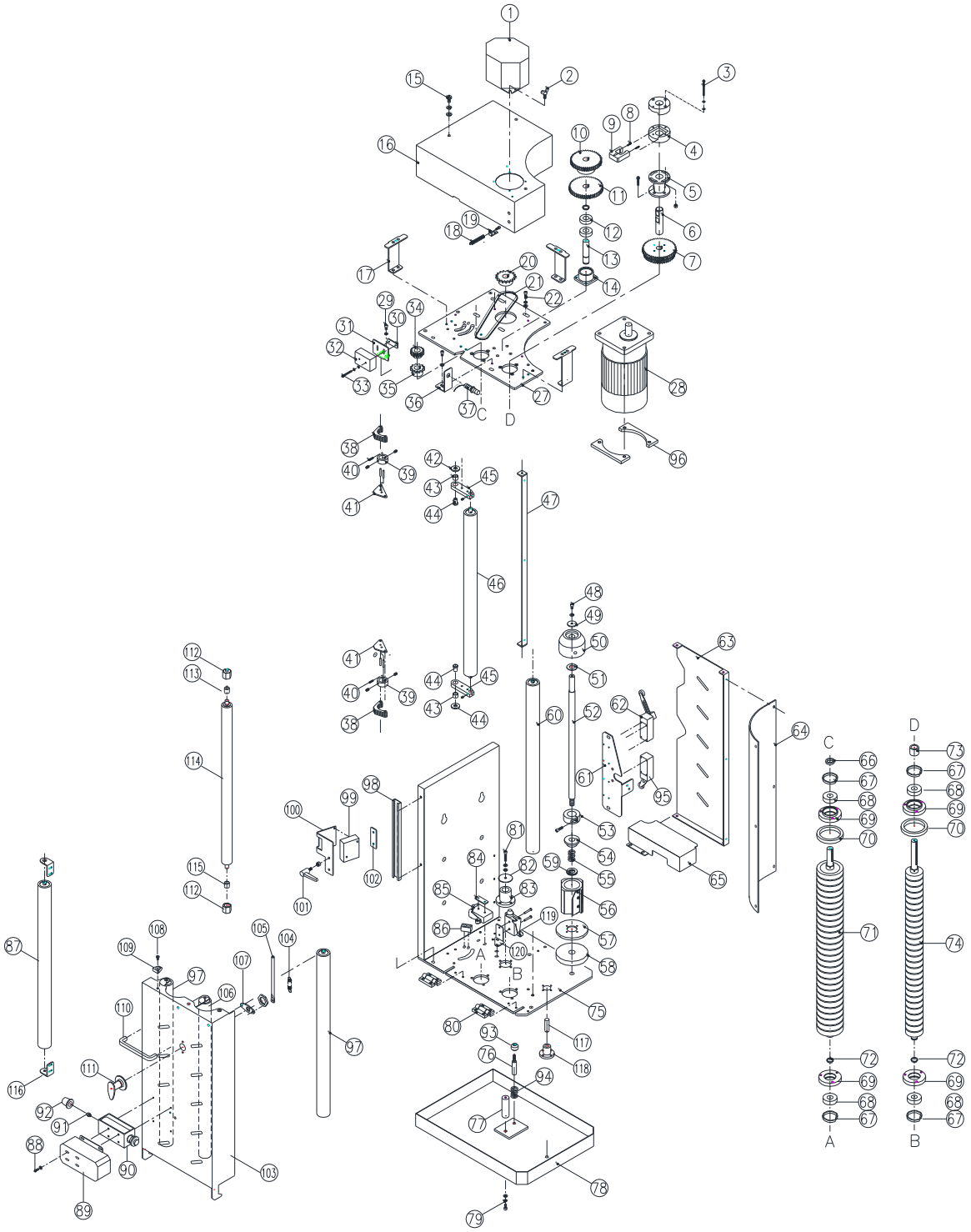
Parts available in inventory are highlighted. Non-highlighted parts may have longer lead times.

No.	Sub No.	Part Number	Description	Quantity
1		600091	TOWER COVER WELDMENT	1
2		207388	SHCS, M10 x 25L S.W. & W	4
3		300774	GEARMOTOR, CARRIAGE LIFT	1
4		300775	SPROCKET, DRIVEN	1
5		300776	BRACKET, GEARMOTOR SUPPORT	1
6		300020	BEARING, 6202-NR	1
7		200631	SHCS, M5 x 8L	4
8		500466	BRACKET, LIMIT TRIP	2
9		600092	TOWER WELDMENT, 80”	1
9		500483	TOWER WELDMENT – 110”	1
10		500467	BRACKET, E-CHAIN MOUNT	1
11		300777	E-CHAIN – 80” TOWER	1
11		500484	E-CHAIN – 110” TOWER	1
12		500468	COVER PLATE, 80” TOWER	1
12		500487	COVER PLATE, 110” TOWER	1
13		200630	HHCS, M12 x 35L	2
14		200140	NUT M12	2
15		207388	SHCS, M10 x 25L S.W. & W	6
16		200632	THREADED ROD, M10 x 60L	2
17		500469	SHAFT, IDLER SPROCKET	1
18		300778	SPROCKET, IDLER	1
19		300017	BEARING 6002ZZ	1
20		300008	SNAP RING, 15mm EXTERNAL	2
21		200804	SHCS, M8 x 20L S.W. & W	1
22		300029	CHAIN – 80” TOWER	1
22		500488	CHAIN – 110” TOWER	1
25A		700063	CHAIN ATTACHMENT ASSEMBLY	
27		500470	BRACKET, CARRIAGE LIFT	1
28		600093	CARRIAGE TROLLEY WELDMENT	1
29		500471	GUIDE WHEEL SHAFT	3
30		500472	SPACER, INNER	6
31		500473	GUIDE WHEEL	6
32		305300	BEARING, 6203	6
33		500474	SPACER, OUTER	6
34		200802	SHCS, M6 x 16L S.W. & W	6

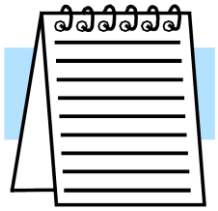
35		500475	BRACKET, LOWER IDLER PROCKET	1
36		207844	SHCS, M6 x 10L S.W. & W	4
37		PJ201600	RING	0

*****Part of an assembly

Film Carriage/Elevator Assembly



Film Carriage/Elevator Parts List



Note
Although all parts are shown in the part list, some may not be available individually. Selected parts must be purchased in assembly.

Parts available in inventory are highlighted. Non-highlighted parts may have longer lead times.

Key No.	Part No.	Description	Q'TY
1	600095	SUPPORTING COVER	1
2	200636	WING NUTS M5x12L	2
3	200766	SCREW	4
4	500661	HANDLE	2
5	500662	GEAR PULL WHEEL	1
6	500663	POSITION SHAFT	1
7	301346	SLIP GEAR 200% & 250%	1
8	301365	SPRING	2
9	500684	SAFETY BUTTON	1
10	301345	FIXED GEAR 41T→250%	1
11	301344	FIXED GEAR 44T→200%	1
12	300807	BEARING 6003ZZ (CWB)	2
13	500685	FIXED GEAR SHAFT	1
13a	300009	SNAP RING, STW-17, 17mm Ext.	2
14	500686	BEARING SEAT	1
14a	301842	SNAP RING RTW-35, 35mm INT.	2
14b	200802	SHCS, M6 x 16L & S.W & W	4
15	207844	SCREW M6 x 10L & S.W & W	3
16	600096	TOP COVER	1
17	500674	TOP COVER SHAFT	3
18&19	500047	SPRING & SEAT	2
20	500019	CHAIN GEAR 17T	1
21	300846	CHAIN	1
22	204833	SCREW M8 x 30L	4
23			
24			
25			

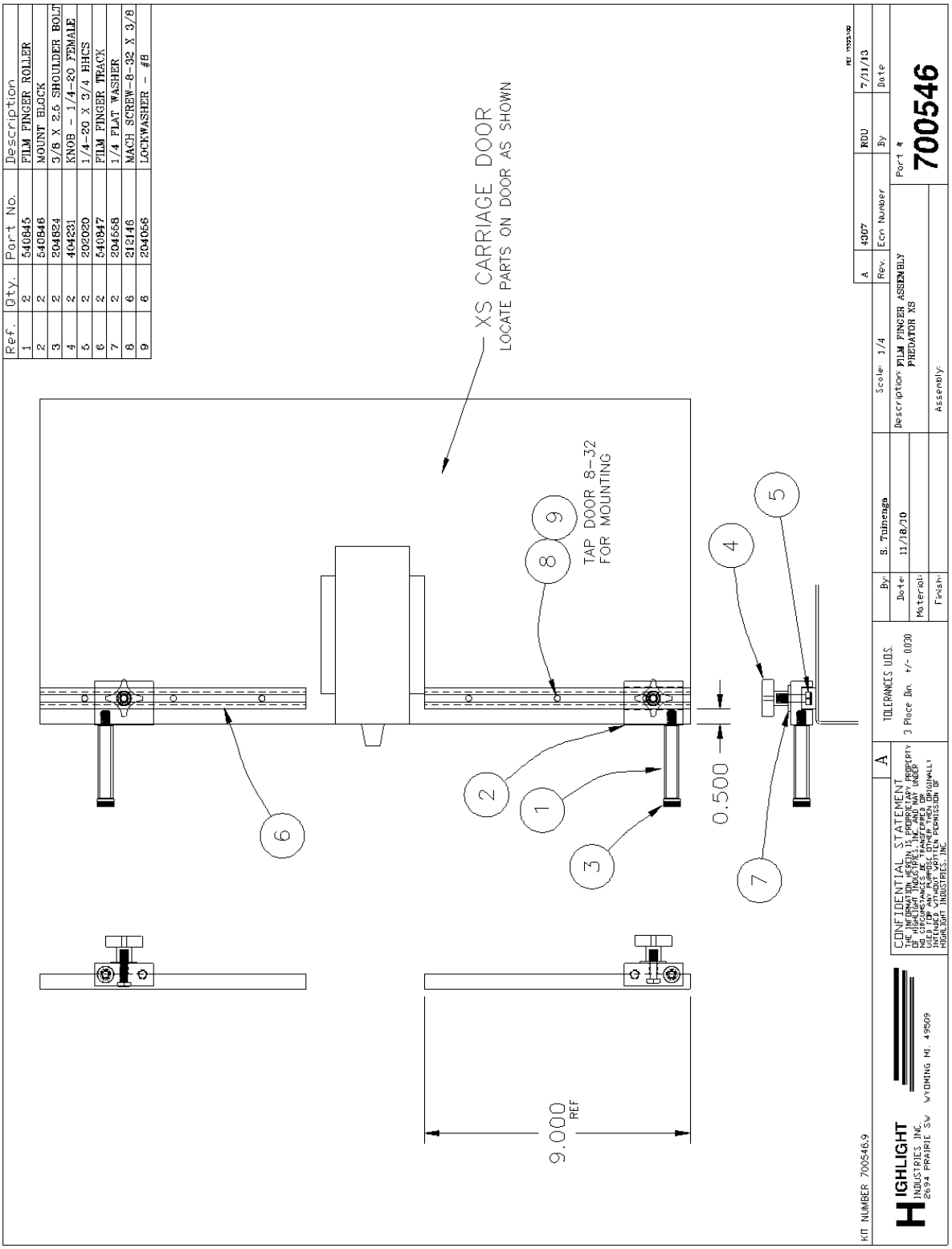
26			
27	500671	CARRIAGE UNIT UPPER SEAT	1
28	301358	MOTOR SV-A10	1
29	200802	SCREW M6x16L & S.W & W	2
30	500669	FIX PIECE	1
31	500672	LIMIT FIXED SEAT	1
32	400637	LIMIT SWITCH TZ-7110	1
33	200106	SCREW M4 x 35	2
34	301343	GEAR →200% &250%	1
35	301359	12 T CHAIN WHEEL	1
36	500670	PROXIMITY SWITCH SEAT	1
37	403556	PROXIMITY SENSOR PM12-04N	1
38A	700074	DANCER STOP ASSEMBLY	1
38*	500071	BLOCK	10
39*	500073	RING	2
39b*		SET SCREW, M6 x 10L	2
40*	500074	SPRING	2
41*	500072	PLATE	2
41b*	201263	PIN, 4MM x 16L	2
42A	700479	DANCER BAR ASSEMBLY	2
42*	500044	RING	2
43*	300024	BEARING HK 1010	2
44*	500046	SWINGING BAR SHAFT	2
45*	500687	MOVING SHAFT SEAT	2
46*	700478	ROLLER SET	1
47	500689	SUPPORTING SHAFT	1
48A	700466	FILM HOLDER ASSEMBLY	1
48*	200802	SCREW M6 X 16L	1
49*	500474	RING	1
50*	700457	RING (UPPER)	1
51*	500691	RING	1
52*	500692	FILM SEAT SHAFT	1
53*	503614	ADJUSTING RING	1
54*	503615	RING (LOWER)	1
55*	500113	SPRING	1
56*	500107	FILM CORE HOLDER	1

57*	500694	BRAKE DISC	1
58*	500695	FRICTION SEAT	1
59*	300026	BEARING NTB1730	1
60	700476	ROLLER SET	1
61	500664	LIMIT SEAT	1
62	400639	LIMIT SWITCH TZ-8108	1
63	500665	SIDE PLATE	1
64	500666	ACRYLIC DOOR	1
65	600159	TERMINAL COVER	1
66	500698	ISOLATED RING	2
67A	700481	BEARING SEAT ASSEMBLY	4
67*	302145	SNAP RING 42mm INT.	4
68*	305998	BEARING	4
69*	500701	BEARING SEAT	4
70	500700	PROTECTION RING	2
71	600098	PRE STRETCH SHAFT	1
72	300009	C-RING S-17	2
73	500699	ISOLATED RING	1
74	600099	PRE STRETCH ROLLER	1
75	600173	ELEVATOR UNIT SEAT	1
76	500677	SENSOR IDLE	1
77	500678	PEDAL SHAFT	1
78	600097	PEDAL	1
79	200084	SCREW M8x20L	1
80	301360 205248	HINGE SHCS, M5 x 12L & S.W & W	2 8
81	200802	SCREW M6x16L	1
82	500676	SAFE PLATE	1
83	301363	LINEAR BUSHING	1
84	500669	FIX PIECE	2
85	400671	LIMIT SWITCH	1
86	500048	BLOCK	2
87	700505	ROLLER SET	1
88	200851	SCREW M4x10L	4
89	600176	COVER	1
90	300719	SOLENOID 24 VDC TAU-1585	1

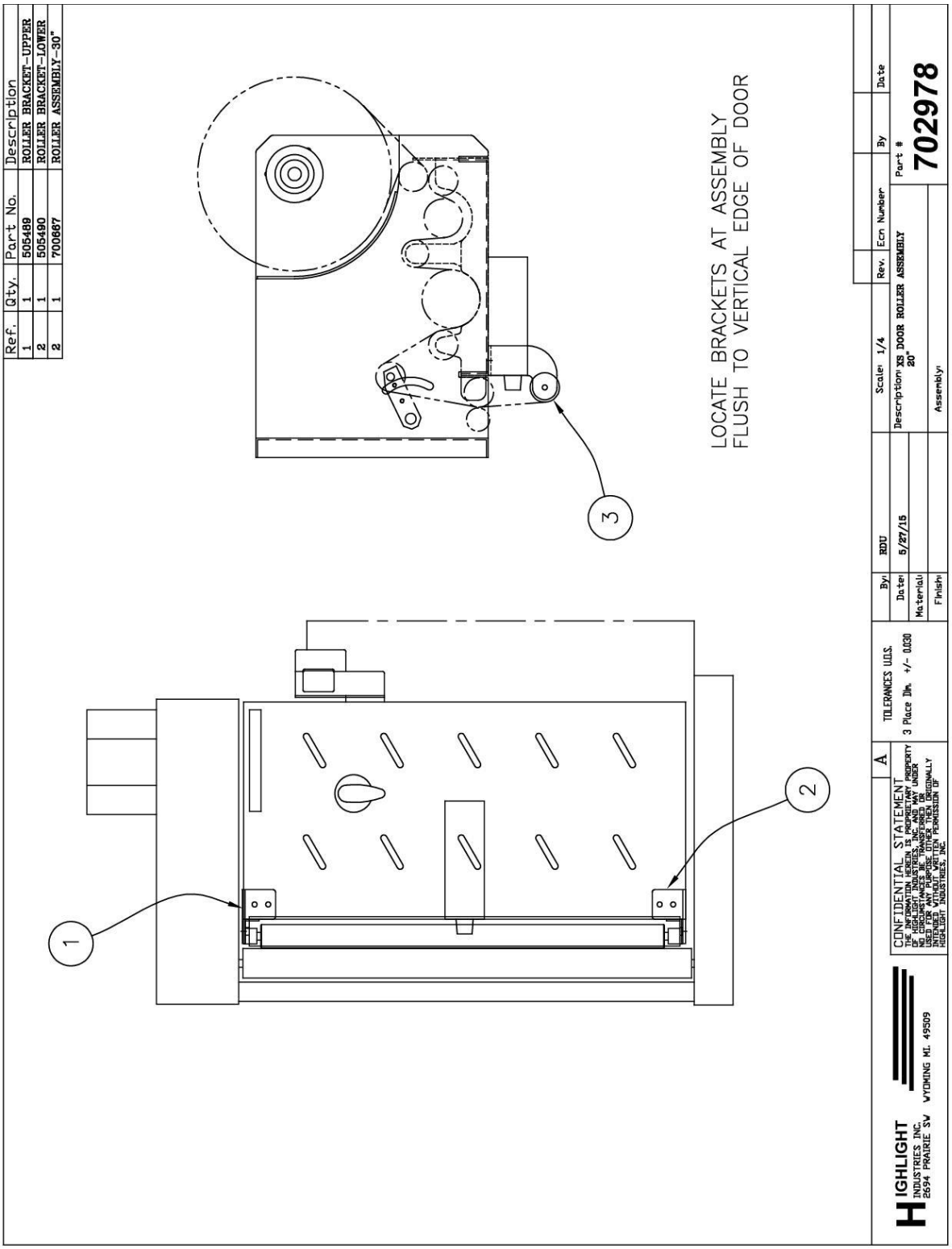
91	300720	PIN PUNCH	1
92	500761	PLUG	1
93	505600	RING	1
94	500113	SPRING	1
95	400639	LIMIT SWITCH TZ-8108	1
96	505599	TAPPED MOTOR MT. PLATE	2
97	700505	ROLLER ASSEMBLY	2
98	500762	TRACK PLATE TBC-N	1
99	400643	PHOTO SENSOR A3R-2MX	1
100	500764	PHOTO SENSOR SEAT	1
101	700506	HANDLE BAR 6x13	1
102	500763	FIXED PIECE	1
103	600175	SAFETY DOOR	1
104	301364	SPRING	1
105	500682	DOOR BOLT	1
106A	700475	ROLLER ASSEMBLY	1
107	500683	PLATE	1
108	200634	SCREW	1
109	500057	SECURITY KEY	1
110	301896	DOOR HANDLE	1
111	301361	DOOR KNOB	1
112	500765	ONE WAY ROLLER SEAT	2
113	301369	BEARING HK1010	1
114	700507	ONE WAY ROLLER ASSEMBLY	1
115	301370	BEARING HK 1012	1
116	500760	ROLLER SEAT	2
117	307313	PEDAL SHAFT	1
118	307314	LINEAR BUSHING	1
119	400671	LIMIT SWITCH ML-7141	1
120	400673	LIMIT SEAT	1

* Part of an assembly

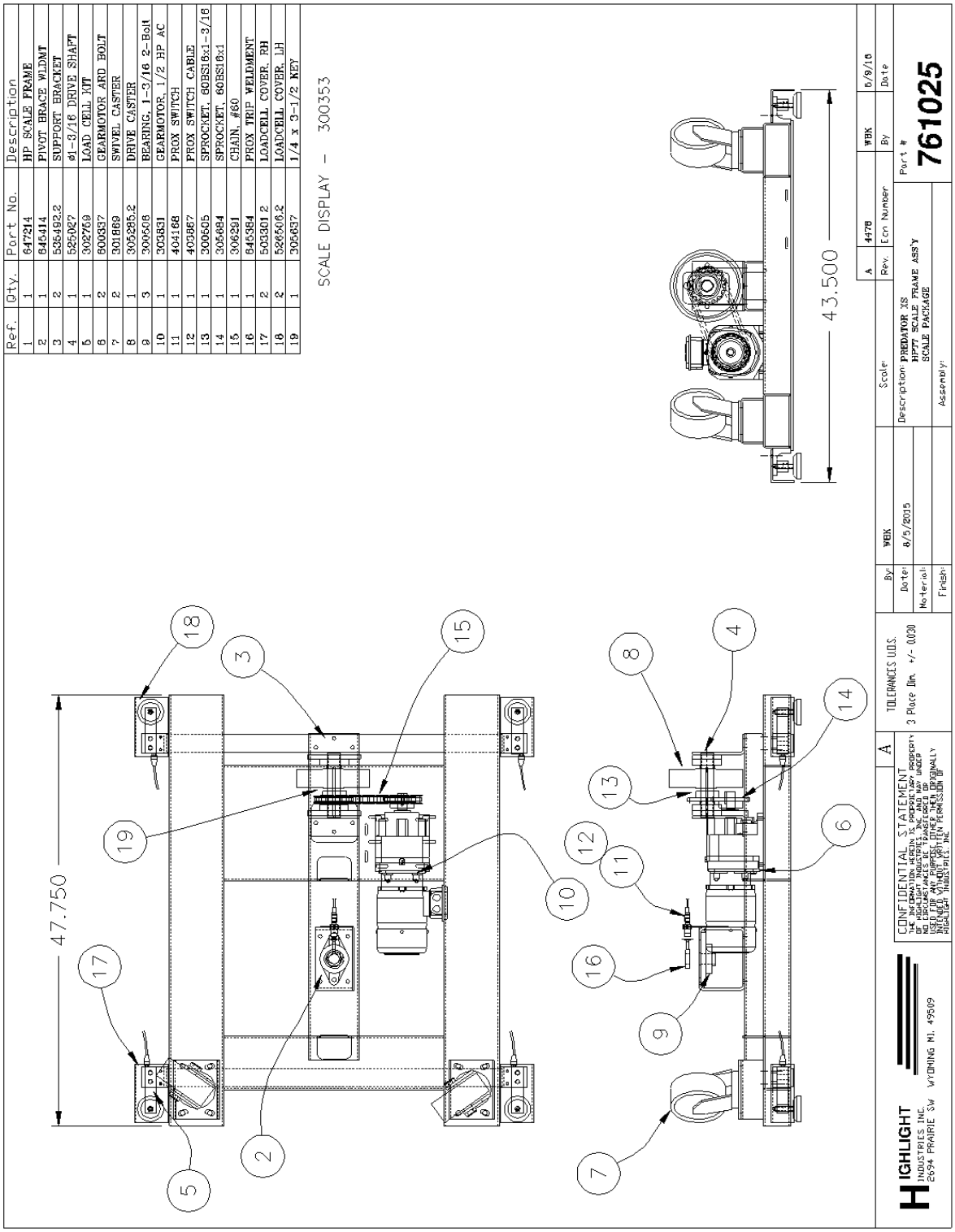
Optional Film Finger Assembly



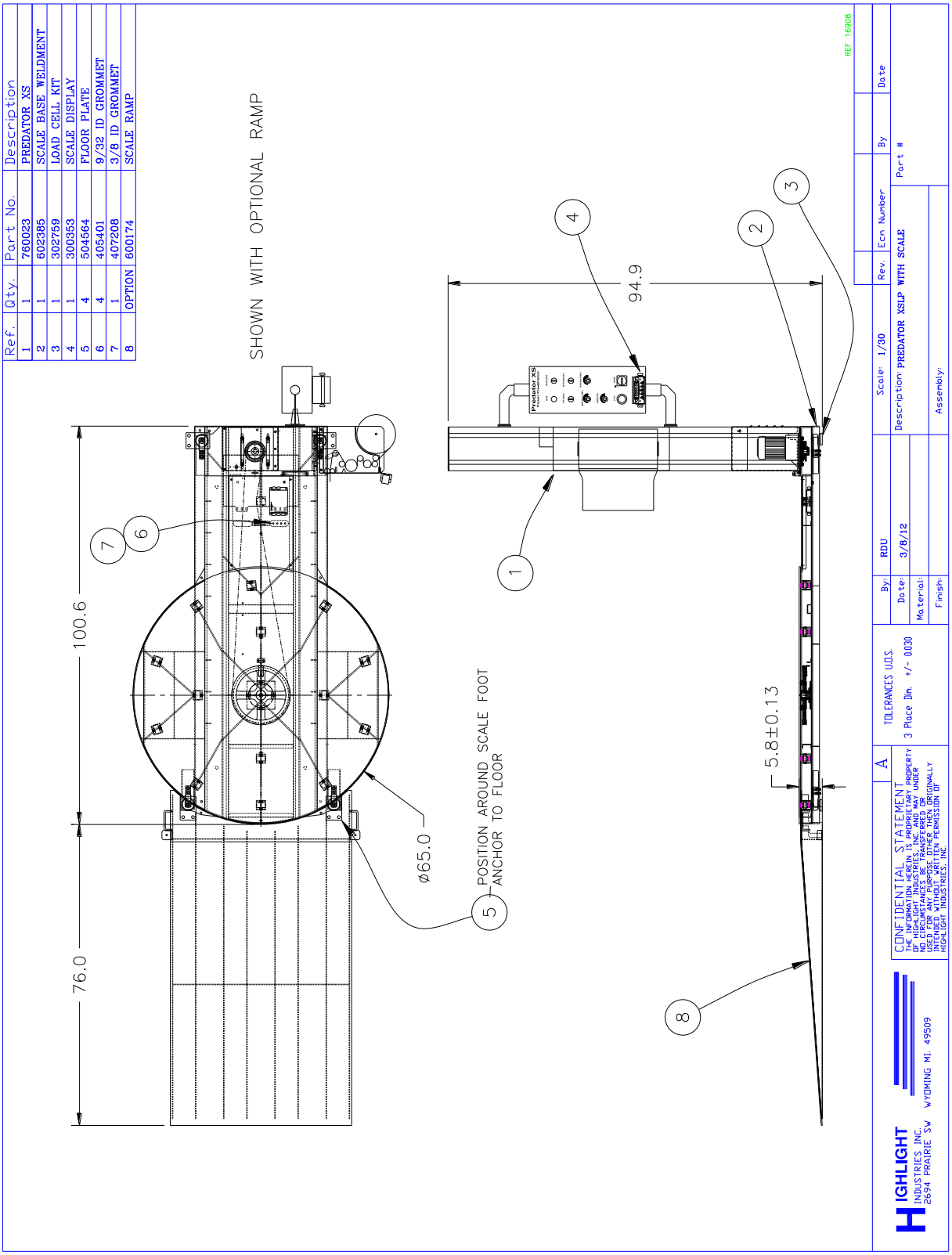
Optional Carriage Door Roller



Optional Split Frame HP Turntable with Scale

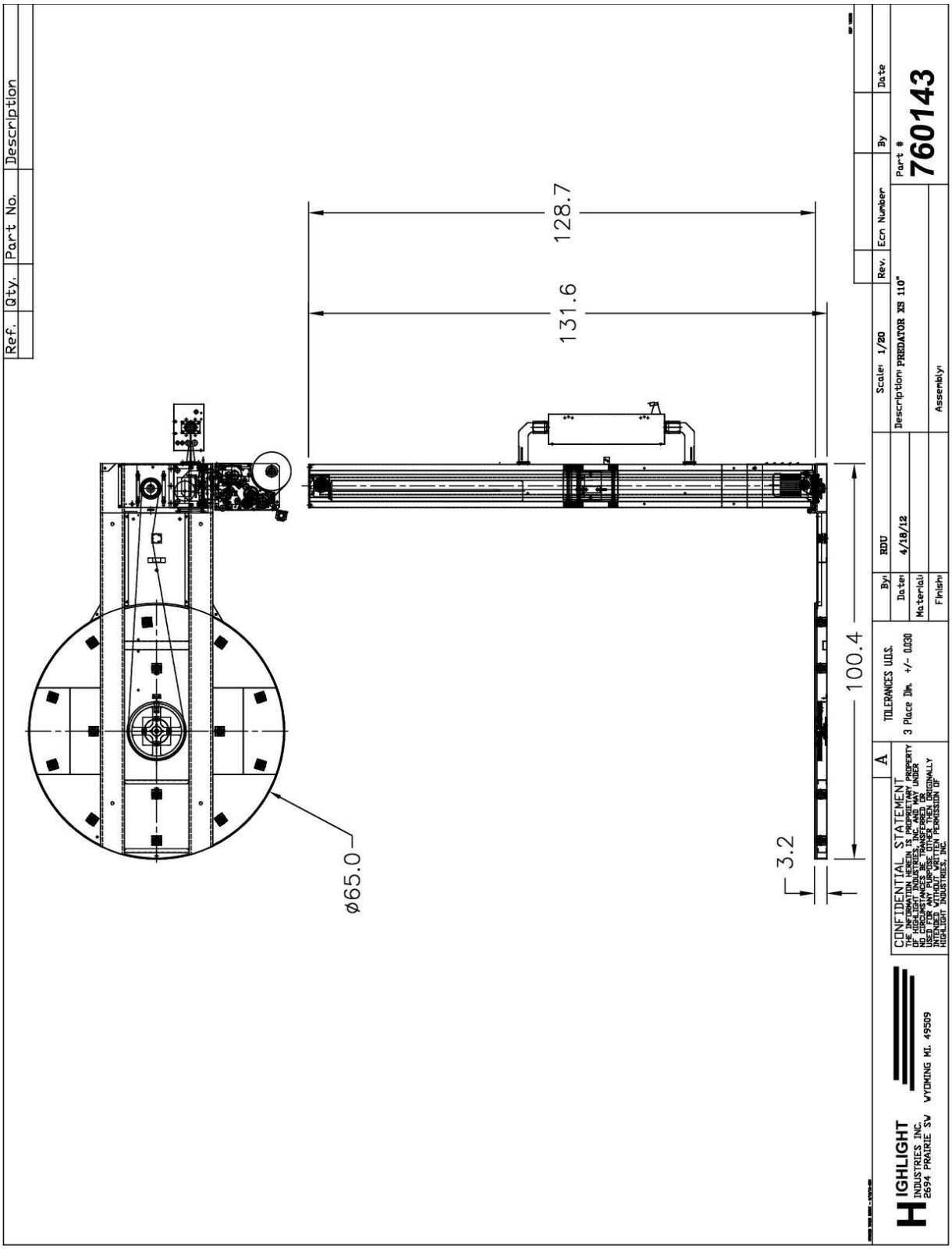


Optional LP Turntable with Platform Scale

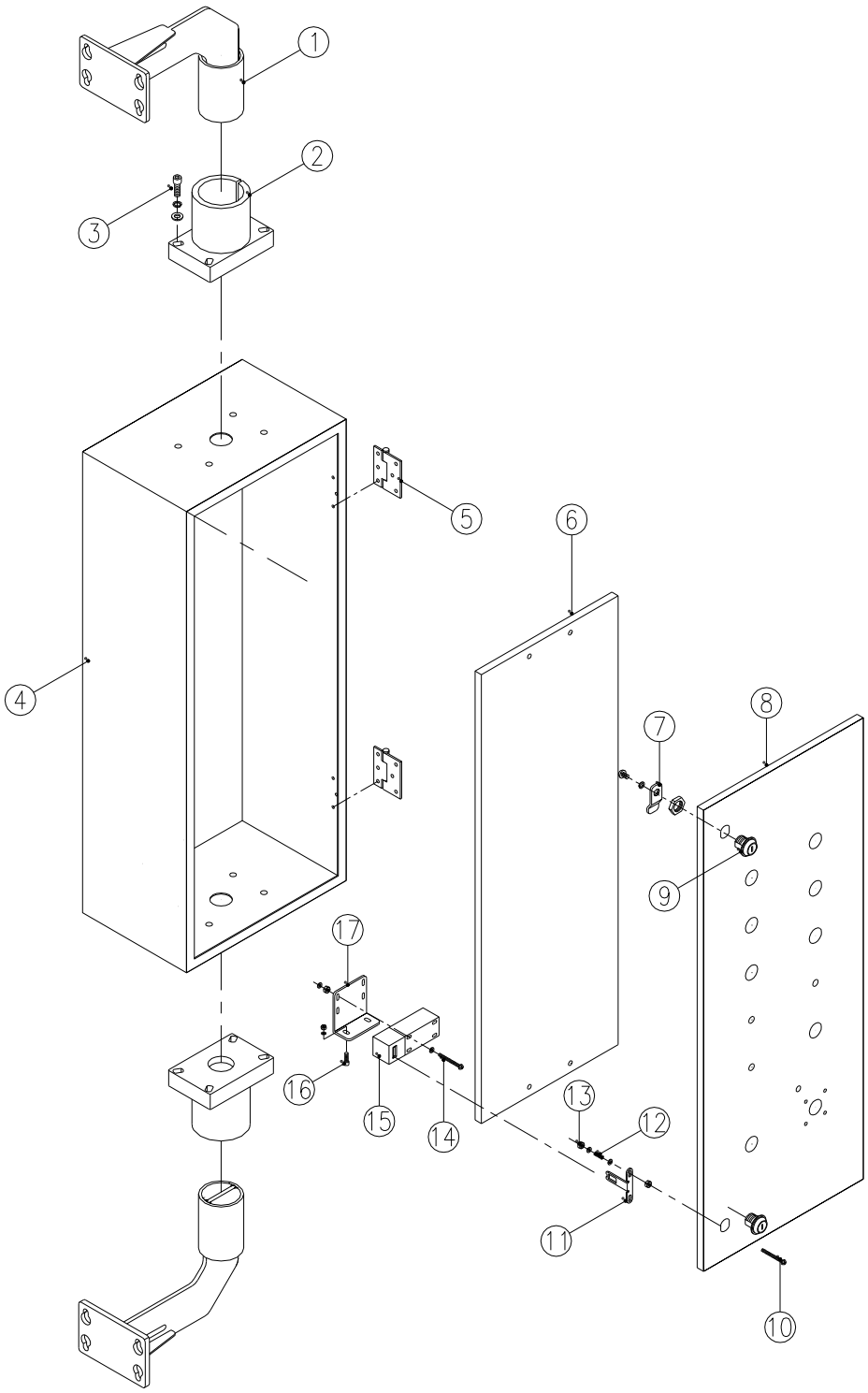


Ref.	Qty.	Part No.	Description
1	1	760023	PREDATOR XS
2	1	602385	SCALE BASE WELDMENT
3	1	302759	LOAD CELL KIT
4	1	300353	SCALE DISPLAY
5	4	504564	FLOOR PLATE
6	4	405401	9/32 ID GROMMET
7	1	407208	3/8 ID GROMMET
8	OPTION	600174	SCALE RAMP

Optional Extended Tower 110”



Control Box Assembly



Control Box Parts List

Note
Although all parts are shown in the part list, some may not be available individually. Selected parts must be purchased in assembly.

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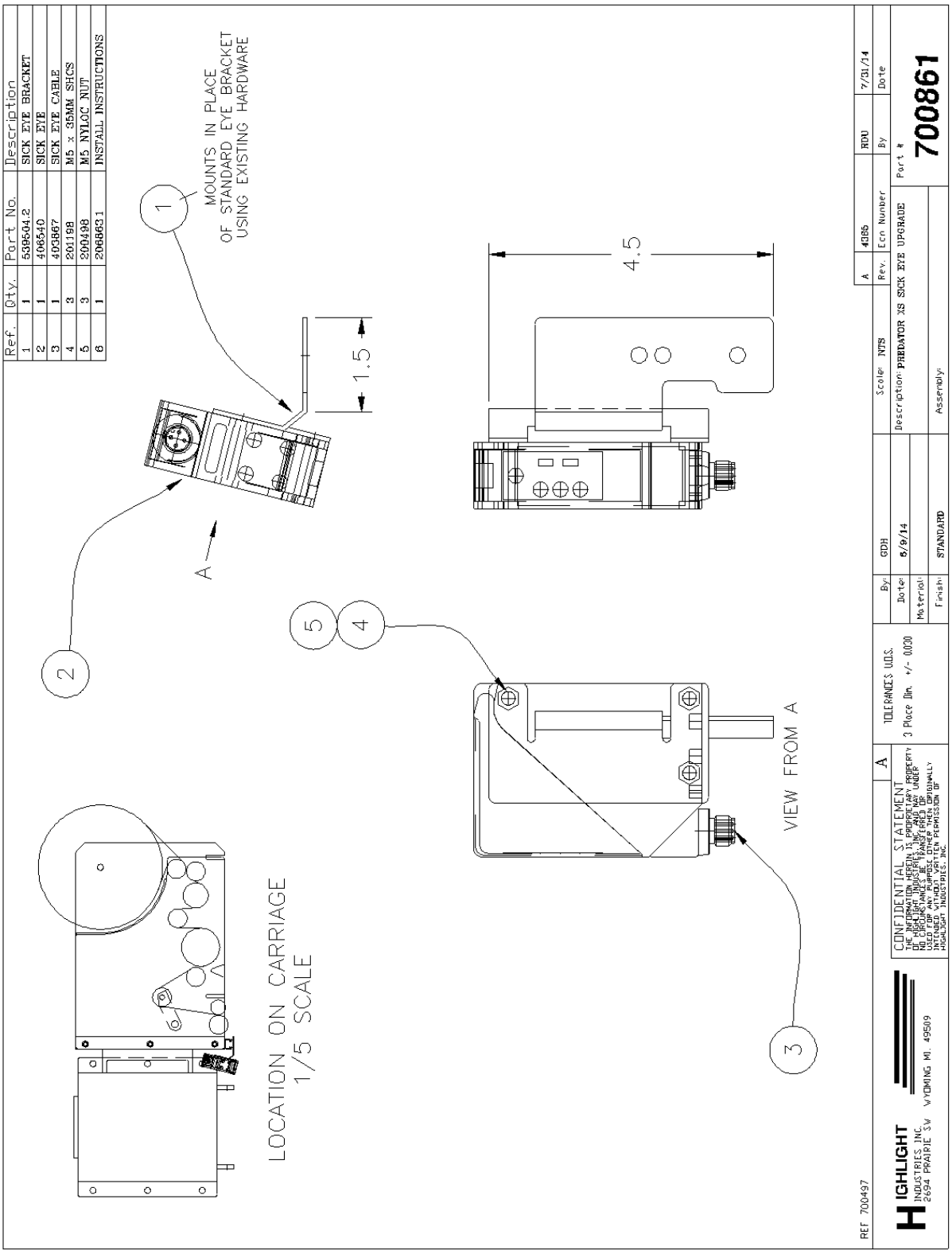
No.	Sub No.	Part Number	Description	Quantity
1		600152	SUPPORT BRACKET	2
2		600153	MOUNT BRACKET	2
3		200086	SHCS, M8 x 40L	8
4		600154	ELECTRICAL BOX	1
5		500106	HINGE	2
6		500479	SUBPANEL	1
7		300048	LOCK PLATE	2
8		600155	ELECTRICAL BOX DOOR	1
9		306532	LOCK, W/ KEY	2
10		200124	PHILLIPS SCREW, M4 x 25L	1
11		500080	KEY, SAFETY SWITCH	1
12		500016	SPRING	2
13		200788	NUT, NYLOC, M4	2
14		200106	MACHINE SCREW, M4 x 35L	4
15		400644	SAFETY SWITCH	1
16		200101	MACHINE SCREW, M4 x 12L	2
17		500105	SECURITY SWITCH BRACKET	1

Advanced IR Eye Upgrade - Optional



206863.1: PREDATOR XS PHOTO EYE UPGRADE OPTION SETUP

STEP 1 Before mounting the new advanced diffused photo eye, use a Phillips Head screw driver to open the top cover of the photo eye. The screw is located at the base on the back of the eye. Open the cover, and remove the cover located inside the eye. Ensure that the two switches are set to D and NPN. Use the range potentiometer to set the desired sensing distance, in meters, between 0 and 2.5 meters (0-8ft).

STEP 2 With the sensing distance and settings selected, mount the eye on the same photo eye rail as the old eye. Wire the photo eye per the wiring instructions below. With the advanced diffused photo eye mounted in place, set the object to be detected at the desired distance, with the surface to be detected directly in front of the sensor and perpendicular to the beam. NOTE: Minimum target size required for proper operation is about 1 square foot for each 10 feet of sensor-to-object distance.

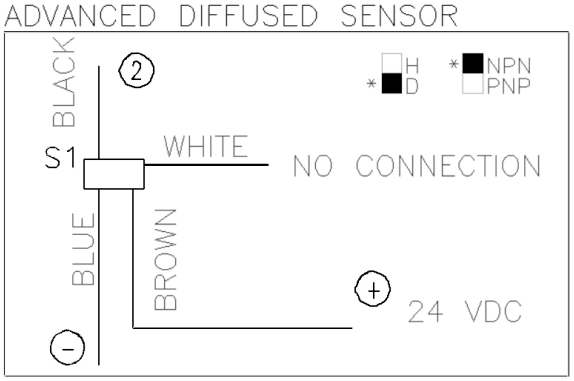
STEP 3 Verify the range setting by moving the object away from the sensor (yellow LED should go out), then back towards the sensor (LED should come on again at about the same distance as before). NOTE: It is best to set the range with the object at the maximum distance at which you expect to detect that object.

PREDATOR ADVANCED DIFFUSED PHOTO EYE WIRING

After mounting new advanced diffused eye and bracket to carriage, cut old photo eye cable located in the top of carriage. Cut and strip wire ends and connect new eye cable and old eye cable to 5 pin terminal block provided.

Wiring Table

Original Cable	New Cable
Brown+	Brown+
White-	Blue-
Blue-	Blue-
Gray	Black
Black (No Connect)	White (No Connect)



8

Notes