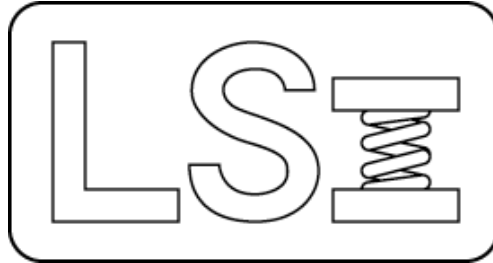


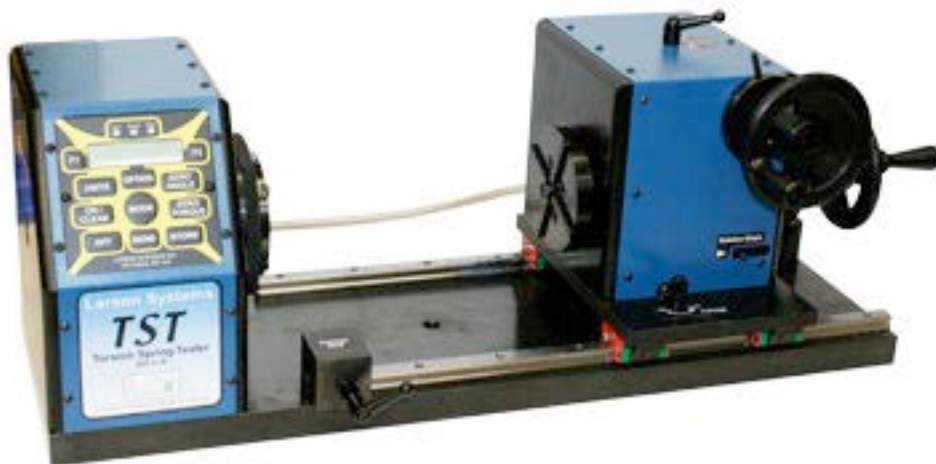
# *Larson Systems Inc.*



## *TST 200 Parts List*

*050-0000-0071-00*

*Torsion Spring Tester 200 in-lb. Capacity*





# 050-0000-0071-00 K

# Parts List

## TST 200 - Torsion Spring Tester 200 in-lb

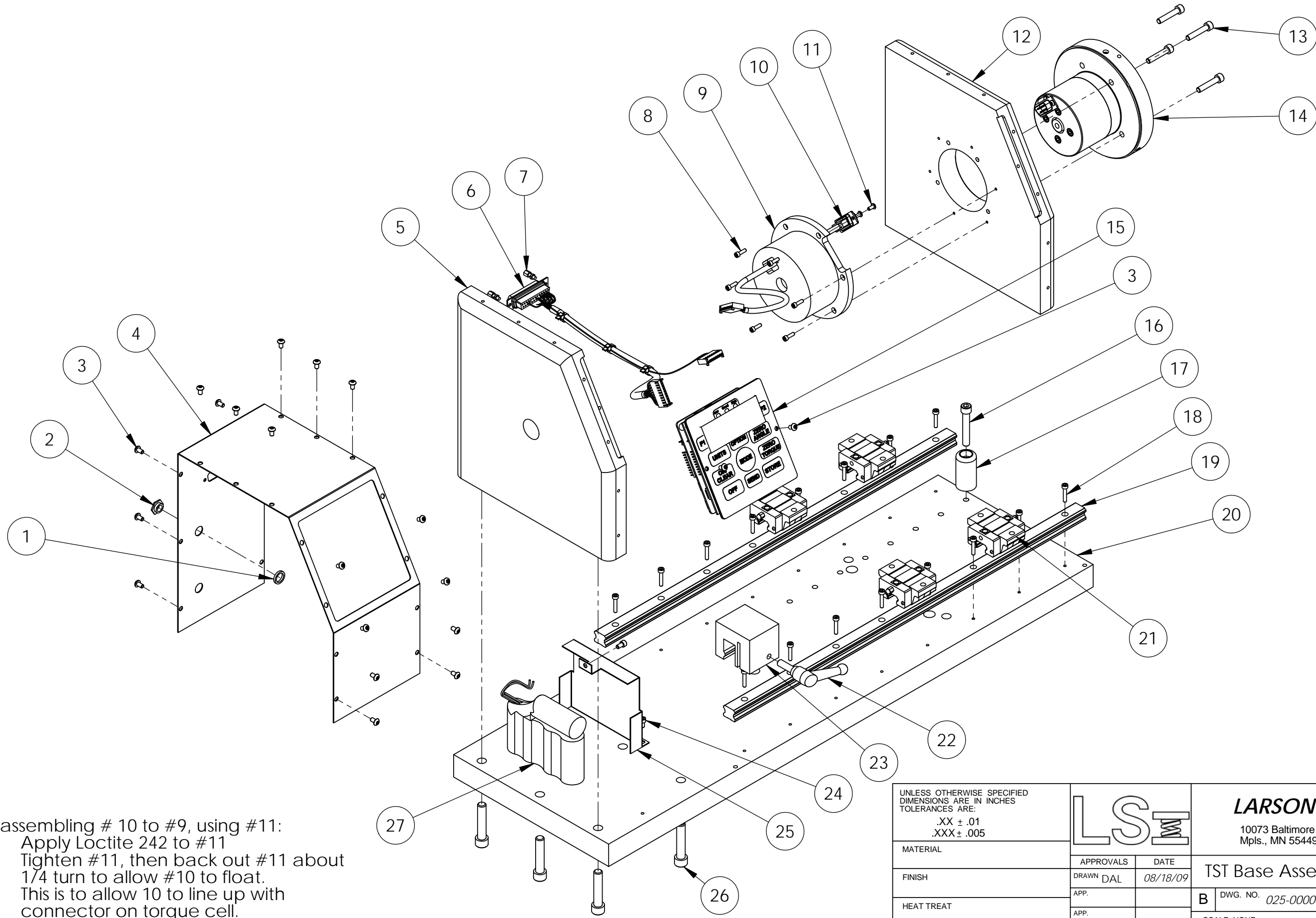
Rev	By	Date	Description
G	SMH	11-04-2002	Added 025-0000-0528-00 as an option
H	SMH	11-14-2002	Removed 25-0-528, No longer needed with new stop design
J	MDL	11-29-2002	Added 025-6000-0009-00
K	KMP	04-15-2005	Redesign Tailstock

Item	Qty	Part Number	Rev	Part Name	PCB Location	Part Length
1	1	025-0000-0336-01	P	TST Base Assembly		in.
2	1	025-0000-0633-02	E	TST 200 Tailstock w/ Fine Adjust		in.
3	1	025-0000-0369-00	D	TST Cable Armor Assembly, Std		in.
4	1	060-1000-0040-00	D	User Manual - TST		in.
5	1	059-0000-0037-00	C	Shipping Crate - TST Series		in.
6	1	025-1000-0396-00		Power Supply, 100-240 VAC 50-60 Hz (USA Plug)		in.
7	1	060-2000-0003-00		Parts List - TST 200		in.
8	1	025-6000-0009-00		Sticker Assembly - TST 200		in.

Approved by: 

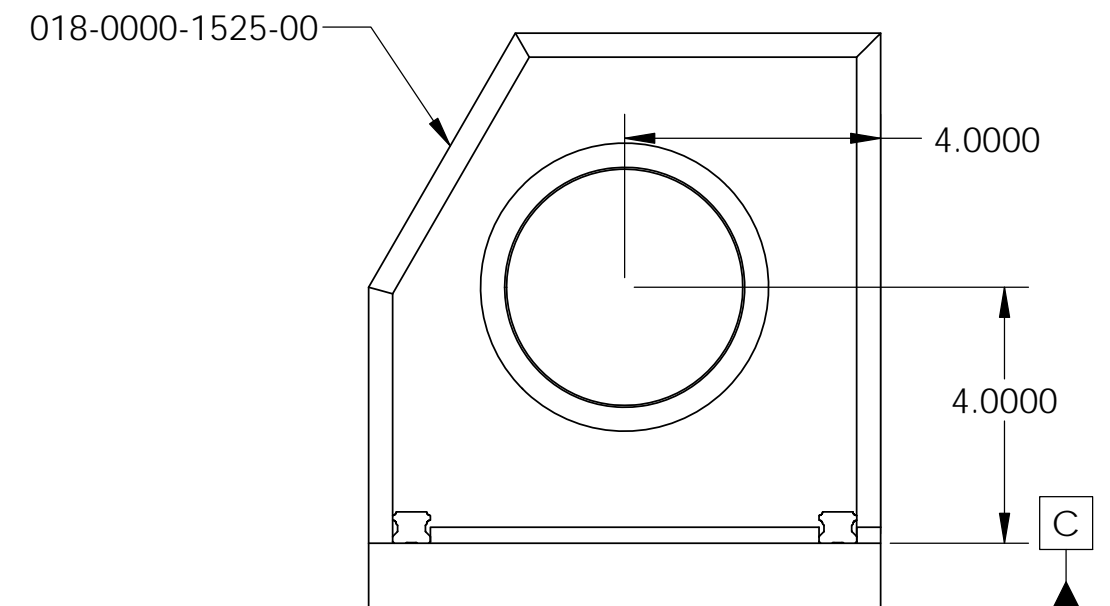
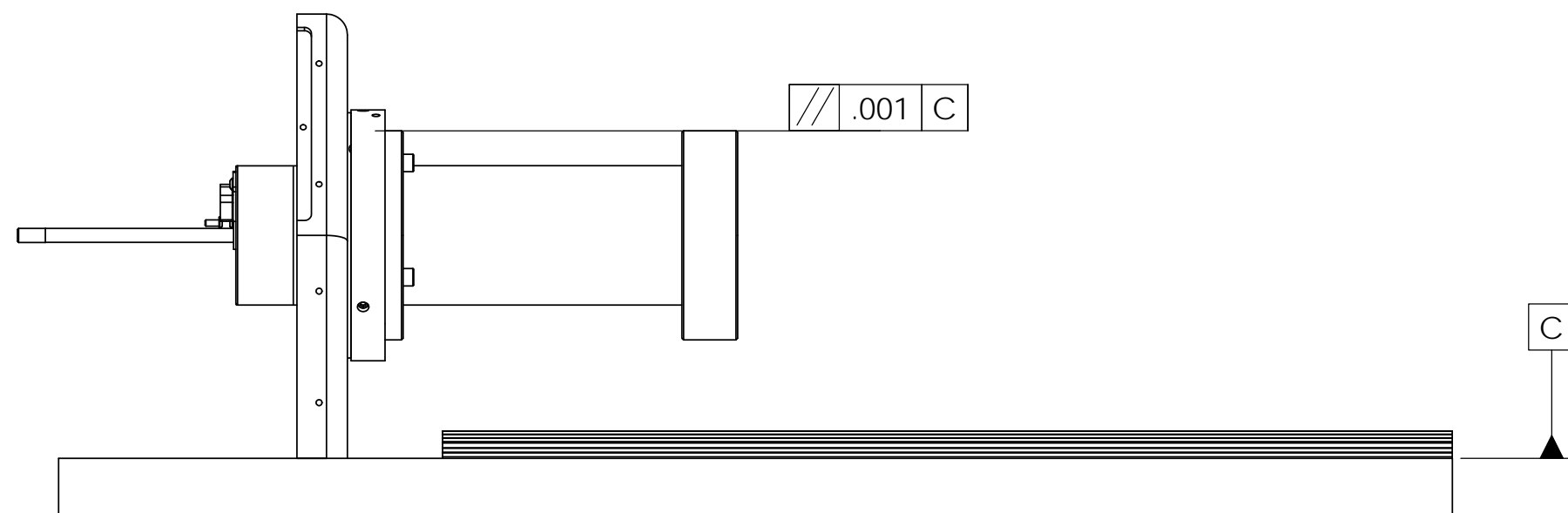
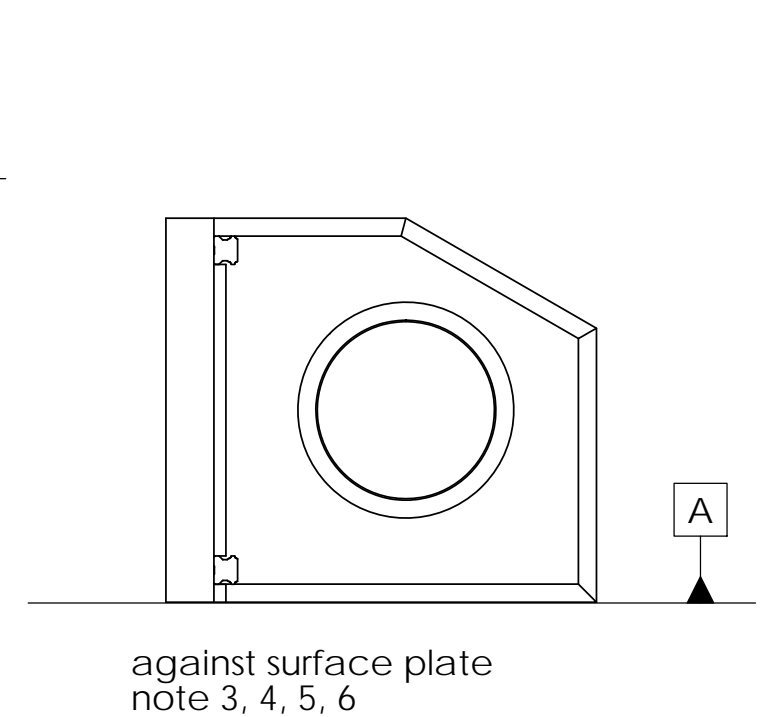
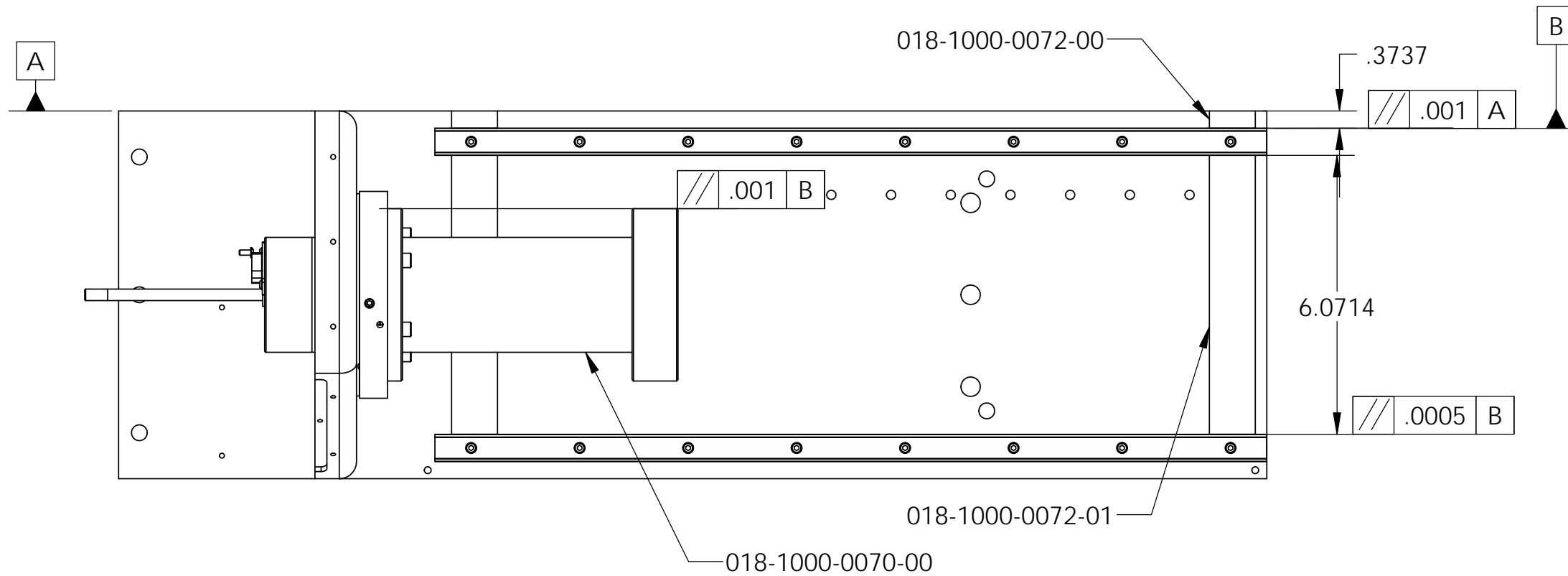
Date: May 3, 2005

REV	DATE	DESCRIPTION	DRW	APP



Notes:  
 When assembling # 10 to #9, using #11:  
 1. Apply Loctite 242 to #11  
 2. Tighten #11, then back out #11 about 1/4 turn to allow #10 to float.  
 3. This is to allow 10 to line up with connector on torque cell.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: .XX ± .01 .XXX ± .005			<b>LARSON SYSTEMS INC.</b> 10073 Baltimore St. NE PH. 763-780-2131 Mpls., MN 55449 FAX. 763-780-2182		
			TST Base Assembly		
	MATERIAL	APPROVALS	DATE	B DWG. NO. 025-0000-0336-01	REV: P
	FINISH	DRAWN DAL	08/18/09		SCALE: NONE
HEAT TREAT	APP.	APP.			



- NOTE:
1. Shim or machine 018-0000-1525-00 to achieve 4.000 dimension
  2. Indicate top of 018-1000-0070-00 to be parallel to base
  3. Align rails with spacers 018-1000-0072-00, -01 and snug screws
  4. tighten one end and indicate over each hole to make rail parallel
  5. repeat step 2 with second rail
  6. in same inspection as step 3, 4 and 5 indicated side (top on inspection plate) of 018-1000-0070-00 to be parallel to rails.



# 025-0000-0336-01 P

## TST Base Assembly

# Parts List

Rev	By	Date	Description
K	KMP	11-17-2005	Add Items 54 and 55
M	DAL	08-18-2009	Redraw, Add assembly instructions, deleted 013-2000-0266-00, deleted 013-0000-0115-00
N	DAL	05-04-2010	#17 013-2000-0067-02 was 013-2000-0158-01, added #19 013-2000-0266-00
P	RRS	02-12-2013	Add note on page 1, add items 13 & 14, moved #10 to be mounted on inside of #9, renumbered

Item	Qty	Part Number	Rev	Part Name	PCB Location	Part Length
1	1	018-0000-1635-00		Power Jack Spacer / Insulator		in.
2	1	018-0000-2160-00	A	Power Jack Nut / Insulator		in.
3	20	013-0000-0077-00		6-32 X 1/4 BHCS		in.
4	1	018-0000-1605-00	K	ENCLOSURE, HEAD STOCK		in.
5	1	018-0000-1526-00	J	Housing Side, Left		in.
6	1	025-1000-0287-00	K	Internal RS 232 Cable - TST		in.
7	2	013-1000-0010-00		Female Screw Lock		in.
8	6	013-0000-0010-00		4-40 X 3/8 SHCS		in.
9	1	018-0000-1660-00	E	Internal Flange Receiver		in.
10	1	025-1000-0304-00	E	Smart Cell Cable Assembly, TST		in.
11	2	013-0000-0020-00		4-40 X 1/4 BHCS		in.
12	1	018-0000-1525-00	N	Housing Side, Right		in.
13	4	013-0000-0175-00		10-32 X 1 SHCS		in.
14	ref	025-0000-0475-00	E	Torque Cartridge - 0.3 in-lb with Lockout		in.
15	1	025-0000-0345-00	D	Front Panel Assembly - TST / STWCS		in.
16	1	013-0000-0061-00		1/4-20 X 1 1/2 SHCS		in.
17	1	018-0000-1617-00	B	TRAVEL STOP		in.
18	16	013-0000-0188-00		M3-0.5 X 16 mm SHCS		in.
19	2	013-2000-0067-02		11" Linear Bearing Rail (15x460 mm) (FLASH, TST)		in.
20	1	018-0000-1527-00	T	Base, TST		in.
21	4	013-2000-0266-00		Linear Bearing Block with 2 hole mount screw from		in.
22	1	013-5000-0131-00		Adjustable Handle 1/4-20 X .78"		in.
23	1	018-0000-2450-00	E	TST Linear Rail Clamp		in.
24	3	013-0000-0142-00		6-32 X 1/4 SHCS		in.
25	1	018-0000-1648-00	C	BATTERY HOLDER		in.
26	6	013-0000-0068-00		5/16-18 X 1 1/2 SHCS		in.
27	1	025-1000-0240-00	Q	Rechargeable Battery, 6V, SDHT, molex connector		in.

Approved by: 

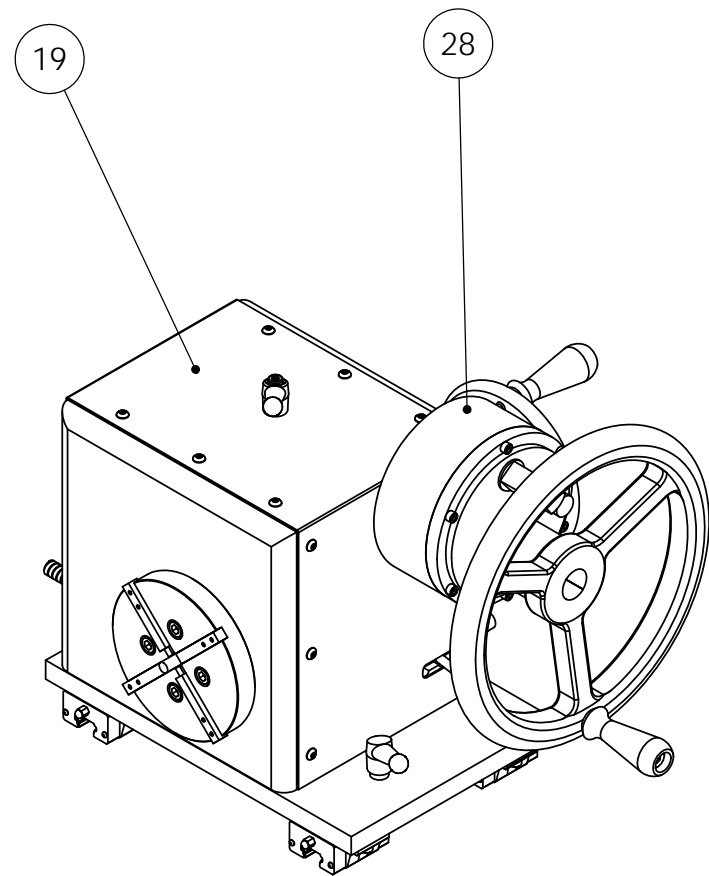
Date: July 22, 2013

**SEE ATTACHED 2 DRAWINGS**

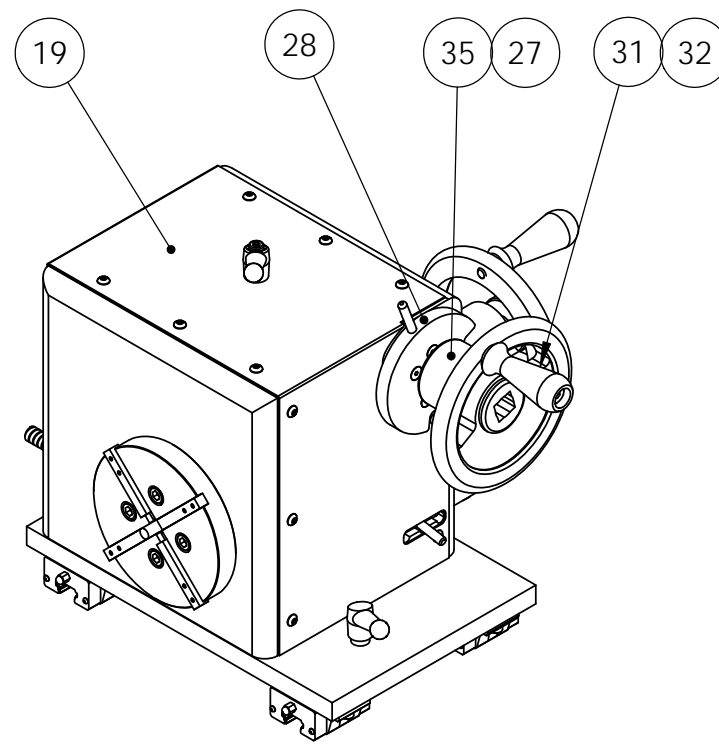
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Page 3 of 3

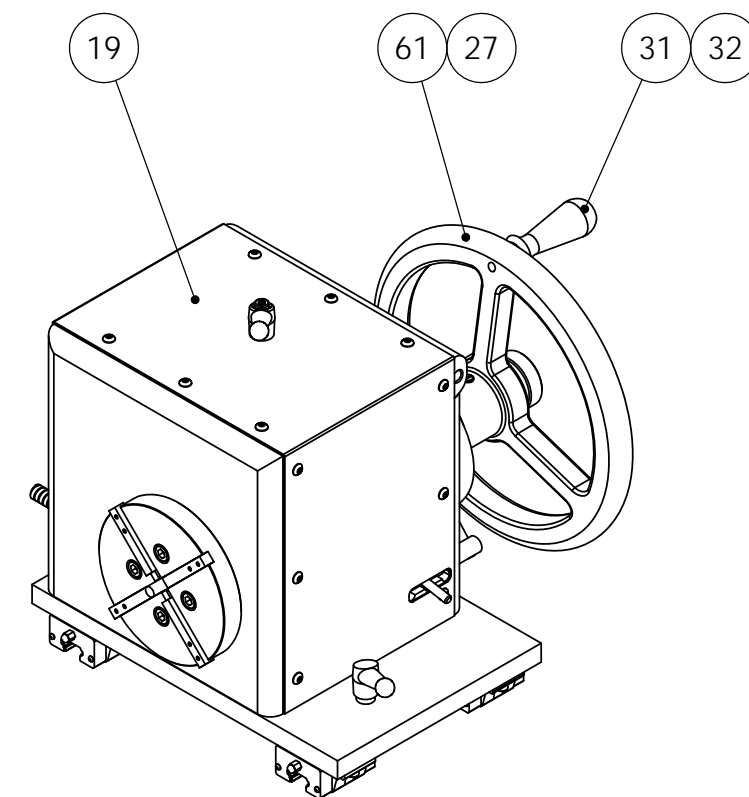
REV	DATE	DESCRIPTION	DRW	APP
		SEE SHEET 2		




**-01**  
1300 in-lb tailstock

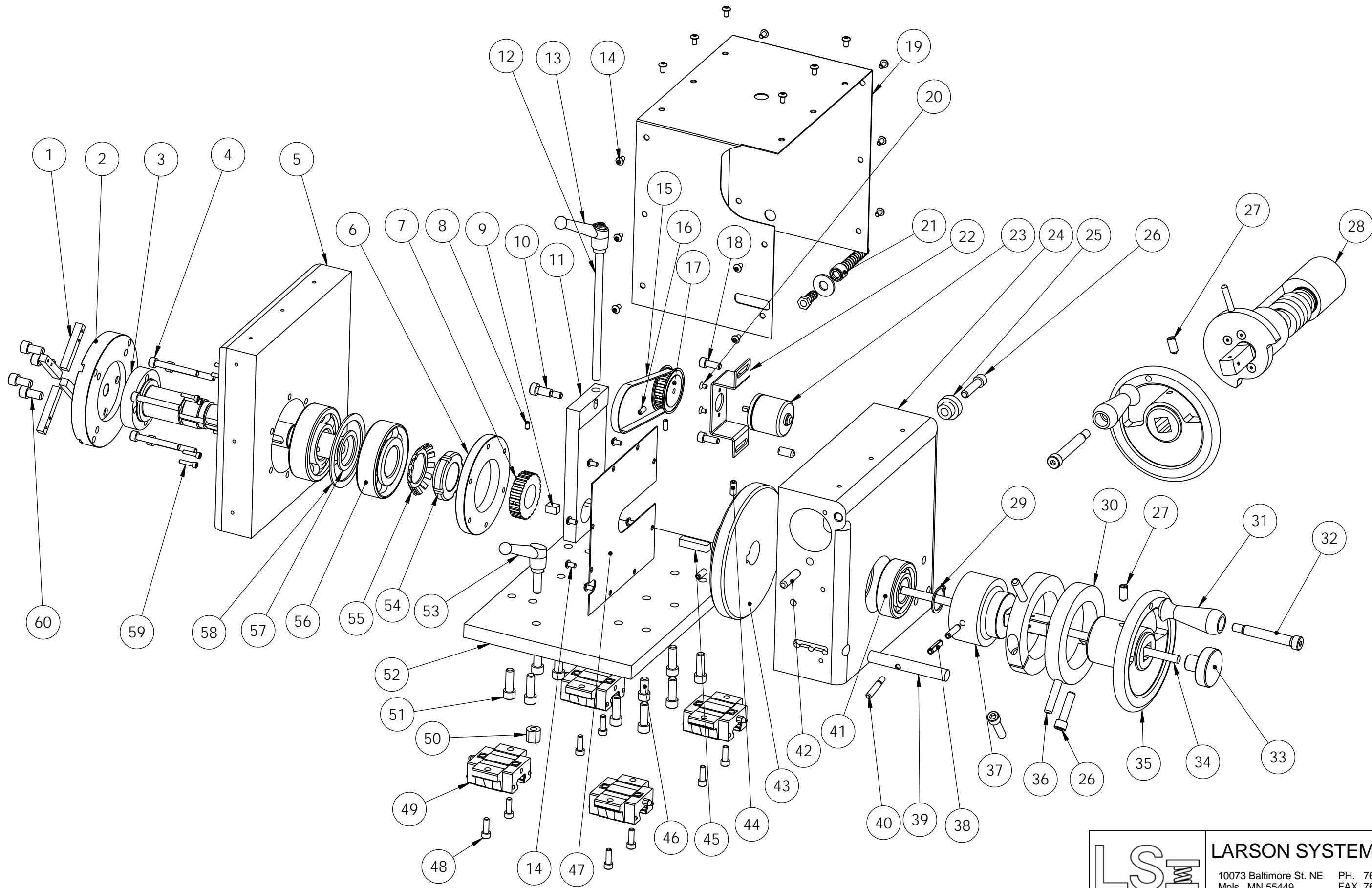



**-02**  
200 in-lb tailstock

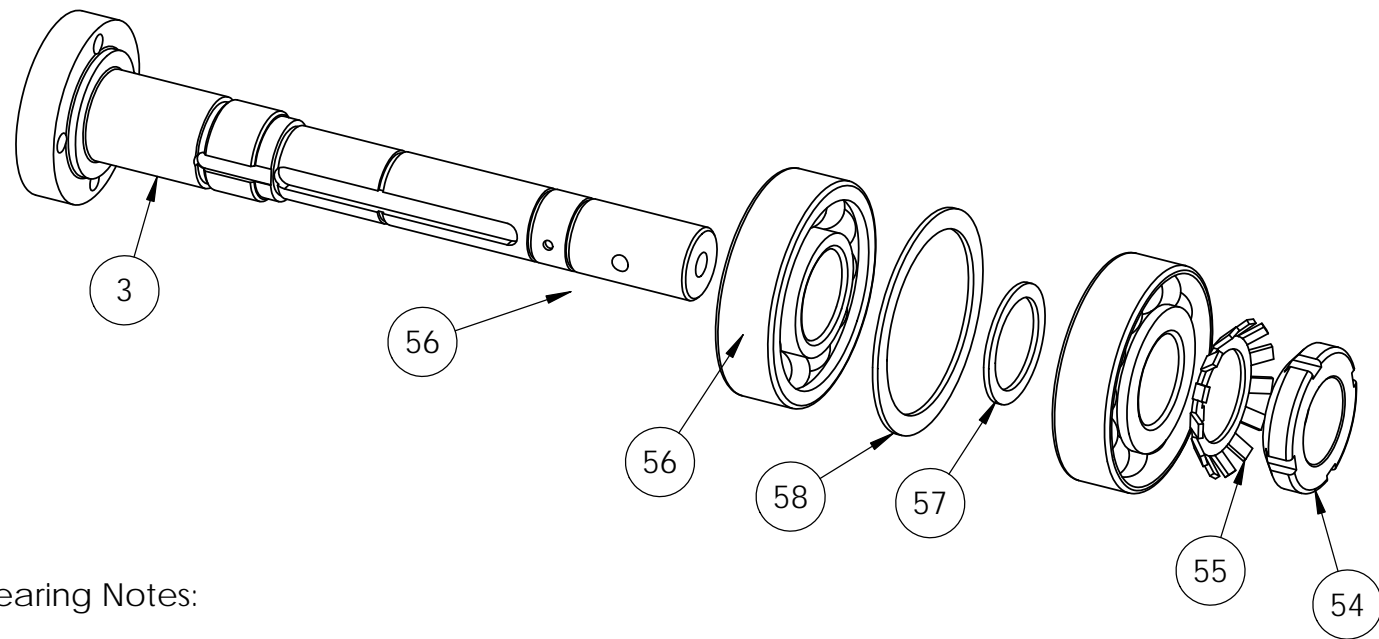
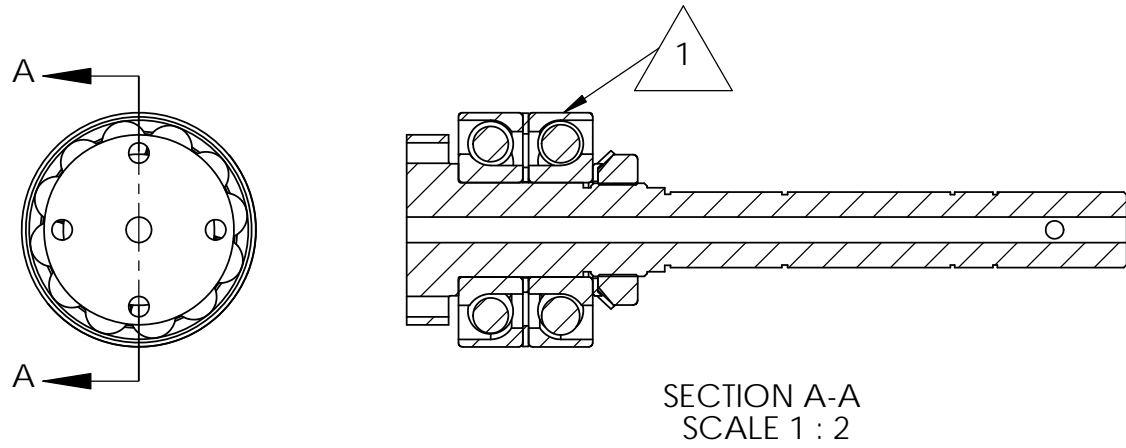


**-03**  
100 in-lb tailstock

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: .XX ± .01 .XXX ± .005		 <b>LARSON SYSTEMS INC.</b> 10073 Baltimore St. NE PH. 763-780-2131 Mpls., MN 55449 FAX. 763-780-2182								
MATERIAL	See Parts List									
FINISH	None	<table border="1"> <tr> <td>APPROVALS</td> <td>DATE</td> </tr> <tr> <td>DRAWN KMP</td> <td>3-8-05</td> </tr> <tr> <td>APP.</td> <td></td> </tr> <tr> <td>APP.</td> <td></td> </tr> </table>	APPROVALS	DATE	DRAWN KMP	3-8-05	APP.		APP.	
APPROVALS	DATE									
DRAWN KMP	3-8-05									
APP.										
APP.										
HEAT TREAT	None	<table border="1"> <tr> <td>TAILSTOCK, TST 200 WITH FINE ADJUST</td> </tr> <tr> <td>B DWG. NO. 025-0000-0633-01, -02, -03E</td> </tr> <tr> <td>SCALE: NONE</td> </tr> </table>	TAILSTOCK, TST 200 WITH FINE ADJUST	B DWG. NO. 025-0000-0633-01, -02, -03E	SCALE: NONE					
TAILSTOCK, TST 200 WITH FINE ADJUST										
B DWG. NO. 025-0000-0633-01, -02, -03E										
SCALE: NONE										

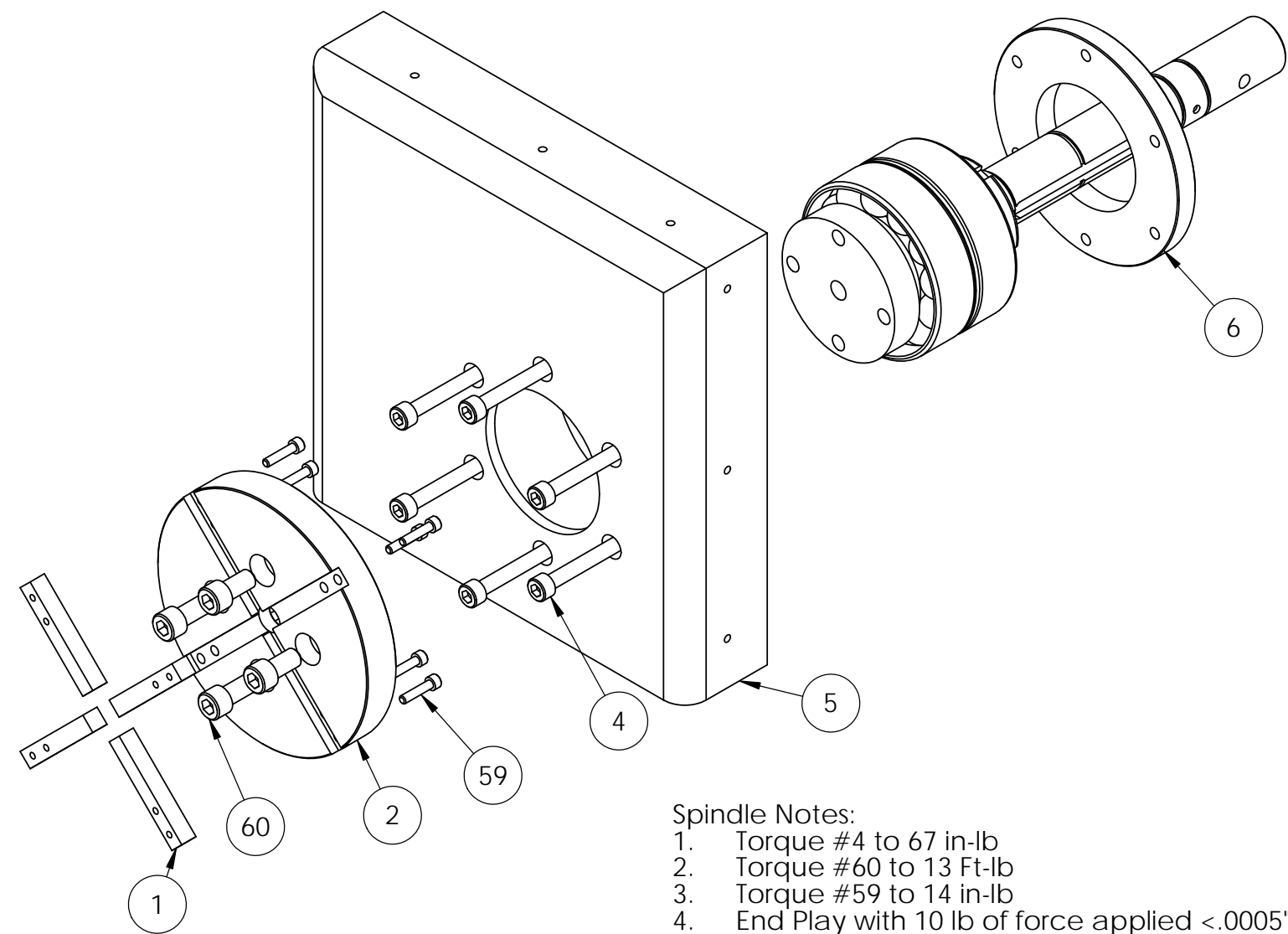


	<b>LARSON SYSTEMS INC.</b>	
	10073 Baltimore St. NE PH. 763-780-2131 Mpls., MN 55449 FAX. 763-780-2182	
<b>B</b>	SCALE: NONE	DWG. NO. 025-0000-0633-01, -02, -03E SHEET 2 OF 7



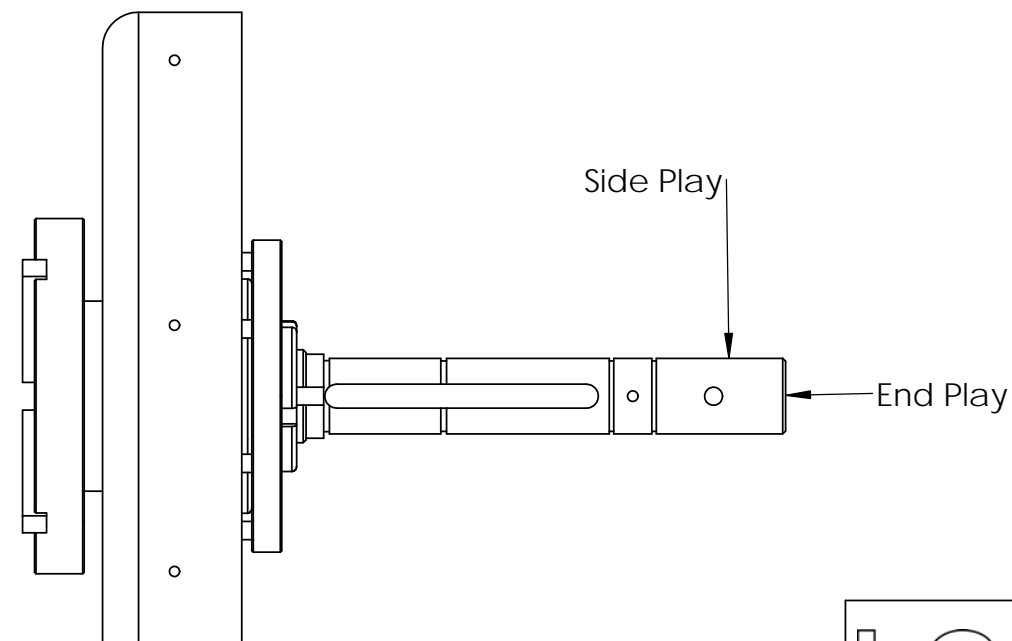
Bearing Notes:

1. Bearing orientation Back to Back
2. Select fit #57 should be .0005" thinner than #58
3. Torque to turn #3 should be between 5 and 10 in-lb after #54 is torqued
4. Grease items #56, 55, 54 at assembly
5. Torque #54 to 40 ft-lb

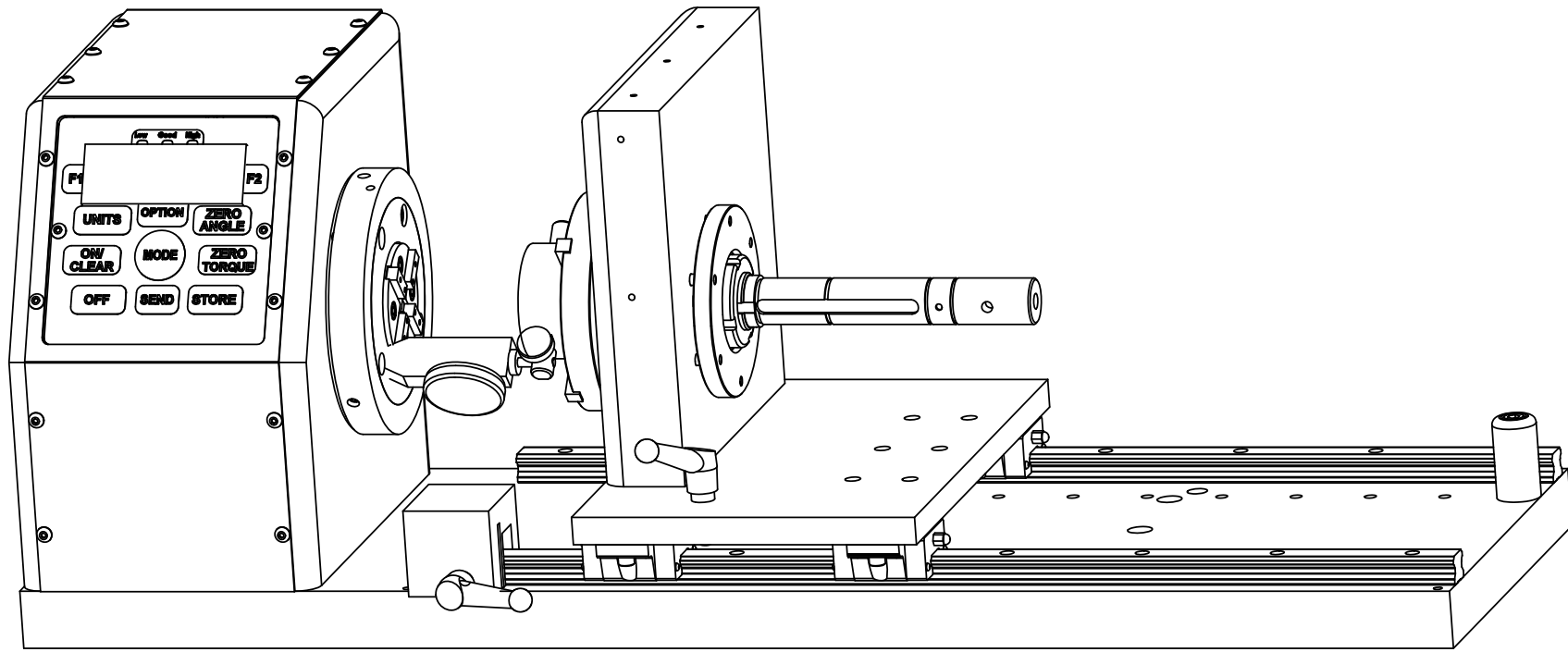


Spindle Notes:

1. Torque #4 to 67 in-lb
2. Torque #60 to 13 Ft-lb
3. Torque #59 to 14 in-lb
4. End Play with 10 lb of force applied <.0005"
5. Side Play with 10 lb of force applied <.002"





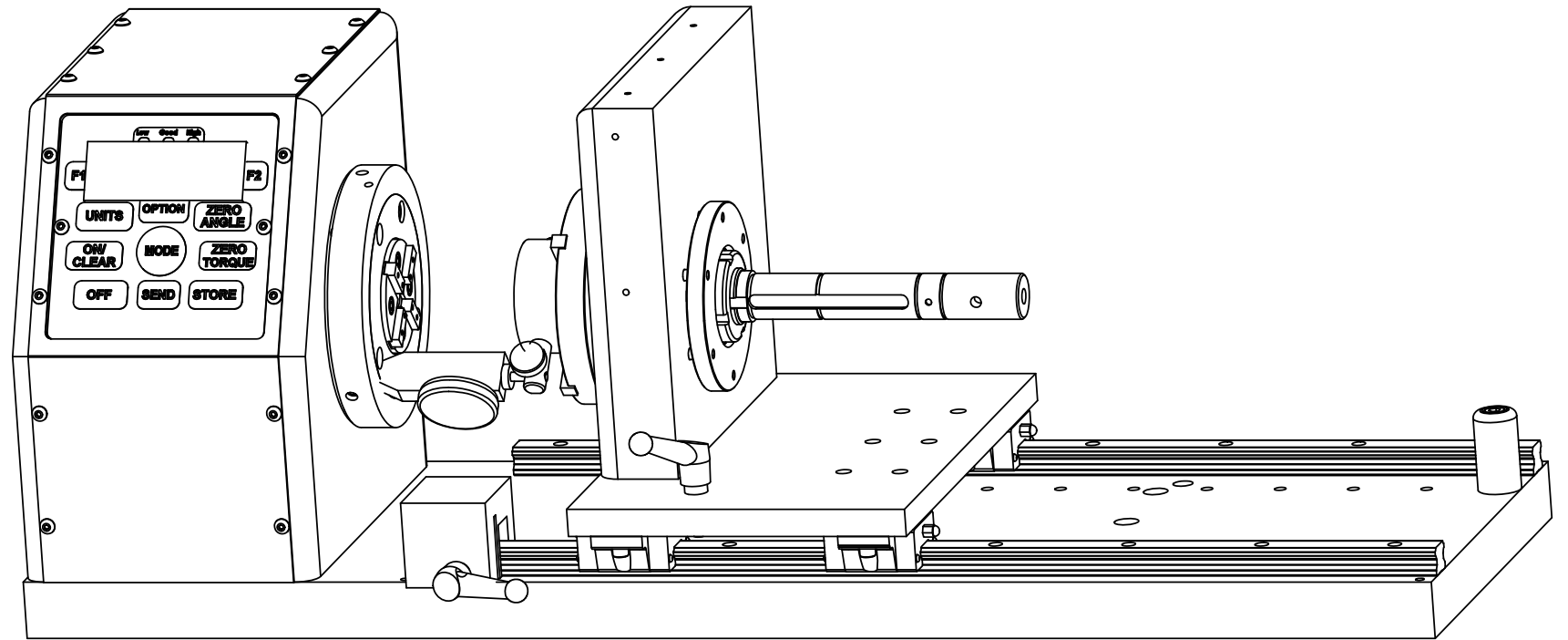


Face Squareness Alignment

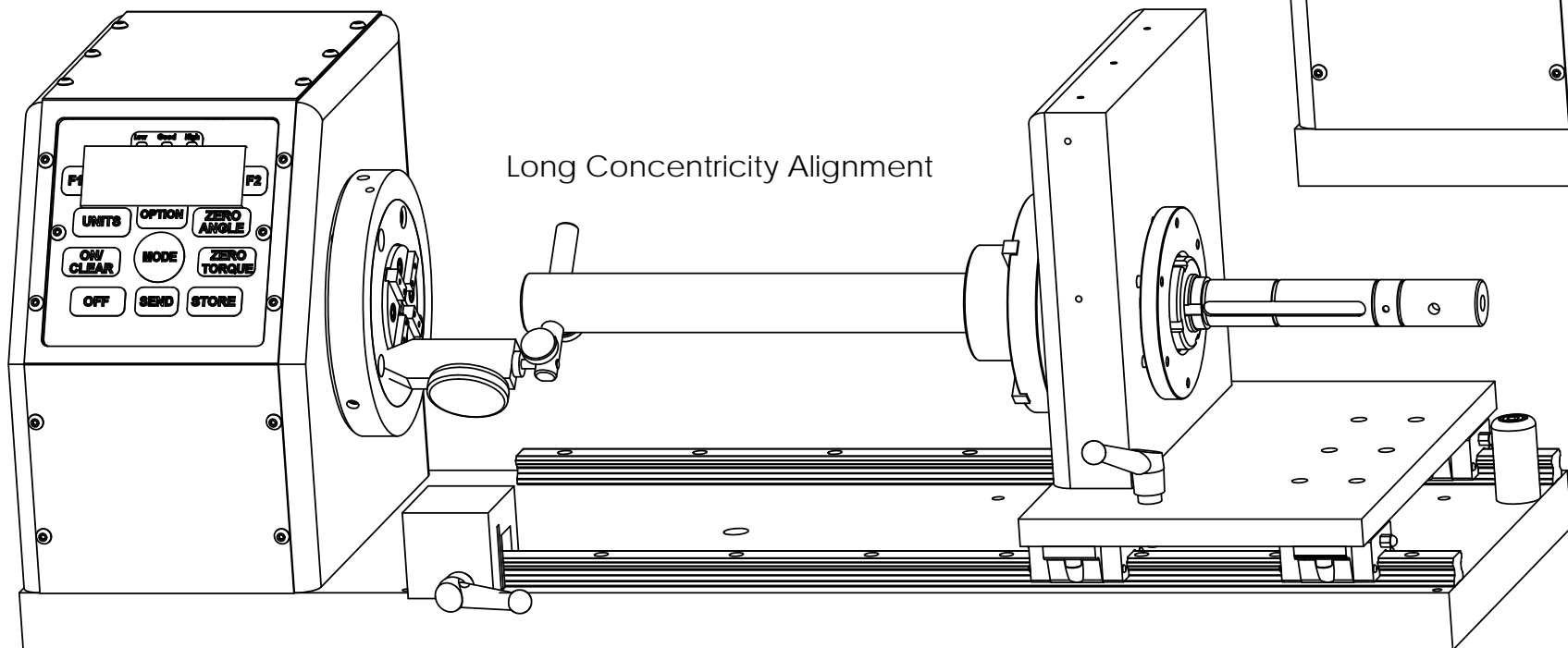
Note:

1. Measure and record 12:00, 3:00, 6:00 and 9:00 positions
2. Measure perpendicularity first
3. Align and shim as necessary
4. Short Concentricity  $< .001$  TIR
5. Long Concentricity  $< .010$  TIR
6. Face Squareness  $< .004$  TIR

Short Concentricity Alignment



Long Concentricity Alignment





# 025-0000-0633-02 E

## TST 200 Tailstock w/ Fine Adjust

# Parts List

Rev	By	Date	Description
B	KMP	06-13-2006	Item 54 18-0-1607-01 was 18-0-1607-00, delete Item 53
C	DAL	08-20-2009	added 8 ea 013-0000-0181-00, 013-0000-0324-00 was 013-0000-0287-00, 013-2000-0057-00 was 013-2000-0172-00, del 013 0000 0293 00 018 0000 1570 01 was 018 0000 1570 00 018 0000 1537 01 was 018 0000 1537 00 013 5000
D	DAL	05-07-2010	Added -01, -02, -03 to same model and drawing
E	RRS	02-13-2013	Item # 42 was 013-2000-0057-00

Item	Qty	Part Number	Rev	Part Name	PCB Location	Part Length
1	4	018-0000-1666-03	E	Torque Cell Key, 1/4 X 1.560		in.
2	1	018-0000-1663-01	B	Chuck mouting Plate, Ø.25 ATST		in.
3	1	018-0000-2645-00	D	Shaft, Tailstock drive ATST		in.
4	6	013-0000-0197-00		10-32 X 1 1/2 SHCS		in.
5	1	018-0000-1700-00	A	TAILSTOCK SIDE PLATE (1300 IN-LB)		in.
6	1	018-0000-2245-00		BEARING RETAINER, ATST		in.
7	1	018-0000-1537-01	G	PULLEY, 24 TEETH, 1/5 PITCH. .7874 BORE		in.
8	2	013-0000-0269-00		6-32 X 1/4 SSS		in.
9	1	018-0000-1894-05	C	Key, .2495/.2500 X .375		in.
10	1	013-0000-0204-00		1/4 X 1/2 SHSS, SHOULDER SCREW 10-24TH		in.
11	1	018-0000-1723-00	A	Shaft Lock (1300 IN-LB)		in.
12	1	018-0000-1722-01	C	THREADED SHAFT		in.
13	1	013-5000-0122-00		Adjustable Handle		in.
14	25	013-0000-0077-00		6-32 X 1/4 BHCS		in.
15	1	013-5000-0031-01		Timing Belt - Positive Drive 110XL 1/4" WIDE		in.
16	2	013-0000-0056-00		6-32 X 3/8 SSS		in.
17	1	018-0000-1570-01	E	PULLEY, 20 TEETH, 1/5 PITCH, .1575 BORE		in.
18	2	013-0000-0025-00		10-24 X 1/2 SHCS		in.
19	1	018-0000-1697-00	F	TAILSTOCK ENCLOSURE (1300 IN-LB)		in.
20	2	013-0000-0262-00		M3-0.5 X 5 mm FHSCS		in.
21	Ref	025-0000-0369-00	D	TST Cable Armor Assembly, Std		in.
22	1	018-0000-1552-00	D	Bracket, Encoder Mounting / TST		in.
23	1	025-1000-0288-00	G	Rotary Encoder Assembly 14-1-28, TST		in.
24	1	018-0000-1712-00	H	Micro Adjust Housing (1,300 in-lb)		in.
25	1	018-0000-1699-00	A	Spacer, Micro Adjust Housing		in.
26	3	013-0000-0064-00		1/4-20 X 1 SHCS		in.
27	3	013-2000-0327-00		Ball Plunger 1/4-20		in.
28	1	025-0000-0388-01	B	Gear Assembly Fine Adjust		in.
29	1	013-2000-0316-00		Snap Ring,		in.
30	2	018-0000-1857-00	C	Stop Clamp		in.

Approved by: \_\_\_\_\_

Date: \_\_\_\_\_

**SEE ATTACHED 4 DRAWINGS**

Printed on 02-13-2013, 1:19:24 PM by RRS

Page 5 of 7



# 025-0000-0633-02 E

# Parts List

## TST 200 Tailstock w/ Fine Adjust

Rev	By	Date	Description
B	KMP	06-13-2006	Item 54 18-0-1607-01 was 18-0-1607-00, delete Item 53
C	DAL	08-20-2009	added 8 ea 013-0000-0181-00, 013-0000-0324-00 was 013-0000-0287-00, 013-2000-0057-00 was 013-2000-0172-00, <del>del 013 0000 0287 00 018 0000 1570 01 was 018 0000 1570 00 018 0000 1537 01 was 018 0000 1537 00 013 5000</del>
D	DAL	05-07-2010	Added -01, -02, -03 to same model and drawing
E	RRS	02-13-2013	Item # 42 was 013-2000-0057-00

Item	Qty	Part Number	Rev	Part Name	PCB Location	Part Length
31	2	018-0000-1688-00	C	Revolving Handle		in.
32	2	013-0000-0285-00		5/16 X 1 3/4 SHSS		in.
33	1	018-0000-1607-01	C	QUICK CHANGE KNOB		in.
34	1	018-0000-1606-04	H	Quick Change Rod		in.
35	2	018-0000-2050-00		4" Wheel TST / SDHT 2000		in.
36	2	013-2000-0119-00		.25 X 1.5 DOWEL PIN		in.
37	1	018-0000-1861-01		Clamp Drum, TST		in.
38	2	013-2000-0318-00		Spring Pin Zinc 3/16x .75"		in.
39	1	018-0000-1858-01	C	Rotational Stop, TST		in.
40	1	018-0000-1859-00		Stop Lever		in.
41	1	013-2000-0152-00		Radial Ball Bearing - .7874 I.d.204Fafnir		in.
42	1	013-2000-0057-00		1/4 X 1" DOWEL PIN		in.
43	1	018-0000-1714-00	J	Worm Gear - TST		in.
44	2	013-0000-0324-00		10-32 X 1/2 SSS Blk Oxide		in.
45	1	018-0000-1894-03	C	Key, .2495/.2500 X 1.00		in.
46	1	013-0000-0031-00		1/4-20 X 1/2 SHCS		in.
47	1	018-0000-1713-00	A	GREASE RETAINER, TAILSTOCK (1300 IN-LB)		in.
48	8	013-0000-0181-00		8-32 X 1/2 SHCS		in.
49	Ref	013-2000-0266-00		Linear Bearing Block with 2 hole mount screw from		in.
50	1	018-0000-2011-00	B	TST TAILSTOCK STOP		in.
51	11	013-0000-0032-00		1/4-20 X 3/4 SHCS		in.
52	1	018-0000-1540-00	E	BASE, TRAVELING		in.
53	1	013-5000-0131-00		Adjustable Handle 1/4-20 X .78"		in.
54	1	013-2000-0044-00	A	Ball Screw Locknut (UT 36)		in.
55	1	013-2000-0045-00		Ball Screw Lockwasher (UT-36)		in.
56	2	013-2000-0246-00		FLUSH GROUND ANGLE CONTACT BEARING		in.
57	1	018-0000-2686-01	A	Bearing Shim (inside), ATST		in.
58	1	018-0000-2686-00	A	Bearing Shim (out side), ATST		in.
59	8	013-0000-0231-00		4-40 X 1/2 SHCS		in.
60	4	013-0000-0264-00		1/4-28 X .500 SHCS		in.

Approved by: \_\_\_\_\_

Date: \_\_\_\_\_

**SEE ATTACHED 4 DRAWINGS**



# 025-0000-0633-02 E

# Parts List

## TST 200 Tailstock w/ Fine Adjust

Rev	By	Date	Description
B	KMP	06-13-2006	Item 54 18-0-1607-01 was 18-0-1607-00, delete Item 53
C	DAL	08-20-2009	added 8 ea 013-0000-0181-00, 013-0000-0324-00 was 013-0000-0287-00, 013-2000-0057-00 was 013-2000-0172-00, del 013 0000 0293 00 018 0000 1570 01 was 018 0000 1570 00 018 0000 1537 01 was 018 0000 1537 00 013 5000
D	DAL	05-07-2010	Added -01, -02, -03 to same model and drawing
E	RRS	02-13-2013	Item # 42 was 013-2000-0057-00

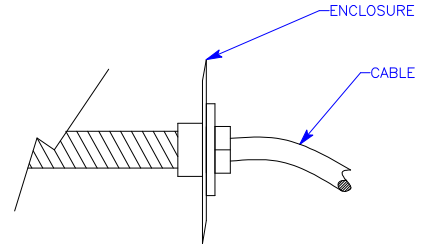
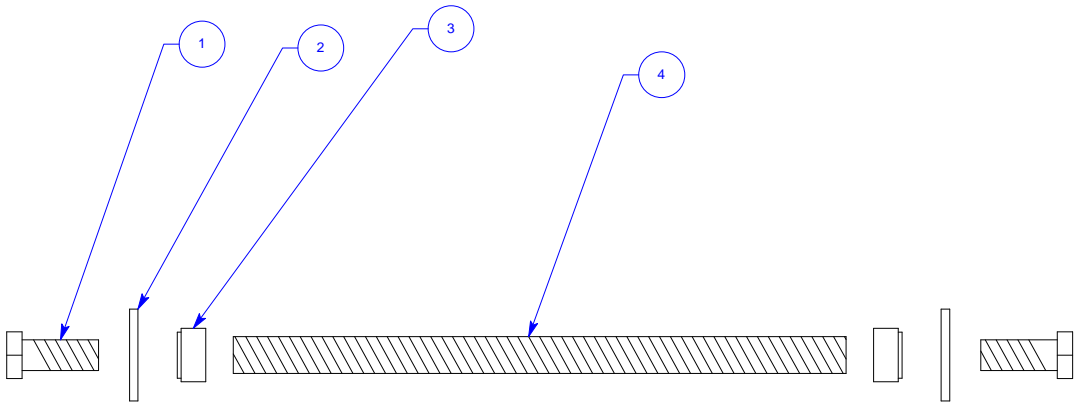
Item	Qty	Part Number	Rev	Part Name	PCB Location	Part Length
62	Ref	060-4000-0220-00		Assembly Specification for the TST		in.

Approved by: \_\_\_\_\_

Date: \_\_\_\_\_

**SEE ATTACHED 4 DRAWINGS**

REV	DATE	DESCRIPTION	DRW	APPR
		See Filemaker		



NOTES:  
1 ASSEMBLE AT INSTALLATION

<b>LARSON SYSTEMS INC.</b>		
SCALE: NONE	TOLERANCE: .XX +/- .01	DRW. BY: WRD
DATE: 12/17/97	.XXX +/- .005	APPR. BY:
TITLE: ASSEMBLY, TST CABLE ARMOR		
MATERIAL:	DRAWING NUMBER	
FINISH: B	025-0000-0369-XXD	



**Larson Systems Inc.**  
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[info@larsonsystems.com](mailto:info@larsonsystems.com)

