

S-T  **INDUSTRIES, INC.**

SCHERR-TUMICO

INSTRUCTION MANUAL

VIDEO INSPECTION SYSTEM

8700/8788 SERIES

MADE IN USA

20-8700 SERIES Video Inspection System

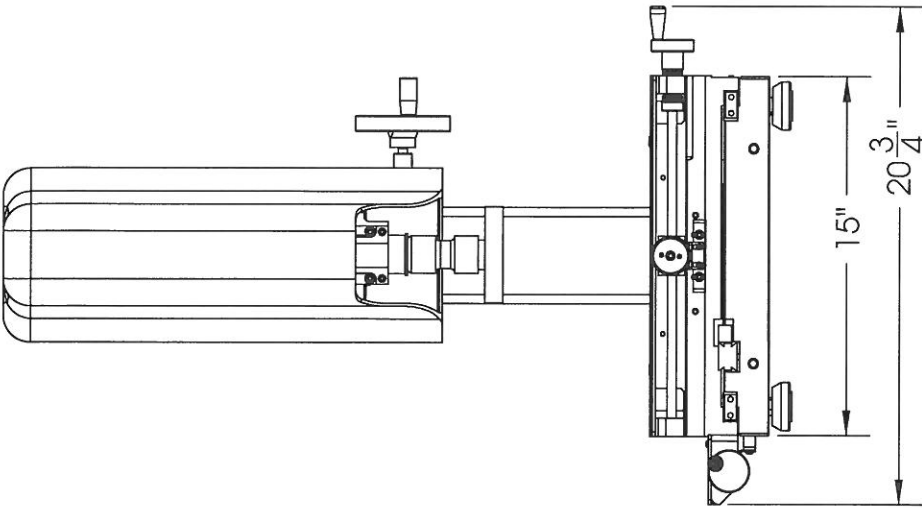
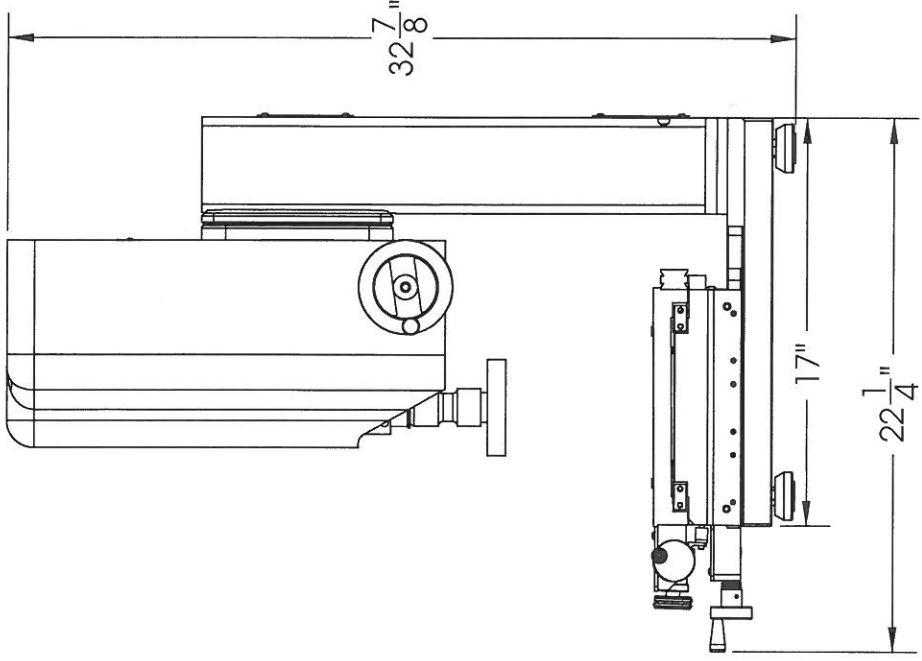
INSTRUCTION MANUAL

INTRODUCTION

This manual contains the instructions for the installation, operation and maintenance of the SCHERR-TUMICO 20-8700 Series Video Inspection System. Due to S-T Industries' policy of continued improvement of products, the right to change without notice is reserved. The information contained in this manual may vary somewhat from the machine with which it is to be used. To fully utilize the capabilities of this video inspection system, a comprehensive study of this manual is necessary. The 20-8700 Series Video Inspection System sets new standards in functional design, ease of use, rigidity and accuracy. Over 60 years of manufacturing experience combined with worldwide factory service make **S-T Video Inspection Systems your best buy.**

TABLE OF CONTENTS

Dimensions.....	3
Specifications.....	4
Installation and Setup.....	5
Power Switches.....	6
Remote Light Control.....	6
Optical System.....	6
Illumination Systems.....	6
Operation.....	7
Options.....	7
Calibration - Stage.....	8
Calibration – Squareness.....	9
Digital Readout Systems.....	10
Maintenance.....	11
Lubrication.....	11
Parts List.....	12



Specifications

Measuring Stage: Top plate 10" x 14"; Travel 4" x 8"

Optional: Top plate 10" x 18"; Travel 4" x 12"

Encoder Resolution .00005"/.001mm.

Focus motion (Z-axis): Travel 6";

Allowable Workload: 25 lbs. evenly distributed.

Illumination: LED ring light and LED back light; Separate controls for 0-100% intensity. (AUTO setting for programmable light control)

Optics: 1-6X zoom lens. Approximately 35X-210X magnification on 17" monitor.

Camera: Color, 1/2" CCD

Monitor: VGA flat panel, 17" diagonal

Crosshair Generator: STX-1000, VGA output, single crosshair

Electrical: 100-240 Volts, 50/60 Hz

Weight: 150 lbs. Crated 200 lbs.

Installation Procedure

IMPORTANT: Lift unit to a sturdy surface for operation using 4 screw-in lift handles. Never lift by measuring stage or by Z-axis column.

1. Adjust 4 leveling feet under base until stable. There should be no noticeable rock of the base on the operational surface.
2. Remove shipping clamps from ends of bearings (one for each axis). Replace screws after removing clamps. For Z-axis (focus), first remove plastic cover. Clamp will be at the top of bearings. Replace screws and cover. Remove any packing material from cables exiting the bottom of the Z-axis column and the back of the unit.
3. Connect camera and light cables to light control box.
4. Plug end of ring light and profile fiber optic bundles into their respective sockets in the rear panel of the light box and secure with setscrews.
5. Install stage glass by aligning radius corners with radiused corners in top plate. Adjust for level if necessary with leveling screws underneath glass. (For best results, use dial indicator on glass to check level) Lock in place by tightening 2 corner expanding plastic bushings. Note: For motorized systems, this step will be performed after the motors are activated.
6. Place video monitor, crosshair generator and digital readout in desired locations. Connect scale cables to digital readout. Plug in respective cables. Power cable from crosshair goes to light control box. Video cable from machine goes to crosshair generator; video cable from monitor goes to crosshair generator.
7. If this system has video edge detection (VED), connect the video cable from the machine to the input of QC300 or QC5000 digital readout.
8. Connect power cables of digital readout, monitor, and light control to the power strip. If this is a CNC system, connect motor cables, joystick, and CNC cables using key in Quadra-Chek manual.

You are now ready to power up!

Main Power

A power strip will serve as the main On/Off switch for the system. A universal power supply provides power to all low voltage components and accepts 100-240 volts, 50-60 Hz input power. This includes the camera, crosshair generator and LED lighting system. Digital readouts and monitors have built-in power supplies that accept 100-240 volts, 50-60 Hz input power.

Remote Light Control

The remote light control allows convenient access to the light intensity adjustment.

The Profile Illumination knob controls bottom lighting. Rotate clockwise to increase light, counterclockwise to decrease.

The Surface Illumination knob controls top lighting. Rotate clockwise to increase light, counterclockwise to decrease.

Optical System

A 6X zoom lens is standard. When used in standard configuration, this provides approximately 35X to 200X magnification on screen.

Other attachments are available to modify the magnification. Consult S-T Industries for information.

Video Equipment

Standard system includes a 17" VGA monitor. (Exact size may vary slightly due to availability) Other sizes are available. Units with VED have lower on-screen magnification.

Standard system includes color camera.

Illumination

LED backlight and ringlight. Auto feature on light control allows computer to control light intensity during measuring program.

Operation

Normal operation of this video inspection system is similar to that of an optical comparator. (Make sure all components are powered up and working properly before proceeding with this section.)

a. Place part on glass plate in approximate orientation to be measured. Secure with modeling clay if necessary. (Part fixtures to hold parts square are always recommended)

b. Find feature to be measured by adjusting zoom lens to lowest setting. Adjust lighting to best illuminate part as you adjust focus.

c. When feature is located, adjust zoom lens to preferred setting, adjust lighting and refine focus if necessary.

d. To measure, move edge of feature to crosshair and zero digital readout. Move other edge of feature to crosshair and read measurement on digital readout.

This is a very simple description of the measurement process. Many enhancements are available including skewing, geometric calculations and video edge detection.

Options

1. Video Edge Detection (VED).
2. Motor control
3. CNC motor control (X, Y and Z axis) with VED, auto focus and light control

Measuring Stage Calibration

Linear Accuracy

The measuring stage linear accuracy can be calibrated by using S-T Industries' 74-0500-00 calibration plate. Use the highest zoom setting when calibrating video inspection systems.

1. Place the calibration plate on the stage so it is resting on the three rubber pads and so the longer side is parallel with the X axis.
2. Focus on the 6" or 150mm scale.
3. Move the stage all the way to one end of its travel and align the end mark of the calibration scale with the vertical screen crosshair. Move the stage back and forth and see that the line remains on the center of the crosshair. Adjust the plate as necessary until it is parallel to the X stage motion.
4. Realign the end mark with the crosshair.
5. Zero the X axis display on the DRO and move the stage until the other end of the scale aligns with the crosshair. Note: Care must be taken to be consistent when aligning scale marks to the crosshair.
6. The X axis display should read the same as the scale length; 6.00000" or 150.000mm. If it does not, consult your DRO manual and adjust LEC (Linear Error Correction) until the reading is correct.
7. Return to the end mark of the scale, zero the X axis display, if necessary, and move to the next increment on the scale (1.0" or 10mm). Record the value and repeat for each increment.
8. It will be necessary to reposition the plate to the other end of the stage and repeat the procedure to calibrate the entire length.
9. To calibrate the Y axis, rotate the calibration plate so it is aligned with the Y axis. Repeat steps 1-7 using the Y axis.

Measuring Stage Calibration

Stage Squareness

The measuring stage linear accuracy can be calibrated by using S-T Industries' 74-0500-00 calibration plate. Use the highest zoom setting when calibrating video inspection systems.

1. Place the calibration plate on the stage so it is resting on the three rubber pads and so the longer side is parallel with the X axis.
2. Focus on the large crosshair in the center of the plate.
3. Move the stage back and forth to see that the horizontal line stays on the crosshair. Adjust the calibration plate if necessary.
4. Move the stage until the end of the vertical line of the crosshair is aligned with the screen crosshair.
5. Zero the X and Y axis displays on the DRO.
6. Move the stage in the Y direction only until you reach the end of the line or the end of stage travel. If the line has moved away from the crosshair in the X direction, move the stage until it lines up again.
7. The squareness is the deviation of the X axis divided by the length of travel along the Y axis.

Digital Readout Systems

The 8700 Series Video Inspection System comes with several optional digital readout systems.

20-8700-01 - 4" x 8" travel stage with standard digital readout system, QuadraChek 120 2-axis DRO. Standard features include INCH/MM, INC/ABS and PRINT.

20-8701-01 – 4" x 12" travel, features same as above

20-8700-02 - 4" x 8" travel stage with QuadraChek 220 geometric digital readout system. DRO has all standard features plus geometric calculations including point, line, circle, distance, angle and skew and programmability.

20-8701-02 – 4" x 12" travel, features same as above

20-8700-03 - 4" x 8" travel stage with QuadraChek 320 geometric digital readout system. DRO has all features of QC 220 plus built in monitor with Video Edge Detection (VED) and touch screen control.

20-8701-03 – 4" x 12" travel, features same as above

20-8700-04 - 4" x 8" travel stage with QuadraChek 5200 geometric digital readout system. DRO has all features of above system and includes PC computer with WINDOWS^R based QC 5200 software. Unique features are graphic representation of part features as they are measured, mouse driven commands and unlimited programmability.

20-8701-04 – 4" x 12" travel, features same as above

20-8788-00 - 4" x 8" travel stage with QuadraChek 323 series geometric digital readout system. Fully CNC automatic measuring system with VED, auto focus, auto lighting, joystick with trackball for X-Y-Z axis control

20-8789-00 - 4" x 12" travel, features same as above

20-8788-01 - 4" x 8" travel stage with QuadraChek 5230 series geometric digital readout system. Fully CNC automatic measuring system with VED, auto focus, auto lighting, joystick with trackball for X-Y-Z axis control.

20-8789-01 - 4" x 12" travel, features same as above

Maintenance

1. Lubrication

- a. Light oil should be used occasionally on ballways and bearings.
- b. Access to vertical ways is by removing main cover. Apply oil, and then move focus up and down to spread lubrication.

For more information contact:

S-T Industries, Inc.
301 Armstrong Blvd. North
St. James, MN 56081

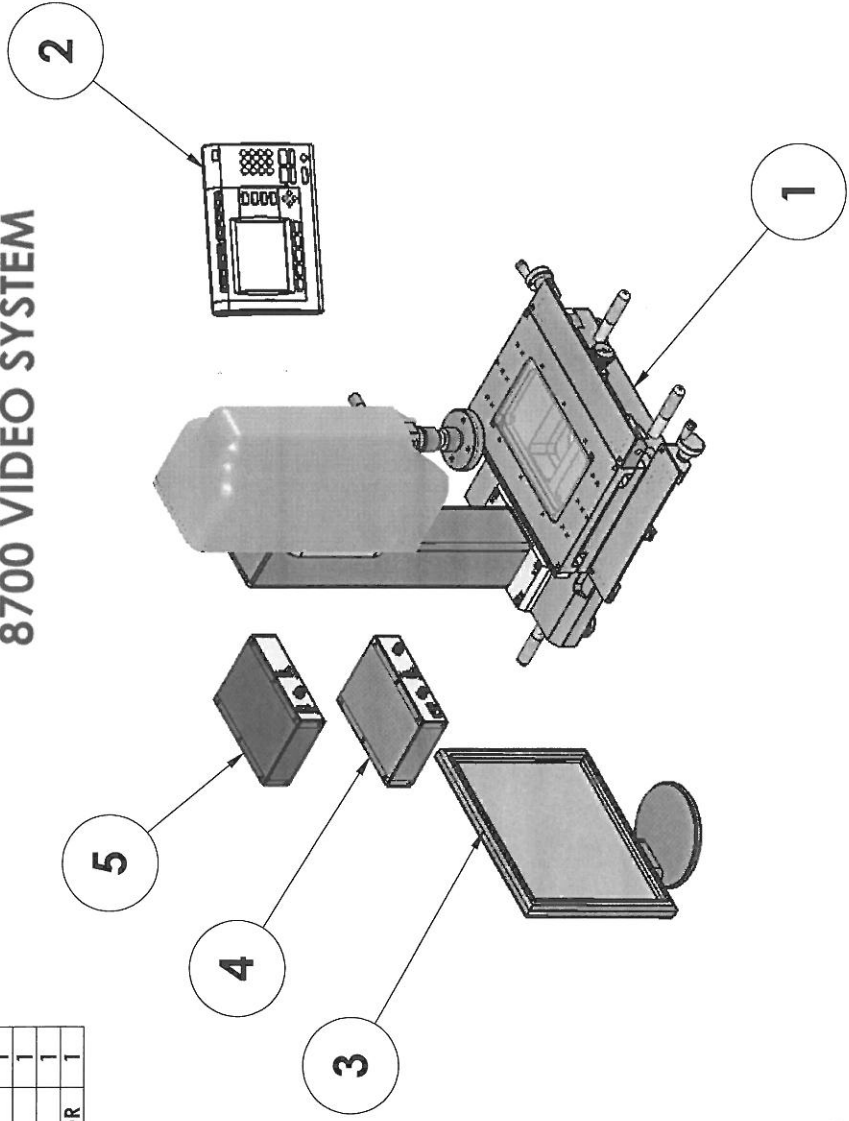
TEL 507/375-3211
FAX 507/375-4503

sales@stindustries.com

www.stindustries.com

ITEM NO.	Description	QTY.
1	8700 VIDEO SYSTEM	1
2	DIGITAL READOUT	1
3	MONITOR	1
4	LIGHT CONTROL	1
5	CROSS HAIR GENERATOR	1

8700 VIDEO SYSTEM

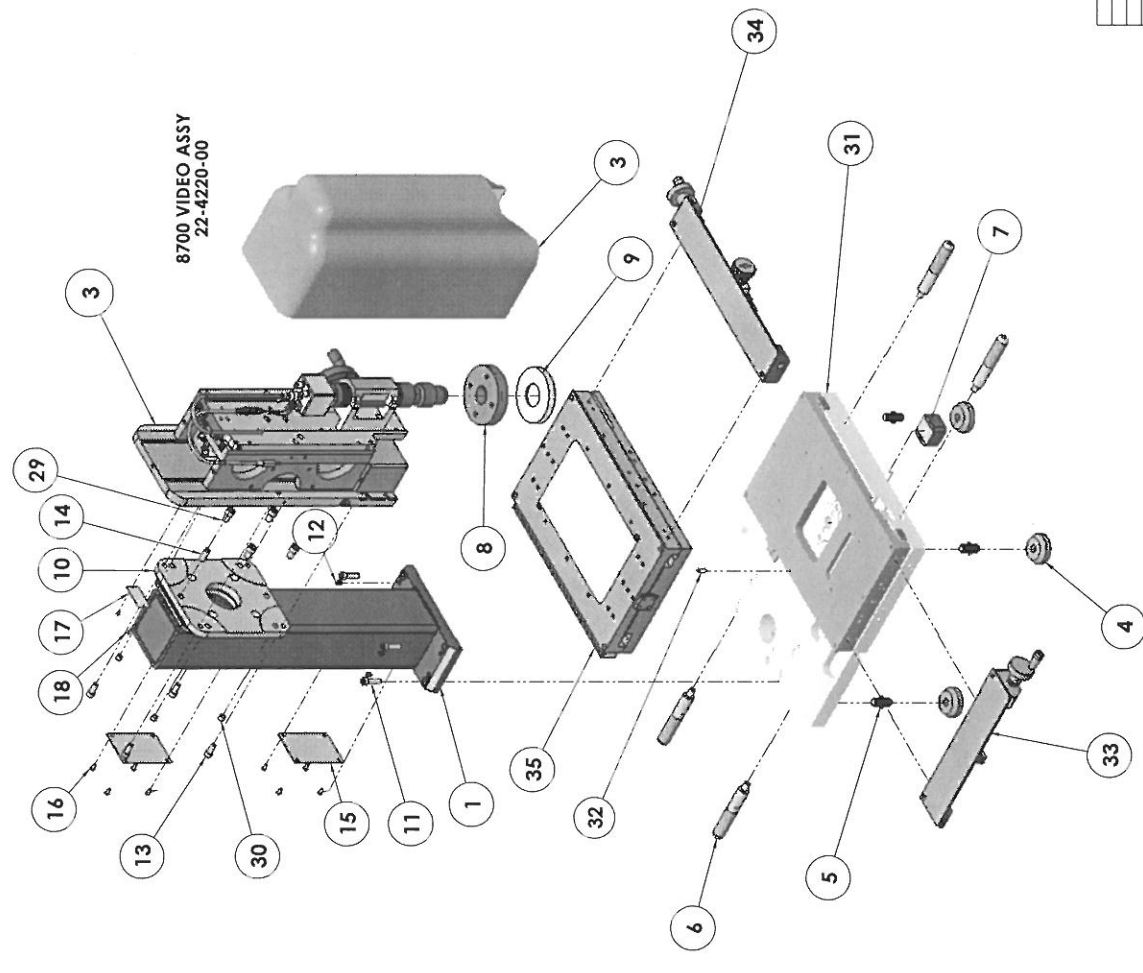


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INTERPRET GEOMETRIC TOLERANCING PER MATERIAL		COMMENTS:		
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NEXT ASSEMBLY		USED ON APPLICATION		

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REV	DATE	DESCRIPTION
1	01/15/00	ISSUE FOR MANUFACTURE
2	02/01/00	REVISION TO DRAWING
3	02/01/00	REVISION TO DRAWING
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8700 VIDEO ASSY
22-4220-00



ITEM NO.	PART NUMBER	Description	QTY
1	22-4217-00	8400 COLUMN ASSY	1
2	22-4181-00	Z-AXIS ASSY, MANUAL	1
3	18-1122-00	FOOT ASSY	4
4	22-4192-07	1/2" - 1/8" FOOT STUD	4
5	22-4217-05	HANDLE	4
6	22-4192-07	FOOT STUD	4
7	48-8404-00	RING LIGHT ADAPTOR	4
8	48-8404-00	RING LIGHT ADAPTOR	4
9	48-8404-00	RING LIGHT	1
10	22-4192-03	ALIGNMENT PLATE	1
11	48-8404-00	SCREW, SHCS 5/16 X 3/8 LG	1
12	48-8404-00	SCREW, SHCS 5/16 X 3/8 LG	4
13	48-8404-00	SCREW, SHCS 5/16 X 3/8 LG	4
14	48-8404-00	SCREW, SHCS 5/16 X 3/8 LG	4
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16	48-8404-00	SCREW, SHCS 5/16 X 3/8 LG	4
17	48-8404-00	SCREW, SHCS 5/16 X 3/8 LG	4
18	48-8404-00	SCREW, SHCS 5/16 X 3/8 LG	4
19	48-8404-00	SCREW, SHCS 5/16 X 3/8 LG	4
20	48-8404-00	SCREW, SHCS 5/16 X 3/8 LG	4
21	22-4020-18	CABLE COLOR CAMERA A DIGITAL	1
22	48-8412-00	CAMERA CABLE	1
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30	48-8412-00	CAMERA CABLE	1
31	48-8412-00	CAMERA CABLE	1
32	48-8412-00	CAMERA CABLE	1
33	22-4218-00	"Y" AXIS HAND CRANK ASSY (P)	1
34	22-4218-00	"Y" AXIS HAND CRANK ASSY (R)	1
35	22-4218-00	"Y" AXIS HAND CRANK ASSY (R) (P)	1

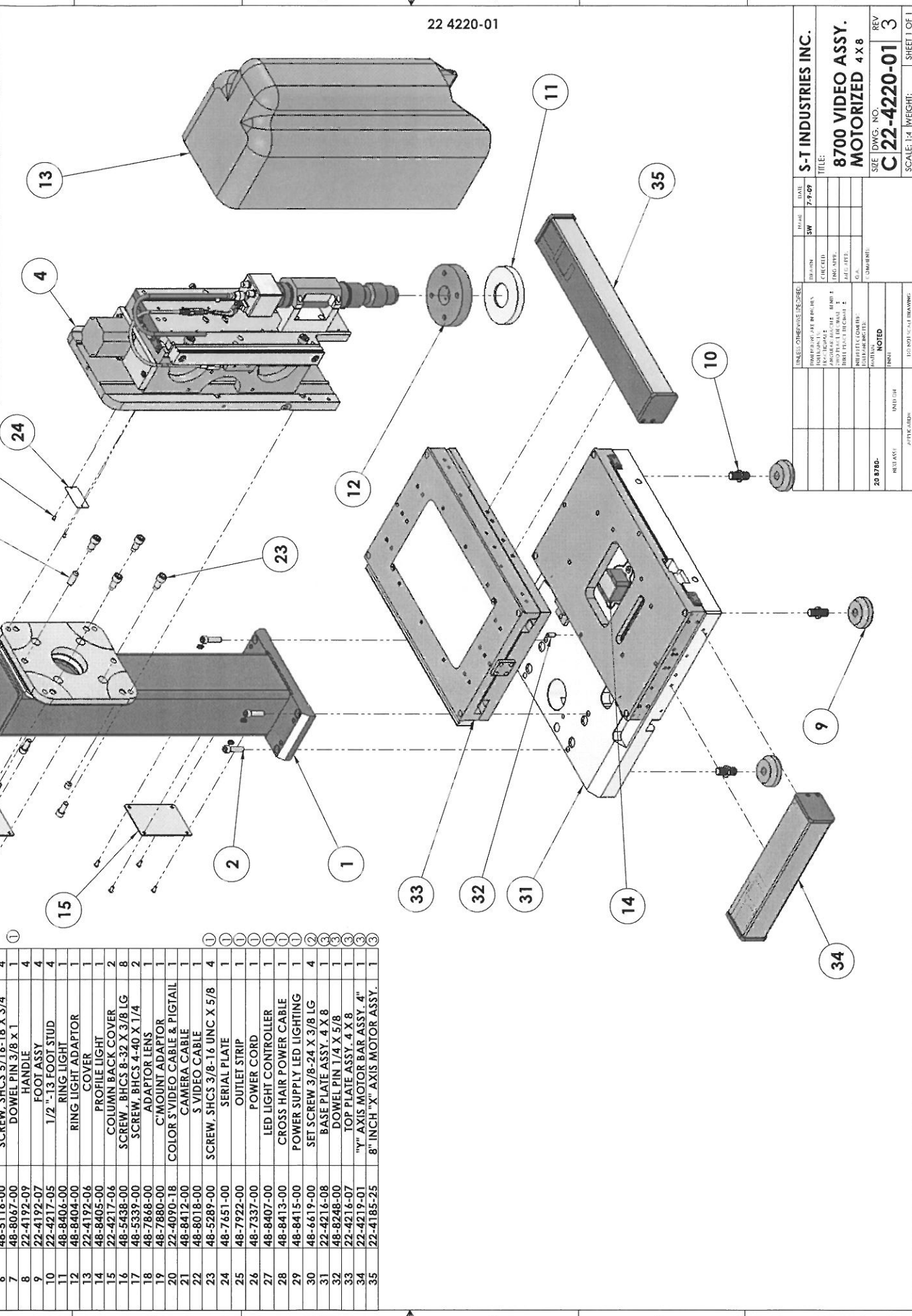
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1. TO ASSEMBLE ITEM'S 19-23 SEE DWG- 22 4189-11.

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S-T INDUSTRIES INC.	
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BY	J. J. J.
CHECKED	J. J. J.
APPROVED	J. J. J.
NOTED	
DR	J. J. J.
DATE	01/15/00
SCALE	1:1
SHEET NO	8
TOTAL SHEETS	8

D 22-4220-00

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	2	ALLOED ITEM 48-8412-00	7/23/2010	
	3	ADDED ITEM 22-4216-01 ETC.	9/9/2010	



22 4220-01

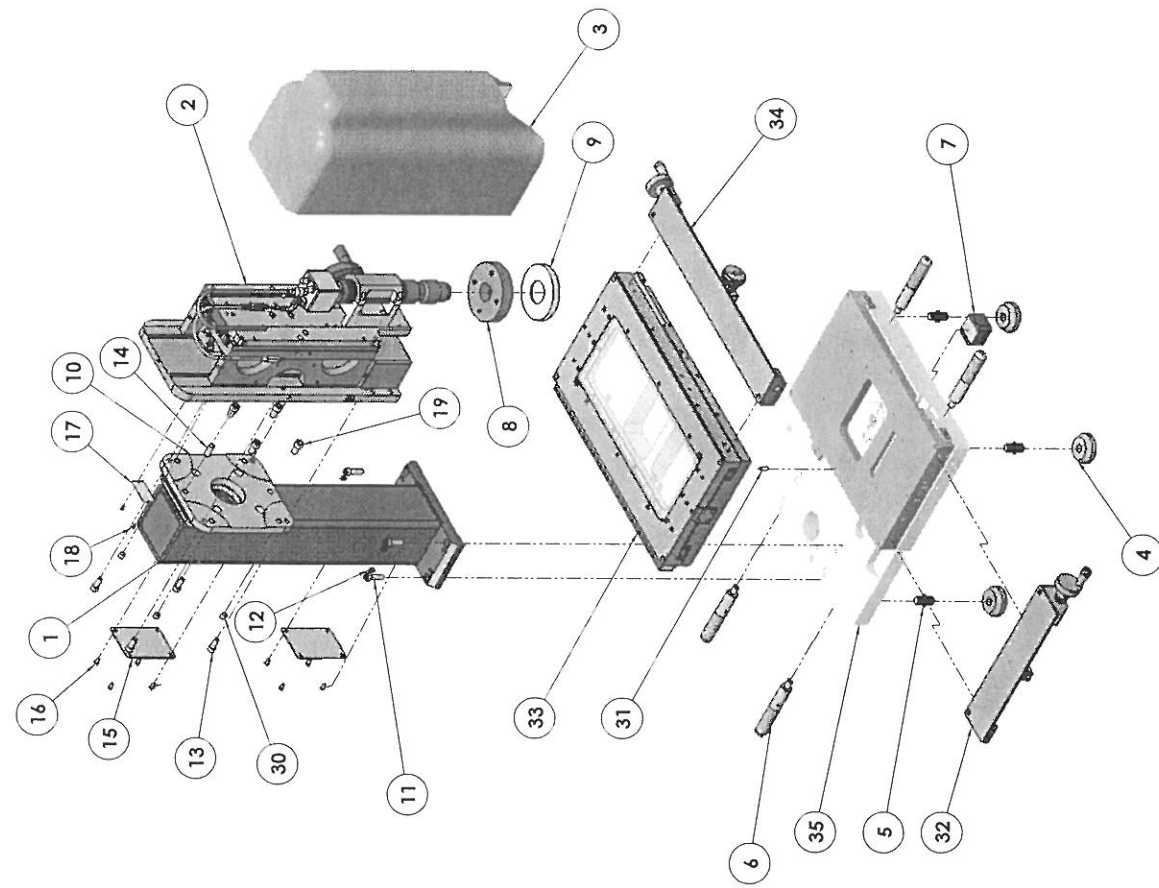
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1	22-4217-00	8600 COLUMN ASSY.	1
2	48-6150-00	SCREW SHCS 5/16-18 X 1 1/4	4
3	48-7882-00	SET SCREW 1/4-20 X 3/8 LG.	4
4	22-4189-14	Z-AXIS ASSY. - MOTORIZED	1
5	22-4192-03	ALIGNMENT PLATE	1
6	48-5116-00	SCREW SHCS 5/16-18 X 3/4	4
7	48-8067-00	DOWEL PIN 3/8 X 1	1
8	22-4192-09	HANDLE	4
9	22-4192-07	FOOT ASSY.	4
10	22-4217-05	1/2" -13 FOOT STUD	4
11	48-8406-00	RING LIGHT	1
12	48-8404-00	RING LIGHT ADAPTOR	1
13	22-4192-06	COVER	1
14	48-8405-00	PROFILE LIGHT	1
15	22-4217-06	COLUMN BACK COVER	2
16	48-5438-00	SCREW BHCS 8-32 X 3/8 LG	8
17	48-5339-00	SCREW BHCS 4-40 X 1/4	2
18	48-7868-00	ADAPTOR LENS	1
19	48-7860-00	C-MOUNT ADAPTOR	1
20	22-4090-18	COLOR S VIDEO CABLE & PIGTAIL	1
21	48-8412-00	CAMERA CABLE	1
22	48-8018-00	S VIDEO CABLE	1
23	48-5289-00	SCREW SHCS 3/8-16 UNC X 5/8	4
24	48-7651-00	SERIAL STRIP	1
25	48-7922-00	OUTLET STRIP	1
26	48-7337-00	POWER CORD	1
27	48-8407-00	LED LIGHT CONTROLLER	1
28	48-8413-00	CROSS HAIR POWER CABLE	1
29	48-8415-00	POWER SUPPLY LED LIGHTING	1
30	48-6619-00	SET SCREW 3/8-24 X 3/8 LG	4
31	22-4216-08	BASE PLATE ASSY. 4 X 8	1
32	48-8248-00	DOWEL PIN 1/4 X 5/8	1
33	22-4216-07	TOP PLATE ASSY. 4 X 8	1
34	22-4219-01	"Y" AXIS MOTOR BAR ASSY. 4"	1
35	22-4185-25	8" INCH "X" AXIS MOTOR ASSY.	1

S-T INDUSTRIES INC.	
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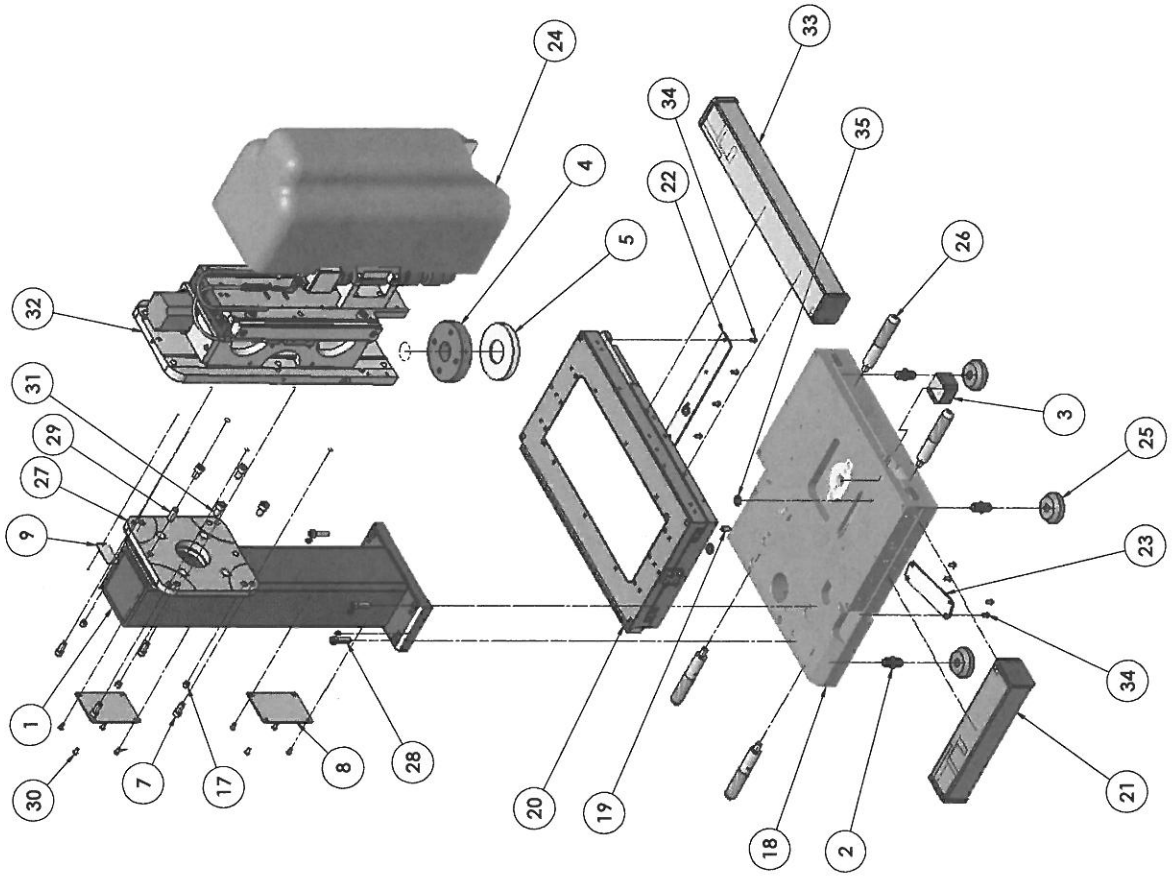
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2	22-4182-00	Z-AXIS ASSY., MANUAL	1
3	22-4192-00	COVER	1
4	22-4192-01	COVER	1
5	22-4217-05	1/2" X 1 1/2" FOOTSTUD	4
6	22-4192-07	HANDLE	4
7	48-8605-00	PROFILE LIGHT	4
8	48-8606-00	RING LIGHT	1
9	48-8604-00	RING LIGHT MOTOR	1
10	22-4192-03	ALIGNMENT PLATE	1
11	48-8150-00	SCREW, SHCS 5/16-18 X 1 1/4	4
12	48-8151-00	SCREW, SHCS 5/16-18 X 1 1/4	4
13	48-5114-00	SCREW, SHCS 5/16-18 X 3/4	4
14	48-8067-00	DOWEL PIN 3/8 X 1	1
15	22-4217-06	COLUMN BACK COVER	2
16	48-8605-00	PROFILE LIGHT	4
17	48-2681-00	SCREW, SERIAL PLATE	1
18	48-5382-00	SCREW, BHCS 4-40 X 1/4	2
19	48-5282-00	SCREW, SHCS 3/8-16 UNC X 5/8	4
20	48-2980-00	C-MOUNT ADAPTOR	1
21	22-4090-18	CABLE, COLOR CAMERA & DIGITAL	1
22	48-8412-00	CAMERA CABLE	1
23	48-8018-00	5 VIDEO CABLE	1
24	48-7922-00	OUTLET STRIP	1
25	48-8413-00	POWER SUPPLY	1
26	48-8413-00	LED LIGHT	1
27	48-8413-00	LED LIGHT	1
28	48-8413-00	CROSS HAIR POWER CABLE	1
29	48-8415-00	POWER SUPPLY FOR LED LIGHTING	1
30	48-4619-00	SET SCREW 3/8-24 X 3/8 LG	4
31	48-8248-00	DOWEL PIN 1/4 X 5/8	1
32	22-4218-00	Y-AXIS HAND CRANK ASSY. (PI)	1
33	22-4185-14	12 INCH X 4 AXIS CRANK ASSY. (PI)	1
34	22-4185-14	12 INCH X 4 AXIS CRANK ASSY. (PI)	1
35	22-4216-08	BASE PLATE ASSY. 4 X 8	1



S-T INDUSTRIES INC.	
TITLE: 8700 VIDEO SYSTEM 4 X 12 STAGE MAN.	
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APPROVED BY: J. S. HARRIS	DATE: 01/01/88
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APPROVED BY: J. S. HARRIS	DATE: 01/01/88

REV	DATE	DESCRIPTION	BY	CHKD
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5		MODIFIED FOR PRODUCTION		



ITEM NO.	PART NUMBER	Description	QTY
1	22-4217-00	8600 COLUMN ASSY.	1
2	48-8044-00	LENS	4
3	48-8045-00	TRIPPLE LENS	4
4	48-8046-00	RING LIGHT ADAPTOR	1
5	48-8048-00	RING LIGHT	1
6	48-8049-00	SET SCREWS 1/4 X 1/8 IN. LG	4
7	48-8114-00	SCREW SHCS 1/4 X 1/4	4
8	22-4217-04	COLUMN BACK COVER	2
9	48-7451-00	SERIAL PLATE	1
10	48-7885-00	CAMOUNT ADAPTOR	1
11	48-7922-00	OUTLET STRIP	1
12	48-7937-00	POWER CORD	1
13	48-8047-00	LENS	1
14	48-8048-00	LENS	1
15	48-8049-00	CROSS HAIR POWER CABLE	1
16	48-8415-00	POWER SUPPLY LED LIGHTING	1
17	22-4217-00	SET SCREW 3/8 X 3/8 IN. LG	4
18	48-8248-00	SCREW SHCS 1/4 X 1/8	4
19	48-8248-00	DOWEL PIN 1/4 X 3/8	4
20	22-4222-01	TOP PLATE ASSY. 4 X 12	1
21	22-4222-01	Y AXIS MOTOR ASSY. 4"	1
22	22-4222-01	WIRE HOLDING PLATE	1
23	22-4192-06	COVER	1
24	22-4192-06	POSS ASSY	4
25	22-4192-07	POSS ASSY	4
26	22-4192-03	ALIGNMENT PLATE	4
27	48-6150-00	SCREW SHCS 5/16 X 1/4	4
28	48-6150-00	SCREW SHCS 5/16 X 1/4	4
29	48-5287-00	SCREW SHCS 3/8 X 3/8 IN. LG	8
30	48-5287-00	SCREW SHCS 3/8 X 3/8 IN. LG	8
31	48-5287-00	SCREW SHCS 3/8 X 3/8 IN. LG	8
32	22-4187-14	Z-AXIS ASSY. - MOTORIZED	1
33	48-5155-00	WASHER 3/8 X 3/8	8
34	48-5155-00	SCREW SHCS 3/8 X 3/8	8
35	48-5155-00	FLAT WASHER 3/8	4
36	48-7748-02	WASHER	1

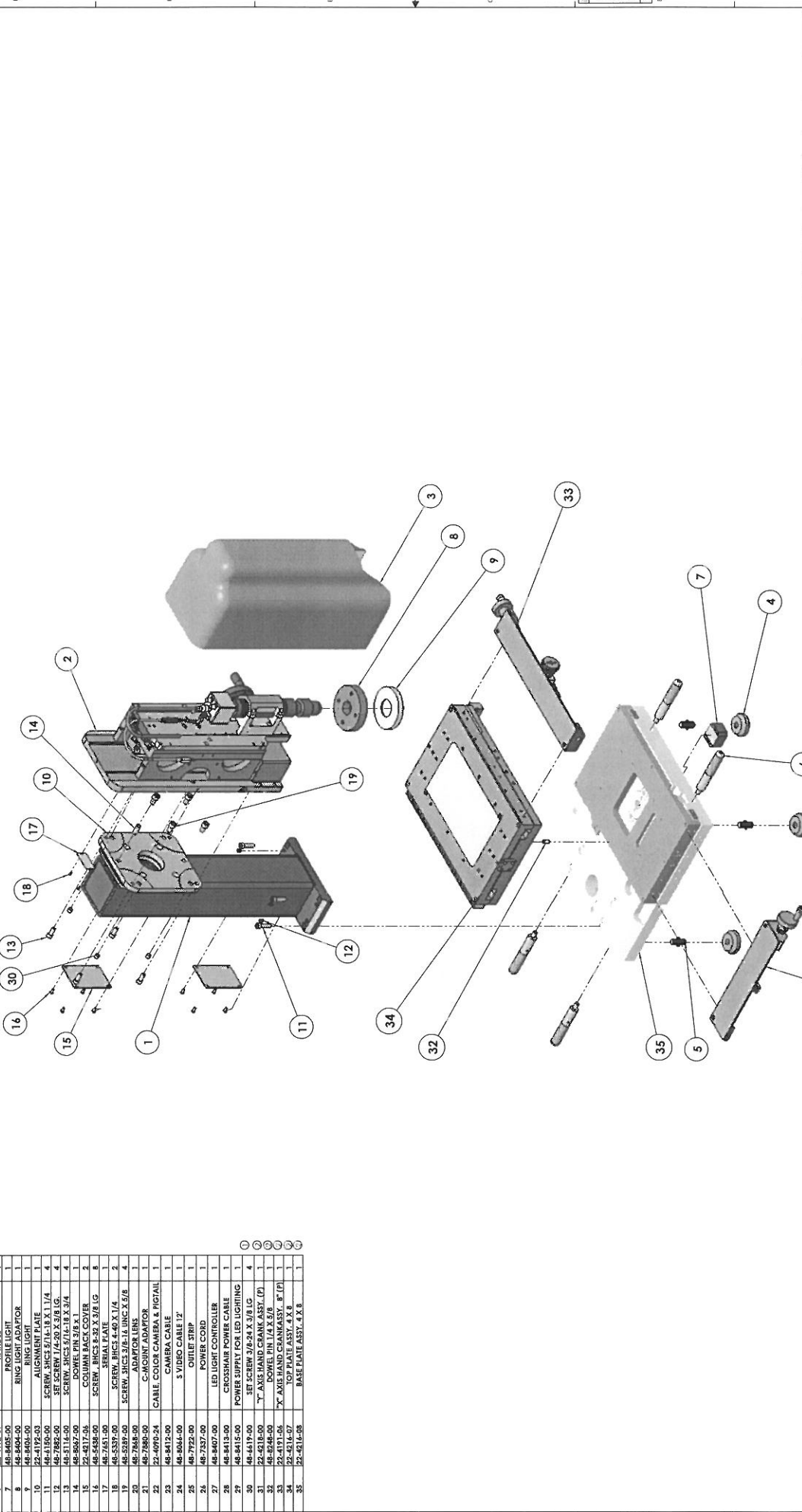
S-T INDUSTRIES INC.
8700 VIDEO SYSTEM
4 X 12 MOTORIZED
D 22-4220-03 5

SHEET 1 OF 1
 SCALE: 1:1
 DATE: 11/19/88
 DRAWN BY: J. J. JONES
 CHECKED BY: J. J. JONES
 APPROVED BY: J. J. JONES

NOTED:
 ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.

REV	DATE	DESCRIPTION
1	11/20/2010	ISSUED FOR MANUFACTURE
2		

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	22-4220-00	8600 COLUMN ASSY.	1
2	22-4187-00	Z-AXIS ASSY. MANUAL	1
3	22-4192-00	COVER	4
4	22-4192-00	COVER	4
5	22-4172-05	1/2" X 13 FOOT STUD	4
6	22-4172-07	HANDLE	4
7	46-8405-00	PROFILE LIGHT	1
8	46-8404-00	RING LIGHT ADAPTOR	1
9	22-4192-03	ALIGNMENT PLATE	1
10	46-8150-00	SCREW, SHCS 5/16 X 1.8 X 1 1/4	4
11	46-7882-00	SET SCREW, T/4-20 X 3/8 LG.	4
12	46-5114-00	SCREW, SHCS 5/16 X 1.8 X 3/4	4
13	46-8415-00	SCREW, SHCS 5/16 X 1.8 X 3/4	4
14	46-8415-00	SCREW, SHCS 5/16 X 1.8 X 3/4	4
15	22-4171-06	COLUMN BACK COVER	2
16	46-5438-00	SCREW, BHCS 8-32 X 3/8 LG	8
17	46-7451-00	SERIAL PLATE	1
18	46-5587-00	SCREW, BHCS 4-40 X 1/4	2
19	46-7884-00	SCREW, SHCS 5/16 X 3/8	2
20	46-7884-00	SCREW, SHCS 5/16 X 3/8	2
21	46-7880-00	C-MOUNT ADAPTOR	1
22	22-4090-24	CABLE COLOR CAMERA & PIGTAIL	1
23	46-8412-00	CAMERA CABLE	1
24	46-8064-00	5 VIDEO CABLE 1/2"	1
25	46-7722-00	OUTLET STRIP	1
26	46-7537-00	POWER CORD	1
27	46-8407-00	LED LIGHT CONTROLLER	1
28	46-8413-00	CROSSHAIR POWER CABLE	1
29	46-8415-00	POWER SUPPLY FOR LED LIGHTING	1
30	46-4419-00	SET SCREW 3/16 X 3/8 LG	4
31	22-4218-00	T-Y AXIS HAND CRANK ASSY (PT)	1
32	22-4218-00	T-Y AXIS HAND CRANK ASSY (PT)	1
33	22-4218-06	X-AXIS HAND CRANK ASSY. 8" (P)	1
34	22-4216-07	TOP PLATE ASSY. 4 X 8	1
35	22-4216-08	BASE PLATE ASSY. 4 X 8	1

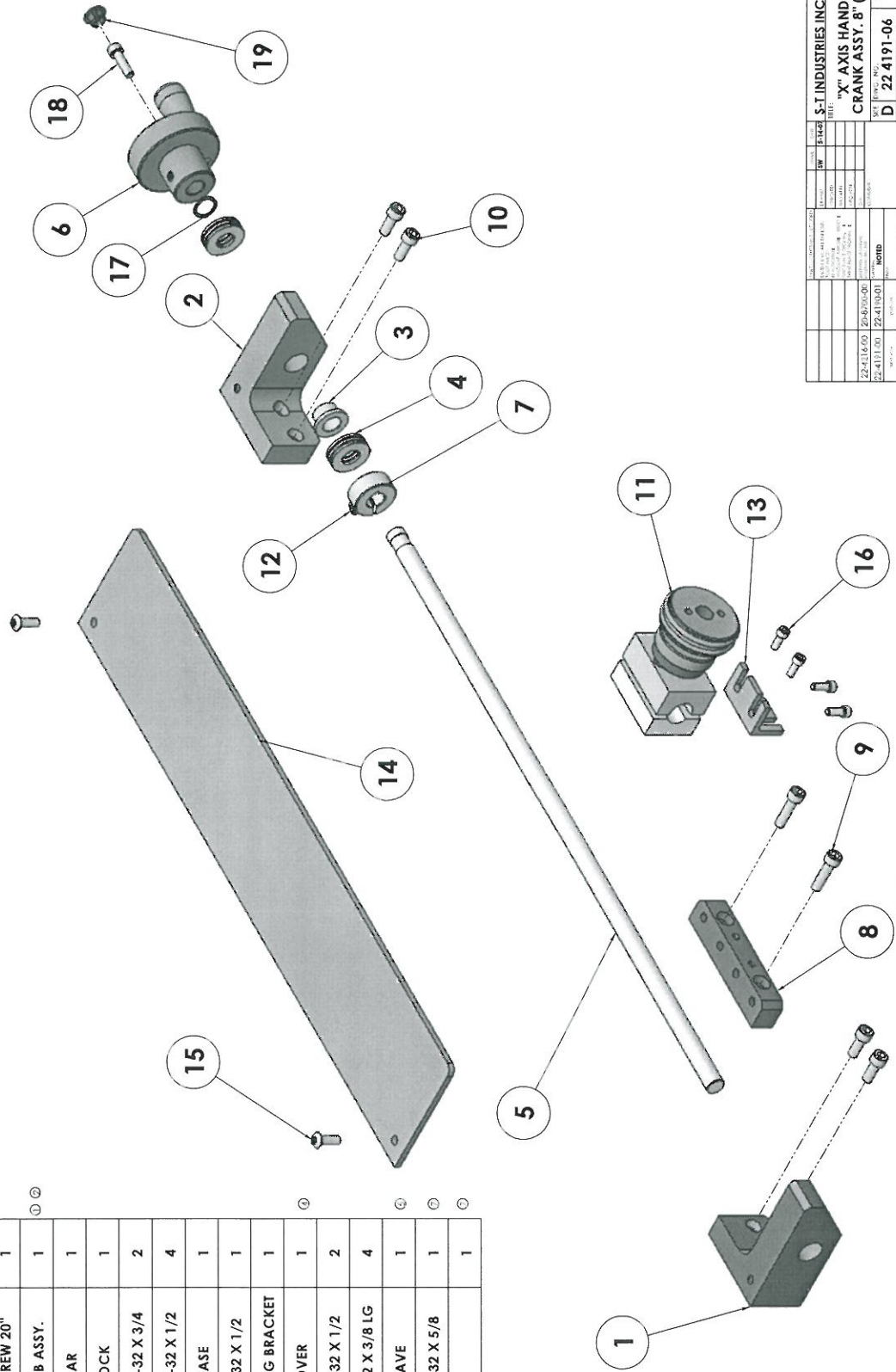


S-T INDUSTRIES INC.		DATE	11/20/2010
8700 VIDEO		REV	2
4 X 8 MAN. LESS X-HAIR		REV	2
D/22-4220-10		REV	2
S-T INDUSTRIES INC.		REV	2
8700 VIDEO		REV	2
4 X 8 MAN. LESS X-HAIR		REV	2
D/22-4220-10		REV	2
S-T INDUSTRIES INC.		REV	2
8700 VIDEO		REV	2
4 X 8 MAN. LESS X-HAIR		REV	2
D/22-4220-10		REV	2
S-T INDUSTRIES INC.		REV	2
8700 VIDEO		REV	2
4 X 8 MAN. LESS X-HAIR		REV	2
D/22-4220-10		REV	2

NOTE:
1. TO ASSEMBLE ITEM'S 20-24 SEE DWG. 22 4189-11.

"X" AXIS HAND CRANK ASSY. 8" 22-4191-06

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	22-4180-04	MOUNTING BRACKET	1
2	22-4180-05	HAND CRANK MOUNT	1
3	48-8013-00	FLANGE BEARING	1
4	48-8341-00	PRECISION THRUST BEARING	2
5	22-4180-06	X-AXIS LEAD SCREW 20"	1
6	22-3844-34	HANDLE & KNOB ASSY.	1
7	22-3844-20	SPLIT COLLAR	1
8	22-4180-16	MOUNT, BLOCK	1
9	48-5016-00	SCREW, SHCS 10-32 X 3/4	2
10	48-5297-00	SCREW, SHCS 10-32 X 1/2	4
11	22-4101-02	QUICK RELEASE	1
12	48-5061-00	SCREW, SHCS 8-32 X 1/2	1
13	22-4185-13	ROH-ILX MOUNTING BRACKET	1
14	22-4191-16	"X" AXIS COVER	1
15	48-5126-00	SCREW, BHCS 6-32 X 1/2	2
16	48-5412-00	SCREW, SHCS 6-32 X 3/8 LG	4
17	48-6737-00	WASHER, WAVE	1
18	48-5157-00	SCREW, SHCS 8-32 X 5/8	1
19	48-7019-08	PLUG	1



REV.	DATE	DESCRIPTION	BY	CHKD.
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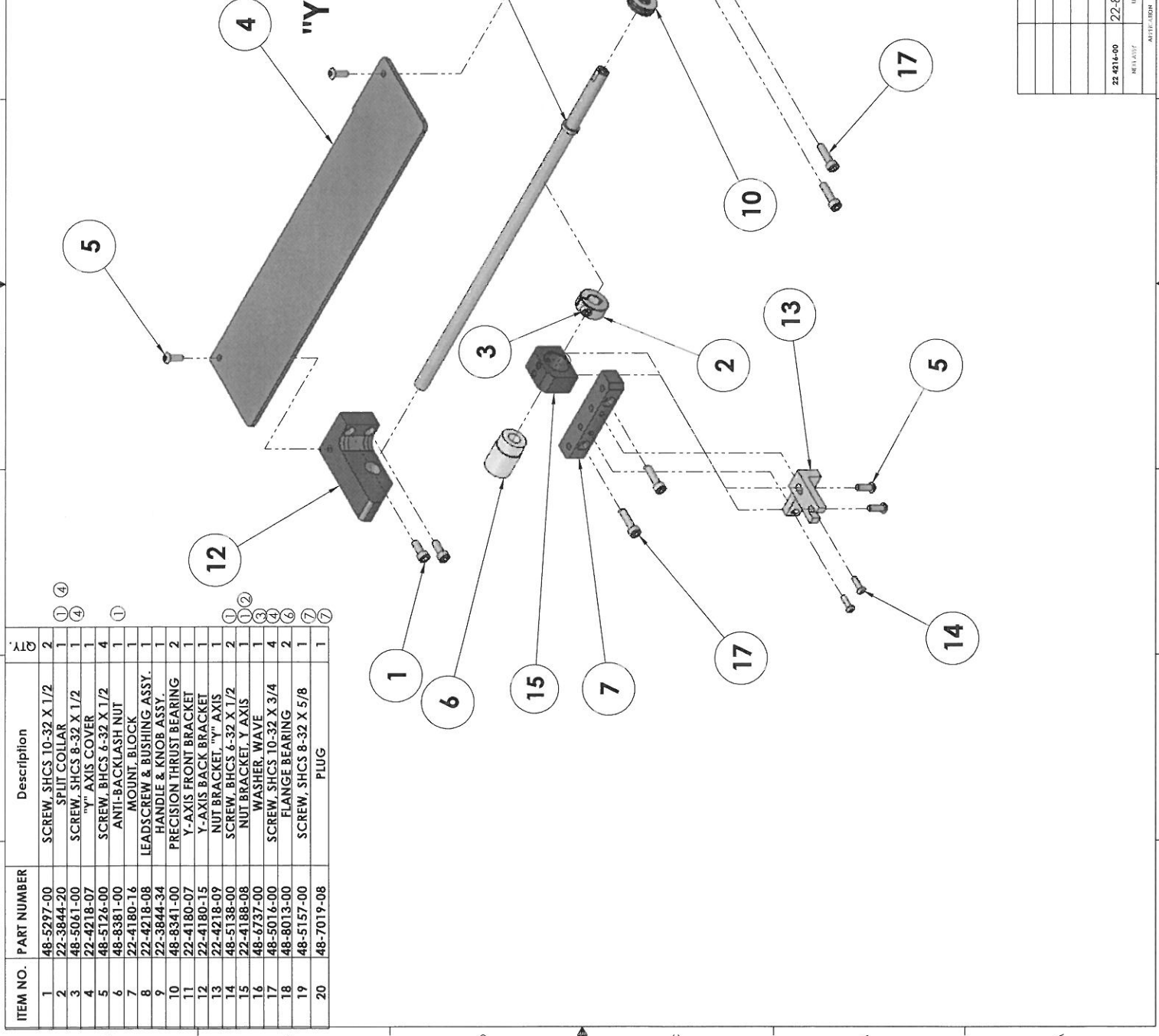
REV.	DATE	DESCRIPTION	BY	CHKD.
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REV.	DATE	DESCRIPTION	BY	CHKD.
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S-T INDUSTRIES INC.
"X" AXIS HAND
CRANK ASSY. 8" (P)
REV. 19/04
D 22-4191-06 7

ZONE	REV.	DESCRIPTION	DATE	APPROVED
	1	ADDED ITEM 22-4218-00 ETC.	11/23/2009	
	2	ADDED ITEM 22-4180-00 REA 22-4180-03	2/4/2010	
	3	ADDED ITEM 48-6734 BEA 48-5016	2/25/2010	
	4	ADDED ITEM 48-6732-00 ETC.	5/12/2010	
	5	ADDED ITEM 48-5018 REA ITEM 48-6734	6/14/2010	
	6	ADDED 48-5013 REA 22-3044+1,2	7/1/2010	
	7	ADDED 48-5157-00 & 48-7019-000	6/29/2010	

"Y" AXIS HAND CRANK ASSY. 22-4218-00



ITEM NO.	PART NUMBER	Description	QTY
1	48-5297-00	SCREW, SHCS 10-32 X 1/2	2
2	22-3844-20	SPLIT COLLAR	1
3	48-5041-00	SCREW, SHCS 8-32 X 1/2	1
4	22-4218-07	"Y" AXIS COVER	1
5	48-5126-00	SCREW, BHCS 6-32 X 1/2	4
6	48-8381-00	ANTI-BACKLASH NUT	1
7	22-4180-16	MOUNT BLOCK	1
8	22-4218-08	LEAD SCREW & BUSHING ASSY.	1
9	22-3844-34	HANDLE & KNOB ASSY.	1
10	48-8341-00	PRECISION THRUST BEARING	2
11	22-4180-07	Y-AXIS FRONT BRACKET	1
12	22-4180-15	Y-AXIS BACK BRACKET	1
13	22-4218-09	NUT BRACKET "Y" AXIS	1
14	48-5138-00	SCREW, BHCS 6-32 X 1/2	2
15	22-4188-08	NUT BRACKET Y AXIS	1
16	48-6737-00	WASHER WAVE	1
17	48-5016-00	SCREW, SHCS 10-32 X 3/4	4
18	48-5013-00	FLANGE BEARING	2
19	48-5157-00	SCREW, SHCS 8-32 X 5/8	1
20	48-7019-08	PLUG	1

UNLESS OTHERWISE SPECIFIED:	UNITS	DATE
DIMENSIONS ARE IN INCHES	SW	6-17-09
TOLERANCES UNLESS OTHERWISE SPECIFIED:		
FRACTIONS		
DECIMALS		
ANGLES		
SPACINGS		
THREADS		
FINISHES		
PROFILES		
TEXT		
NOTES		
22-4218-00	22-8700-00	NOTED
REV		
C22-4218-00		
SCALE: 1:2	WEIGHT:	
SHEET 1 OF 1		

S-T INDUSTRIES INC.

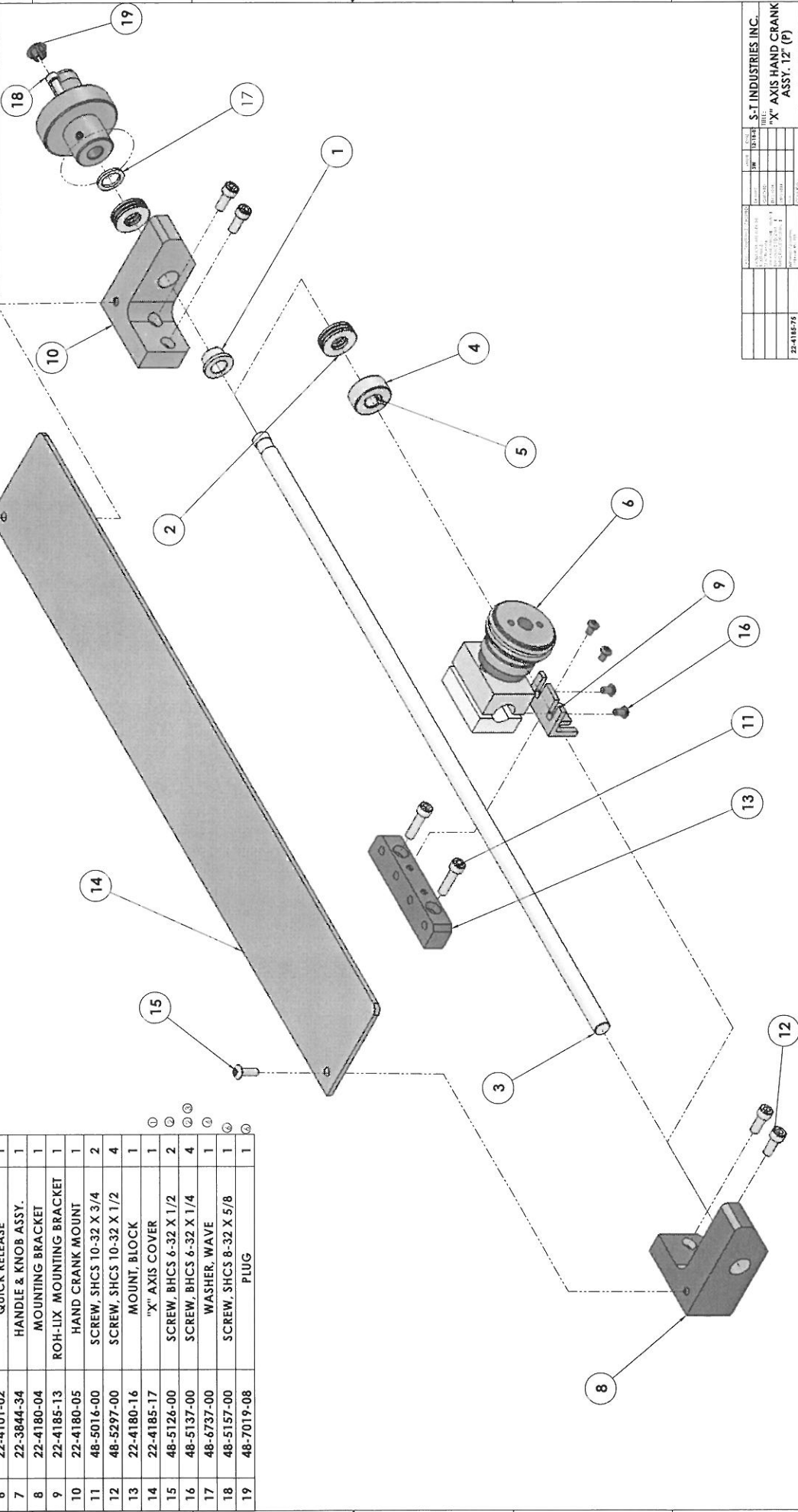
TITLE:
"Y" AXIS 4" (P)
HAND CRANK ASSY.

REV 7

"X" AXIS HAND CRANK ASSY. 12" 22-4185-14

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	48-8013-00	FLANGE BEARING	1
2	48-8341-00	PRECISION THRUST BEARING	2
3	22-4185-15	12 INCH X-AXIS LEAD SCREW	1
4	22-3844-20	SPLIT COLLAR	1
5	48-5061-00	SCREW, SHCS 8-32 X 1/2	1
6	22-4101-02	QUICK RELEASE	1
7	22-3844-34	HANDLE & KNOB ASSY.	1
8	22-4180-04	MOUNTING BRACKET	1
9	22-4185-13	ROH-LIX MOUNTING BRACKET	1
10	22-4180-05	HAND CRANK MOUNT	1
11	48-5016-00	SCREW, SHCS 10-32 X 3/4	2
12	48-5297-00	SCREW, SHCS 10-32 X 1/2	4
13	22-4180-16	MOUNT, BLOCK	1
14	22-4185-17	"X" AXIS COVER	1
15	48-5126-00	SCREW, BHCS 6-32 X 1/2	2
16	48-5137-00	SCREW, BHCS 6-32 X 1/4	4
17	48-6737-00	WASHER, WAVE	1
18	48-5157-00	SCREW, SHCS 8-32 X 5/8	1
19	48-7019-08	PLUG	1

REV.	DATE	DESCRIPTION
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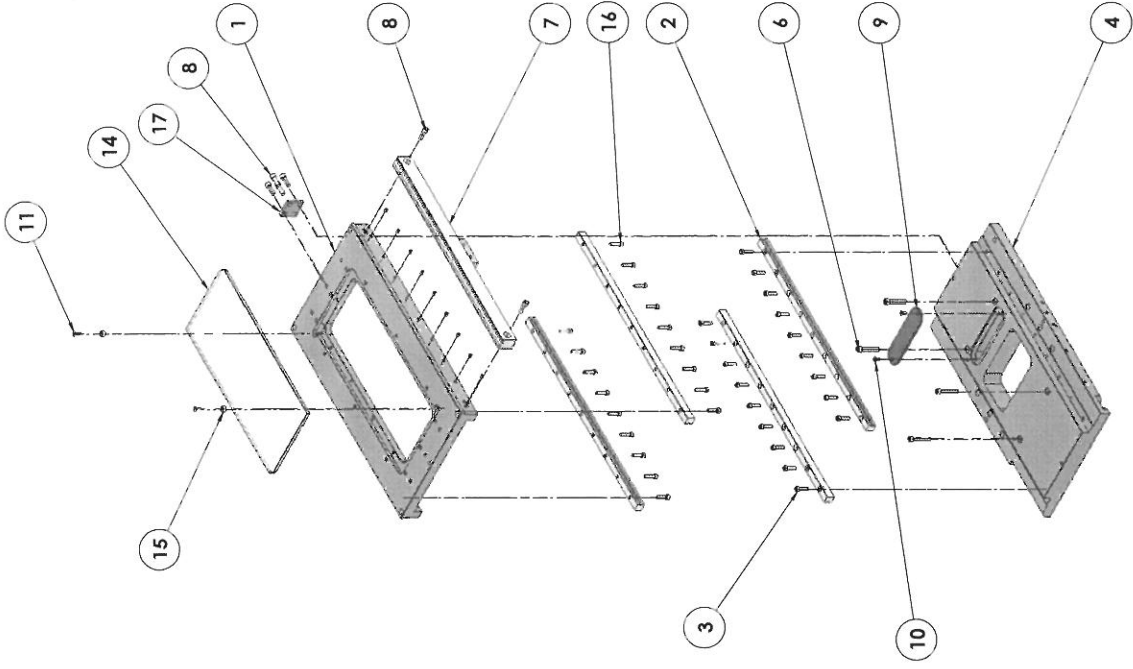


S-T INDUSTRIES INC.	
"X" AXIS HAND CRANK ASSY. 12" (P)	
FILE NO.	22-4185-14
REV.	6
DATE	12/11/14
BY	D
CHECKED	
APPROVED	
DESIGNED	
DRAWN	
MANUFACTURED	
ASSEMBLED	
TESTED	
INSPECTED	
REWORKED	
REWORKED BY	
REWORKED DATE	
REWORKED QTY.	
REWORKED BY	
REWORKED DATE	
REWORKED QTY.	
REWORKED BY	
REWORKED DATE	
REWORKED QTY.	

D 22 4185-14

REV	DESCRIPTION	DATE	APPROVED
1	INITIAL DESIGN	11/15/97	W. J. HARRIS
2	DESIGN CHANGES	11/15/97	W. J. HARRIS
3	DESIGN CHANGES	11/15/97	W. J. HARRIS
4	DESIGN CHANGES	11/15/97	W. J. HARRIS
5	DESIGN CHANGES	11/15/97	W. J. HARRIS
6	DESIGN CHANGES	11/15/97	W. J. HARRIS
7	DESIGN CHANGES	11/15/97	W. J. HARRIS
8	DESIGN CHANGES	11/15/97	W. J. HARRIS
9	DESIGN CHANGES	11/15/97	W. J. HARRIS
10	DESIGN CHANGES	11/15/97	W. J. HARRIS
11	DESIGN CHANGES	11/15/97	W. J. HARRIS
12	DESIGN CHANGES	11/15/97	W. J. HARRIS
13	DESIGN CHANGES	11/15/97	W. J. HARRIS
14	DESIGN CHANGES	11/15/97	W. J. HARRIS
15	DESIGN CHANGES	11/15/97	W. J. HARRIS
16	DESIGN CHANGES	11/15/97	W. J. HARRIS
17	DESIGN CHANGES	11/15/97	W. J. HARRIS

ITEM NO.	PART NUMBER	Description	QTY
1	22-4222-02	TOP PLATE 4 X12	1
2	48-8371-00	GIB, RL-AC-450	1
3	48-5014-00	SCREW, SHCS 10-32 X 3/4	27
4	22-4222-03	UPPER MIDDLE PLATE 4X12	1
5	48-5101-00	SET SCREW 10-32 X 5/16	9
6	48-5401-00	SCREW, SHCS 1/4-20 X 1 1/2	4
7	48-8370-00	SCALE 11"	1
8	48-5057-00	SCREW, SHCS 1/4-20 X 3/4	6
9	22-4197-1B	Y-AXIS ENCODER COVER	1
10	48-5382-00	SCREW, FHCS 8-32 X 3/8 LG.	2
11	48-5974-00	SCREW, FHCS 8-32 X 1/2	2
12	22-4189-13	STAGE LOCK BRACKET	2
13	48-8081-00	SCREW, SET 10-32 X 5/16 BRASS TIP	6
14	22-3759-4788	STAGE GLASS FOR 4X12 STAGE	1
15	22-3759-18	GLASS BUSHING	2
16	22-4226-00	GIB ALIGNMENT SCREW	9
17	22-4227-00	STAGE LOCK	1



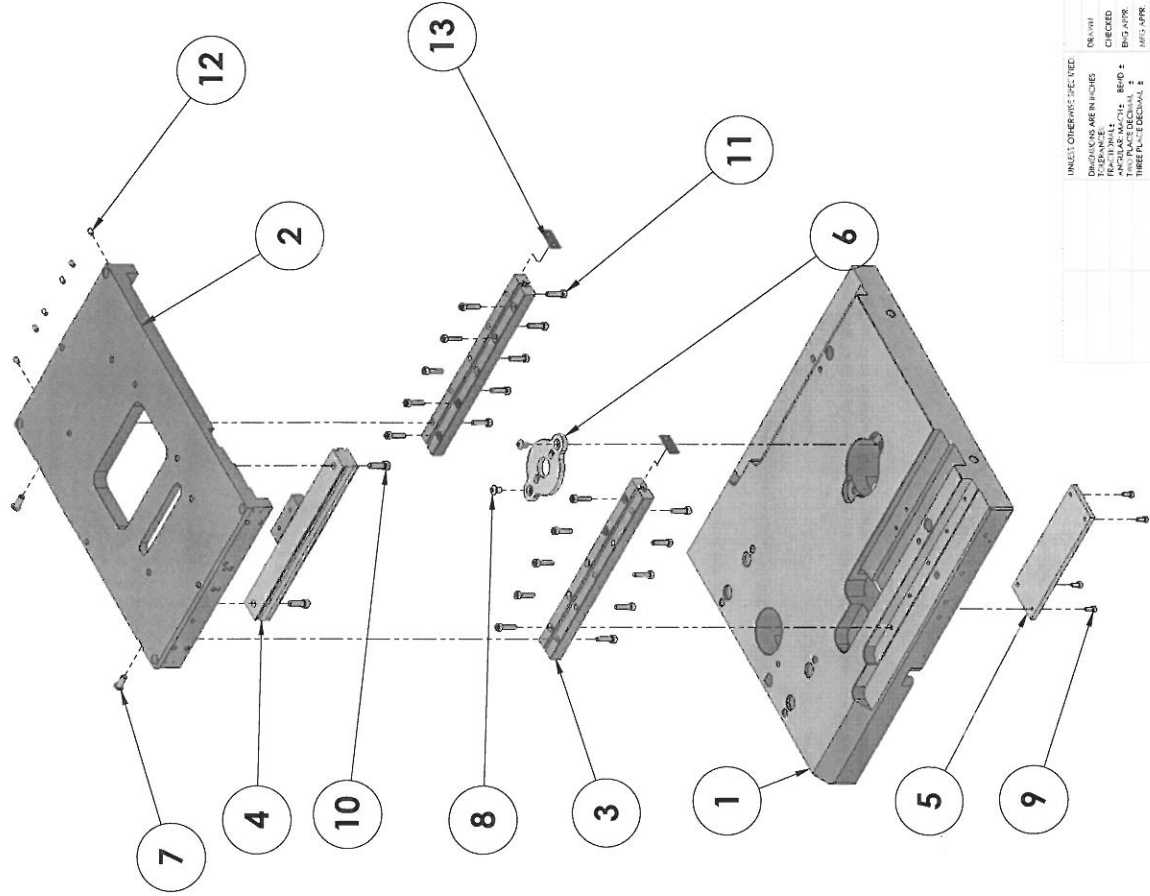
1:2 SCALE

S-T INDUSTRIES INC.		REV	D 22-4222-01	REV	4
TOP PLATE ASSY.		DATE	11/15/97	DATE	11/15/97
4 X 12		BY		BY	
		CHECKED		CHECKED	
		APPROVED		APPROVED	
		DATE		DATE	
		SCALE		SCALE	
		UNIT		UNIT	
		INCHES		INCHES	
		MILLIMETERS		MILLIMETERS	

ITEM NO.	PART NUMBER	Description	QTY
1	22-4216-05	BASE PLATE	1
2	22-4216-03	LOWER SLIDE PLATE	1
3	48-8340-00	R6-250-SET	1
4	48-8090-00	3 INCH SCALE	1
5	22-4216-06	BOTTOM CAP	1
6	22-4191-14	LED MOUNTING	1
7	48-8017-00	SCREW, BHCS 1/4-20 X 5/8	2
8	48-5430-00	SCREW, BHCS 1/4-20 X 3/8	2
9	48-5161-00	SCREW, SHCS 8-32 X 3/8	4
10	48-5057-00	SCREW, SHCS 1/4-20 X 3/4	2
11	48-5016-00	SCREW, SHCS 10-32 X 3/4	20
12	48-5101-00	SET SCREW 10-32 X 5/16	6
13	22-4189-13	Z STAGE LOCK BRACKET	2

BASE PLATE ASSY 4X8

22-4216-08



22 4216-08

ZONE	REV.	DESCRIPTION	DATE	APPROVED
	1	ADDED ITEM 48-5016 REV 14 48-8063	9/23/2009	

UNLESS OTHERWISE SPECIFIED	DATE	NAME	DATE
DESIGN	6/17/09	SW	
CHECKED			
DESIGNED BY			
TRACED BY			
TRIPLE CHECKED BY			
REWORK REVIEWED BY			
APPROVED BY			
DATE			
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22-4216-00
REV A02

22-4216-08
REV 1

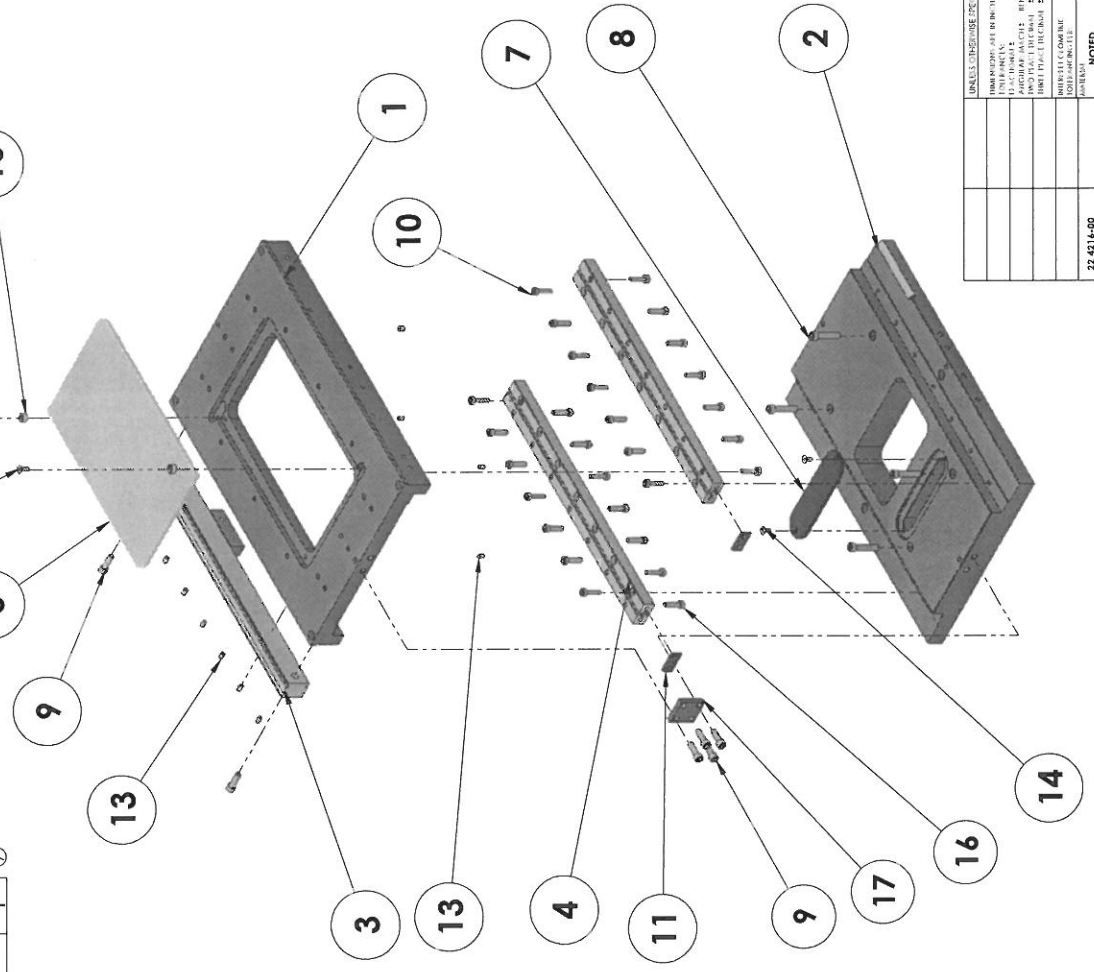
SCALE: 1:2 WEIGHT: 1

SHEET 1 OF 1

S-T INDUSTRIES INC.
TITLE:
BASE PLATE ASSY. 4 X 8
SIZE DWG. NO.
C 22-4216-08
REV
1
SCALE: 1:2 WEIGHT: 1

TOP PLATE ASSY. 4 X 8 22-4216-07

ITEM NO.	PART NUMBER	Description	QTY
1	22-4216-01	TOP PLATE 4 X 8	1
2	22-4216-02	UPPER MIDDLE PLATE 4X8	1
3	48-7797-00	8 INCH SCALE & ENCODER	1
4	48-8343-00	GIB R6 350V SP SET	1
5	22-3759-1788	STAGE GLASS FOR 4 X 8 STAGE	1
6	48-5974-00	SCREW, FHCS 8-32 X 1/2	2
7	22-4191-18	Y-AXIS ENCODER COVER	1
8	48-5242-00	SCREW, SHCS 1/4-20 X 1 1/4	4
9	48-5057-00	SCREW, SHCS 1/4-20 X 3/4	6
10	48-5016-00	SCREW, SHCS 10-32 X 3/4	21
11	22-4189-13	STAGE LOCK BRACKET	2
13	48-5101-00	SET SCREW 10-32 X 5/16	7
14	48-8081-00	SCREW, SET 10-32 X 5/16 BRASS TIP	4
15	48-5382-00	SCREW, FHCS 8-32 X 3/8 LG.	2
16	22-4226-00	GIB ALIGNMENT SCREW	7
17	22-3759-18	GLASS BUSHING	2
17	22-4229-00	STAGE LOCK	1



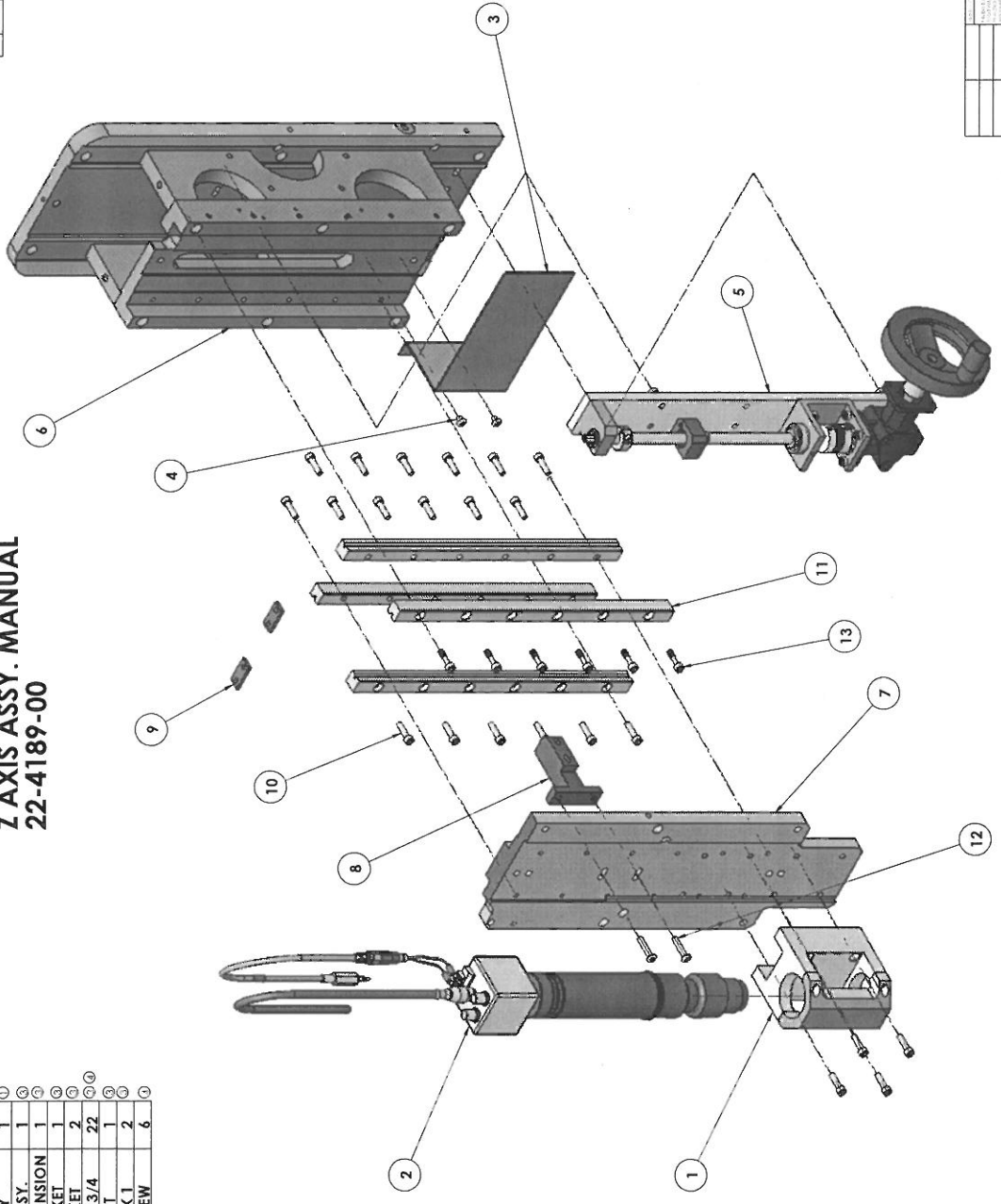
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	1	ADDED ITEM 48-5016-00 REAM 48-8081	9/23/2009	
	2	ADDED ITEM 48-8081 & 48-5382 ETC.	10/17/2009	
	3	ITEM 48-8081 CHG. 4 NVA'S	11/17/2009	
	4	ADDED ITEM 22-4216-07 ETC.	2/23/2010	
	5	ADDED ITEM 22-4226-00 ETC.	5/3/2010	
	6	ADDED ITEM 22-3759-18 ETC.	9/16/2010	
	7	ADDED ITEM 22-4229-00 ETC.	12/14/2010	

UNLESS OTHERWISE SPECIFIED	DATE	BY	APPR.
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S-T INDUSTRIES INC.
TOP PLATE ASSY. 4 X 8
 SIZE DWG. NO. **C22-4216-07**
 REV. **7**
 SCALE: 1:2 WEIGHT: SHEET 1 OF 1

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	22-4189-04	CLAMP ASSY.	1
2	22-4189-11	CAMERA & LENS ASSY	REF
3	22-4189-12	COVER	1
4	48-5106-00	SCREW, BHCS 10-32 X 1/4	2
5	22-4188-00	Z-AXIS CRANK ASSY	1
6	22-4189-16	Z-AXIS SLIDE PLATE ASSY.	1
7	22-4189-07	Z-SLIDER PLATE WITH EXTENSION	1
8	22-4189-10	NUT HOLDING BRACKET	1
9	22-4189-13	STAGE LOCK BRACKET	2
10	48-5016-00	SCREW, SHCS 10-32 X 3/4	22
11	48-8359-00	LINEAR BEARING SET	1
12	48-6148-00	SCREW, SHCS 10-32 X 1	2
13	22-4226-00	GIB ALIGNMENT SCREW	6

Z AXIS ASSY. MANUAL 22-4189-00



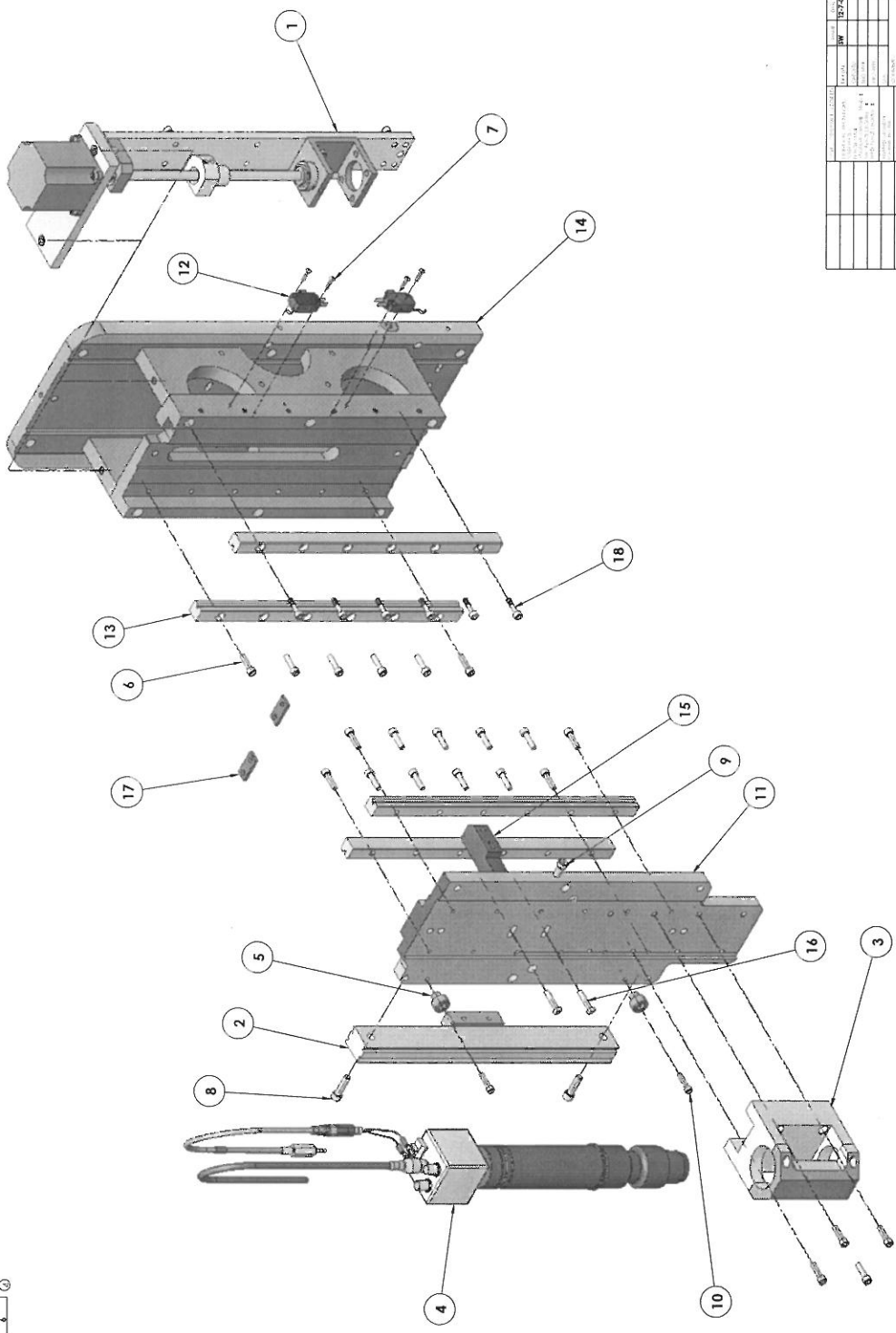
REV.	DESCRIPTION	DATE	BY
1	ISSUED FOR PRODUCTION	11/11/2011	W. J. BROWN
2	REVISED TO ADD PART 13	11/11/2011	W. J. BROWN
3	REVISED TO ADD PART 12	11/11/2011	W. J. BROWN

S-T INDUSTRIES INC.	
Z AXIS ASSY. MANUAL	
REV.	DATE
4	11/11/2011
NOTED	
S-T INDUSTRIES INC.	

D 22 4189-00

REV	DATE	DESCRIPTION
1	11/11/14	ISSUED FOR MANUFACTURE
2	11/11/14	REVISED TO ADD PART 18
3	11/11/14	REVISED TO ADD PART 17
4	11/11/14	REVISED TO ADD PART 15
5	11/11/14	REVISED TO ADD PART 14
6	11/11/14	REVISED TO ADD PART 13
7	11/11/14	REVISED TO ADD PART 12
8	11/11/14	REVISED TO ADD PART 11
9	11/11/14	REVISED TO ADD PART 10
10	11/11/14	REVISED TO ADD PART 9
11	11/11/14	REVISED TO ADD PART 8
12	11/11/14	REVISED TO ADD PART 7
13	11/11/14	REVISED TO ADD PART 6
14	11/11/14	REVISED TO ADD PART 5
15	11/11/14	REVISED TO ADD PART 4
16	11/11/14	REVISED TO ADD PART 3
17	11/11/14	REVISED TO ADD PART 17
18	11/11/14	REVISED TO ADD PART 18

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	22-4189-00	Z-AXIS MOTOR ASSY	1
2	46-8044-00	F INCH SCALE & ENCODER	1
3	22-4189-04	CLAMP ASSY	1
4	22-4189-02	CAMP ASSY	2
5	22-4189-02	Z-SCALE STOPPER	2
6	46-5014-00	SCREW, SHCS, 10-32 X 3/4	22
7	46-5623-00	SCREW, SHCS, 1/4-20 X 1/2	4
8	46-8192-00	SCREW, SHCS, 1/4-20 X 1/8	2
9	46-5014-00	SCREW, SHCS, 10-32 X 3/4	2
10	46-5069-00	Z-SLIDER PLATE WITH EXTENSION	2
11	22-4189-07	LIMIT SWITCH	2
12	46-8044-00	LINEAR BEARING SET	4
13	46-8989-00	Z-AXIS BRACKET	2
14	22-4189-10	NUT HOLDING BRACKET	1
15	46-4148-00	SCREW, SHCS, 10-32 X 1	2
16	22-4189-13	STAGE LOCK BRACKET	2
17	22-4189-13	GIB ALIGNMENT SCREW	2
18	22-4928-00	GIB ALIGNMENT SCREW	2



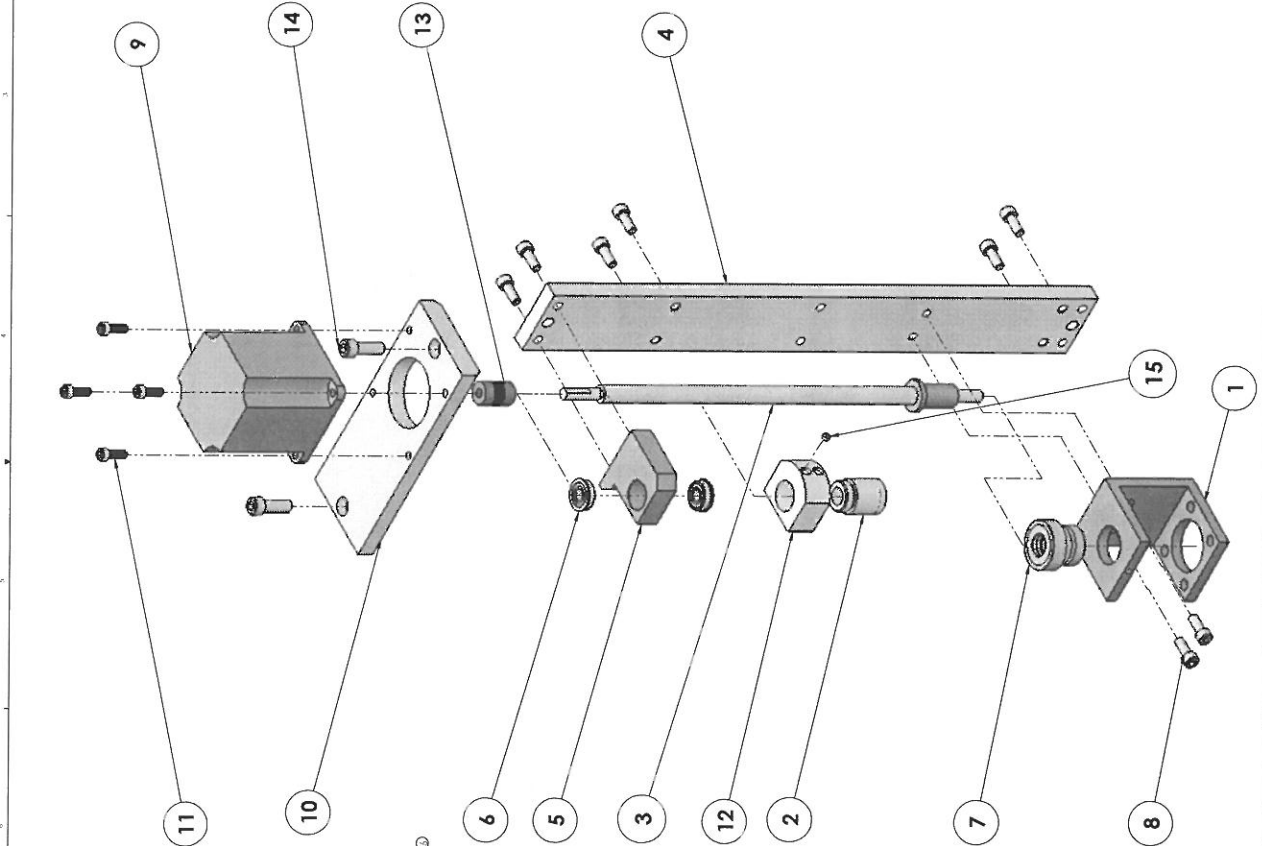
REV	DATE	DESCRIPTION
1	11/11/14	ISSUED FOR MANUFACTURE
2	11/11/14	REVISED TO ADD PART 18
3	11/11/14	REVISED TO ADD PART 17
4	11/11/14	REVISED TO ADD PART 15
5	11/11/14	REVISED TO ADD PART 14
6	11/11/14	REVISED TO ADD PART 13
7	11/11/14	REVISED TO ADD PART 12
8	11/11/14	REVISED TO ADD PART 11
9	11/11/14	REVISED TO ADD PART 10
10	11/11/14	REVISED TO ADD PART 9
11	11/11/14	REVISED TO ADD PART 8
12	11/11/14	REVISED TO ADD PART 7
13	11/11/14	REVISED TO ADD PART 6
14	11/11/14	REVISED TO ADD PART 5
15	11/11/14	REVISED TO ADD PART 4
16	11/11/14	REVISED TO ADD PART 3
17	11/11/14	REVISED TO ADD PART 17
18	11/11/14	REVISED TO ADD PART 18

REV	DATE	DESCRIPTION
1	11/11/14	ISSUED FOR MANUFACTURE
2	11/11/14	REVISED TO ADD PART 18
3	11/11/14	REVISED TO ADD PART 17
4	11/11/14	REVISED TO ADD PART 15
5	11/11/14	REVISED TO ADD PART 14
6	11/11/14	REVISED TO ADD PART 13
7	11/11/14	REVISED TO ADD PART 12
8	11/11/14	REVISED TO ADD PART 11
9	11/11/14	REVISED TO ADD PART 10
10	11/11/14	REVISED TO ADD PART 9
11	11/11/14	REVISED TO ADD PART 8
12	11/11/14	REVISED TO ADD PART 7
13	11/11/14	REVISED TO ADD PART 6
14	11/11/14	REVISED TO ADD PART 5
15	11/11/14	REVISED TO ADD PART 4
16	11/11/14	REVISED TO ADD PART 3
17	11/11/14	REVISED TO ADD PART 17
18	11/11/14	REVISED TO ADD PART 18

S-T INDUSTRIES INC.
**Z-AXIS ASSY,
 MOTORIZED**
 D 22 4189-14 4
 11/11/14

REV	DATE	DESCRIPTION	BY	CHKD

Z-AXIS MOTOR ASSY. 22-4193-00



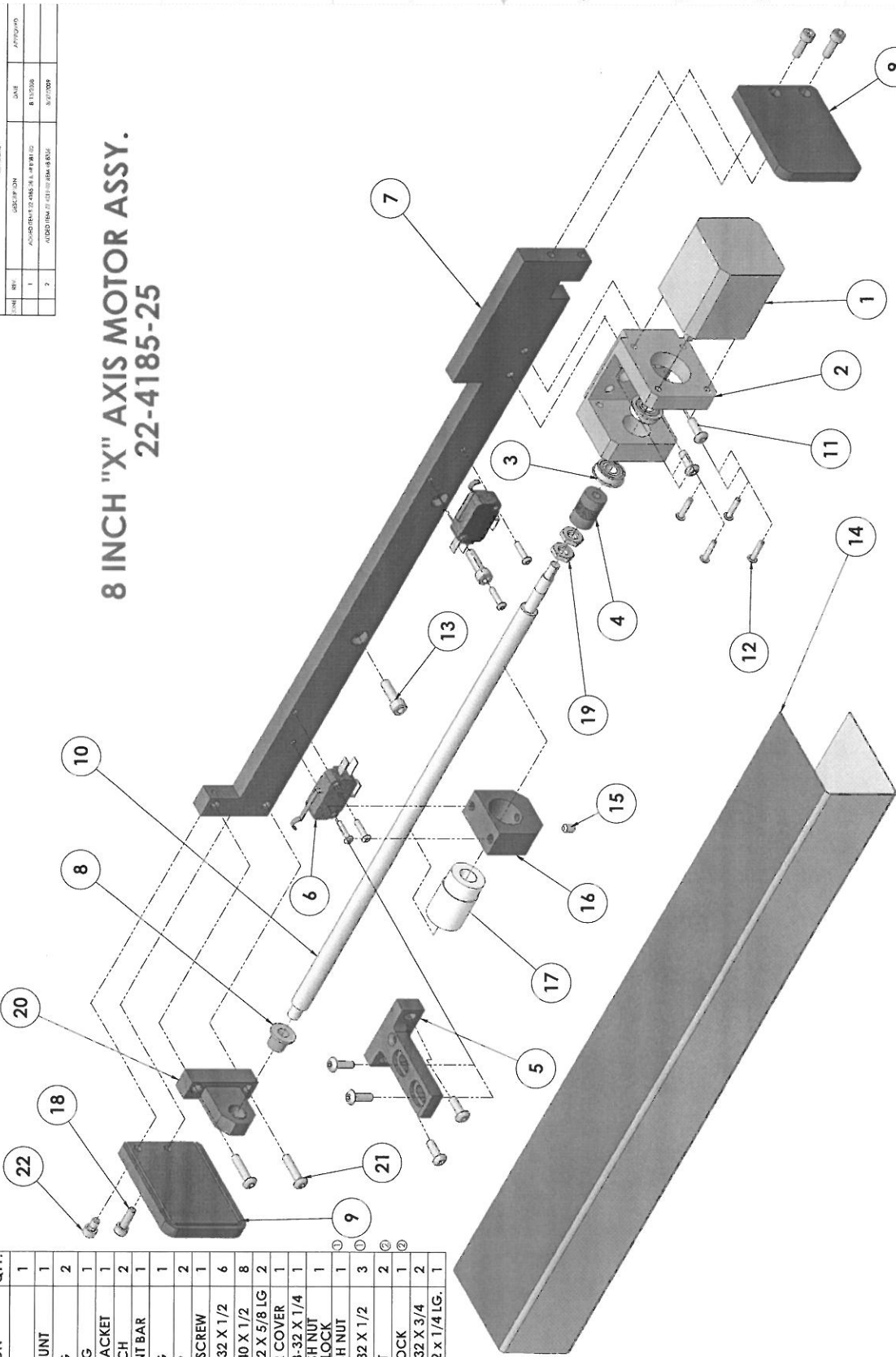
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	22-4082-04	BEARING DRIVE MOUNT	1
2	48-8369-00	BALL NUT	1
3	22-4193-07	LEADSCREW & BUSHING ASSY.	1
4	22-4188-01	"Z" AXIS MOUNT PLATE	1
5	22-4188-02	BEARING BLOCK "Z" AXIS	1
6	48-7928-00	BEARING	2
7	48-8072-00	BEARING	1
8	48-5297-00	SCREW, SHCS 10-32 X 1/2	8
9	22-4228-00	"X" STEPPER MOTOR & WIRE ASSY	1
10	22-4193-01	MOTOR MOUNT	1
11	48-5061-00	SCREW, SHCS 8-32 X 1/2	4
12	22-4186-05	BALL NUT MOUNTING BLOCK	1
13	48-8082-00	COUPLING	1
14	48-5057-00	SCREW, SHCS 1/4-20 X 3/4	2
15	48-5011-00	SET SCREW 8-32 X 1/8	1

S-T INDUSTRIES INC.	
Z-AXIS MOTOR ASSY	
REV	D 22 4193-00 6
SHEET 1 OF 1	

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	48-8043-00	MOTOR	1
2	22-4186-09	MOTOR MOUNT	1
3	48-7928-00	BEARING	2
4	48-8357-00	COUPLING	1
5	22-4186-06	LOWER NUT BRACKET	1
6	48-8044-00	LIMIT SWITCH	2
7	22-4185-26	"X" AXIS MOUNT BAR	1
8	48-7437-00	BUSHING	1
9	22-4186-04	END CAP	2
10	22-4185-27	"X" AXIS LEAD SCREW	1
11	48-5126-00	SCREW, BHCS 8-32 X 1/2	6
12	48-5623-00	SCREW, BHCS 4-40 X 1/2	8
13	48-6784-00	SCREW, SHCS 10-32 X 5/8 LG	2
14	22-4185-24	"X" AXIS MOTOR COVER	1
15	48-5013-00	SCREW, SOC SET 8-32 X 1/4	1
16	22-4185-28	ANTI BACKLASH NUT MOUNTING BLOCK	1
17	48-8381-00	ANTI-BACKLASH NUT	1
18	48-5061-00	SCREW, SHCS 8-32 X 1/2	3
19	22-4219-02	JAM NUT	2
20	22-4186-10	BEARING BLOCK	1
21	48-5185-00	SCREW, BHCS 8-32 X 3/4	2
22	48-6042-00	SCREW, SHCS 8-32 X 1/4 LG.	1

8 INCH "X" AXIS MOTOR ASSY. 22-4185-25

REV.	BY	DATE	APP'D
1	JANUARY 17 1988	11/18/88	
2	AUGUST 14 1991	08/14/91	

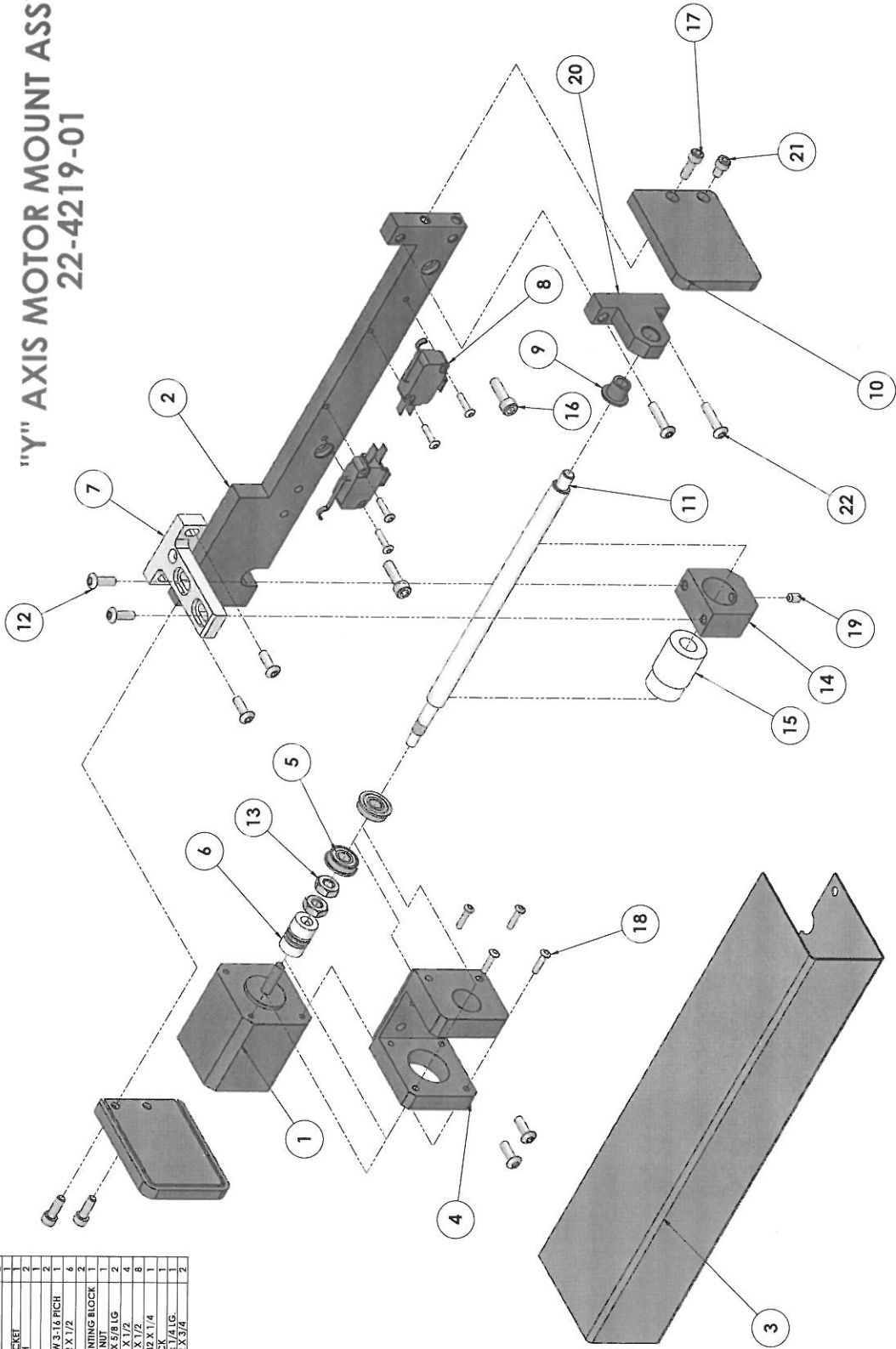


REV.	DATE	BY	APP'D
1	11/13/87		

TITLE: 8 INCH "X" AXIS MOTOR ASSY.
 SEE DIMS. PLS. 6 X 8
 D 22-4185-25 2
 SHEET 11 OF 11

"Y" AXIS MOTOR MOUNT ASSY. 4"

22-4219-01



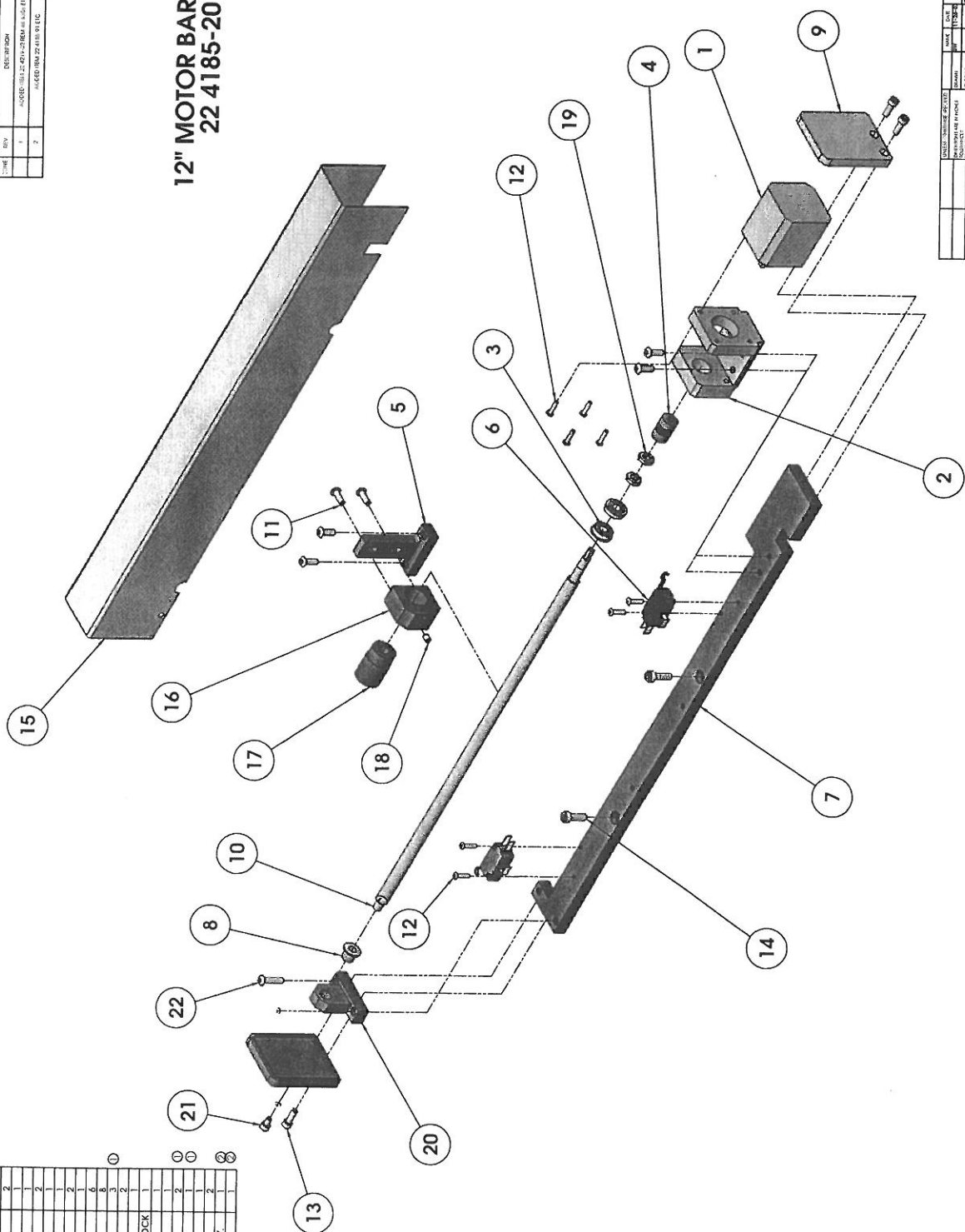
ITEM NO.	PART NUMBER	DESCRIPTION	QTY
1	48-9043-00	MOTOR	1
2	22-4187-01	"Y" AXIS MOUNT BAR	1
3	22-4184-09	MOTOR MOUNT	1
4	48-7928-00	BEARING	2
5	48-9044-00	LOWER OUTPUT SKEWET	1
6	48-7437-00	BUSHING	2
7	22-4187-02	6"Y- AXIS LEAD SCREW 3/16 PITCH	1
8	48-5124-00	SCREW, BHCS 8-32 X 1/2	4
9	22-4185-28	JAM NUT	2
10	48-9381-00	ANTI BACKLASH NUT	1
11	SCREW, SHCS 10-32 X 5/8 LG		2
12	48-5041-00	SCREW, BHCS 4-40 X 1/2	8
13	48-5013-00	SCREW, SOC SET 8-32 X 1/4	1
14	22-4184-10	BEARING BLOCK	1
15	48-9042-00	SCREW, SHCS 8-32 X 1/4 LG	1
16	48-5185-00	SCREW, BHCS 8-32 X 3/4	2

S-T INDUSTRIES INC.
 FILE
 "Y" AXIS MOTOR MOUNT
 ASSY. 4"
 D 22-4219-01
 SHEET 1 OF 1

ITEM NO.	PART NUMBER	DESCRIPTION	QTY
1	22-4185-01	STEPPER MOTOR WIRE ASSY.	1
2	22-4185-09	MOTOR MOUNT	1
3	48-8357-00	COUPLING	2
4	48-8357-00	COUPLING	2
5	22-4184-06	LOWER NUT BRACKET	1
6	48-8044-00	LIMIT SWITCH	2
7	22-4185-22	"X" & "Y" AXIS MOUNT BAR 12X12	2
8	22-4185-22	"X" & "Y" AXIS MOUNT BAR 12X12	2
9	22-4184-04	BRACKET	2
10	22-4185-23	"X" AXIS LEAD SCREW	2
11	48-5124-00	SCREW, BHCS 8-32 X 1/2	6
12	48-5032-00	SCREW, BHCS 4-40 X 1/2	6
13	48-5032-00	SCREW, BHCS 4-40 X 1/2	6
14	48-5032-00	SCREW, BHCS 4-40 X 1/2	6
15	48-6784-00	SCREW, SHCS 1/8-32 X 1/4 LG	3
16	48-6784-00	SCREW, SHCS 1/8-32 X 1/4 LG	3
17	22-4185-21	"X" AXIS MOTOR COVER	1
18	22-4185-28	ANTI BACKLASH NUT MOUNTING BLOCK	1
19	48-8391-00	ANTI BACKLASH NUT	1
20	22-4185-10	SCREW, SOC SET 8-32 X 1/4	1
21	22-4185-10	SCREW, SOC SET 8-32 X 1/4	1
22	48-6042-00	BEARING BLOCK	2
23	48-5185-00	SCREW, BHCS 8-32 X 3/4	2
24	22-4185-23	STEPPER AMP/MOTOR CABLE ASSY	2
25	48-5185-23	LIMIT SWITCH WIRE ASSY 1/2"	2

REV	DATE	APPROVED
1	8/27/2009	
2	12/2/2009	

12" MOTOR BAR ASSY. 22 4185-20

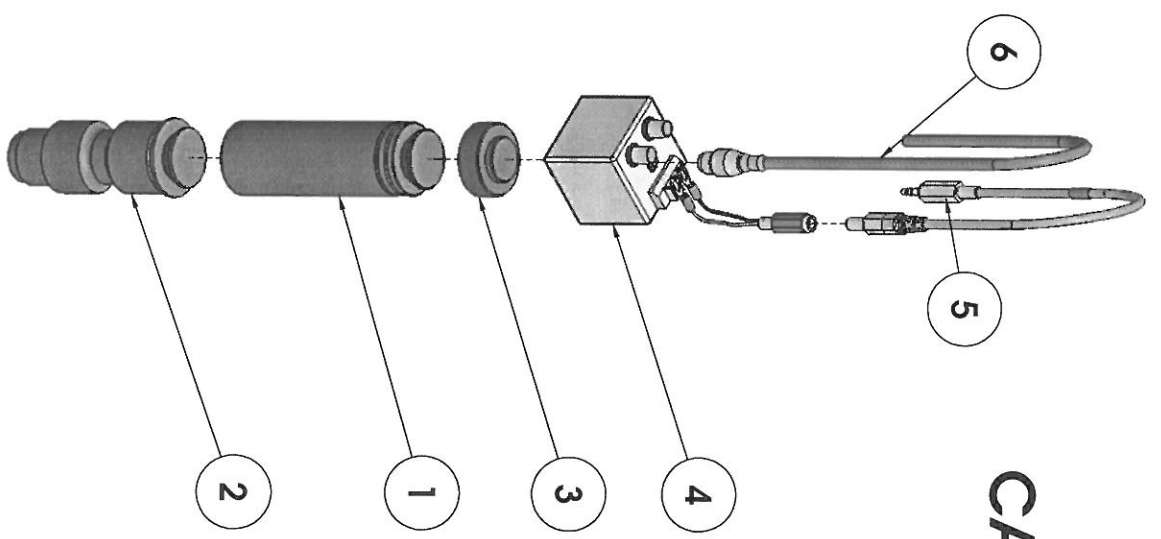


UNLESS OTHERWISE SPECIFIED	MARK	SCALE
DESIGNED BY		
DRAWN BY		
CHECKED BY		
APPROVED BY		
DATE		
REV		
1	8/27/2009	
2	12/2/2009	

S-T INDUSTRIES INC.	
"X" AXIS MOUNT BAR ASSY.	
DATE	REV
22 4185-20	2
SCALE	SHEET
1:1	1 OF 1

D 22 4185-20

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	48-7868-00	ADAPTOR, LENS	1
2	48-7867-00	ZOOM LENS	REF
3	48-7880-00	C-MOUNT ADAPTOR	1
4	22-4090-18	COLOR, S-VIDEO CAMERA & PIGTAIL CABLE	1
5	48-8412-00	CAMERA CABLE	1
6	48-8018-00	S VIDEO CABLE	1
7	48-7867-01	ZOOM LENS W/DETTENTS	REF



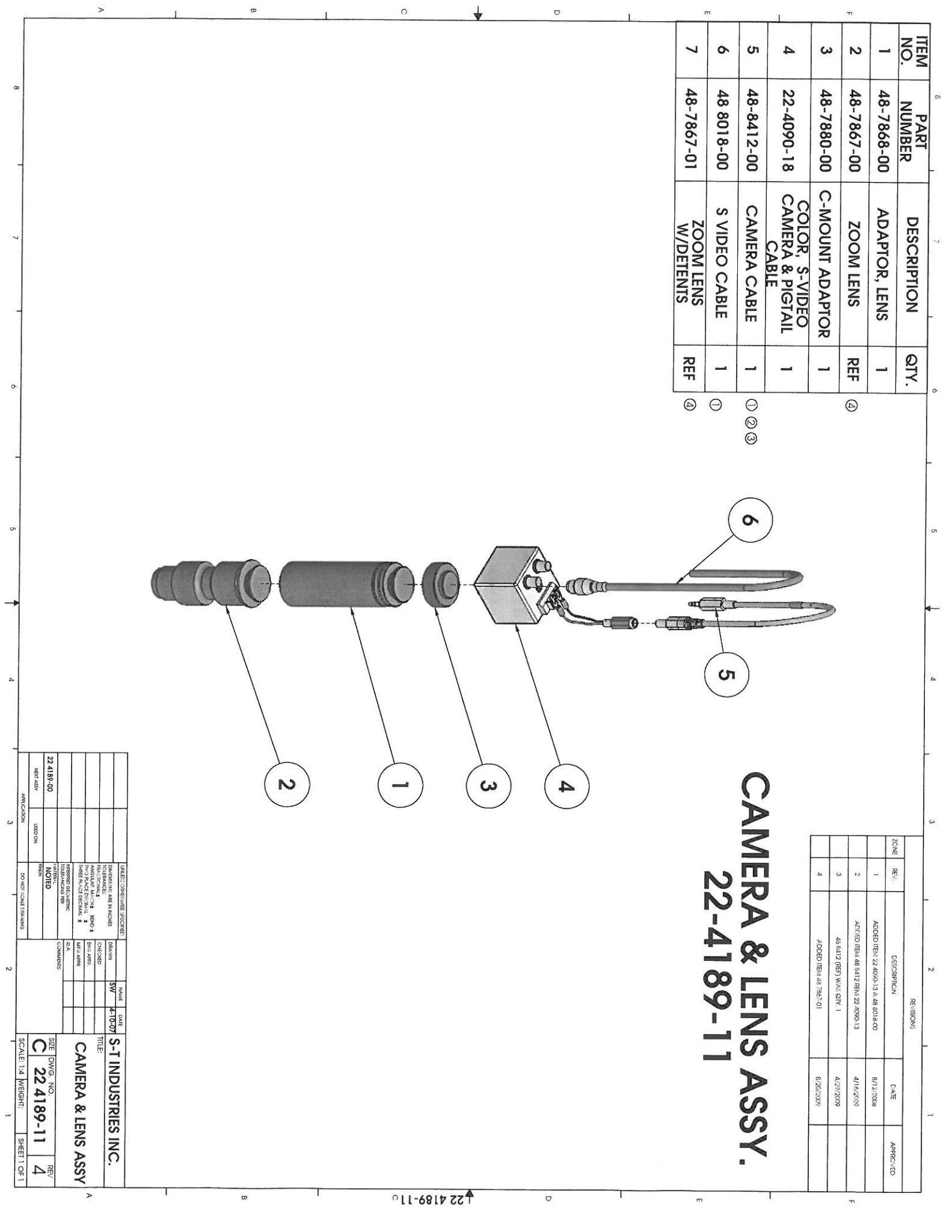
CAMERA & LENS ASSY.

22-4189-11

REVISIONS			
ZONE	REV.	DESCRIPTION	DATE
	1	ADDED ITEM 22 4870 13 A 48 8018-00	8/12/2008
	2	ADDED ITEM 48 8412 ITEM 22 4090 13	4/16/2009
	3	48 8412 (REV) WAS QTY. 1	4/29/2009
	4	ADDED ITEM 48 7867-01	6/20/2009

UNLESS OTHERWISE SPECIFIED		NAME	DATE
FINISH:	AS SHOWN	SW	4/10/07
STRAIGHTENING:	AS SHOWN		
DRILLING:	AS SHOWN		
THREADS:	AS SHOWN		
WELDING:	AS SHOWN		
OTHER:	AS SHOWN		
COMMENTS:			
NOTED			
22 4189-00			
NEXT ASSY			
APPLICATION			
UNID-DIN			
DO NOT SCALE DIMENSIONS			
SCALE: 1:4	WEIGHT:		
SHEET 1 OF 1			

S-T INDUSTRIES INC.
CAMERA & LENS ASSY



22 4189-11 C