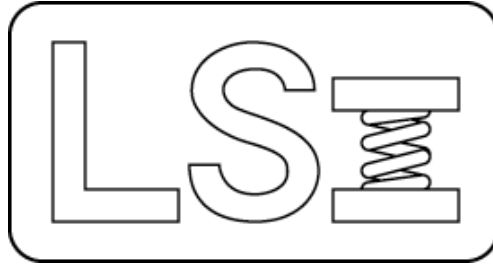


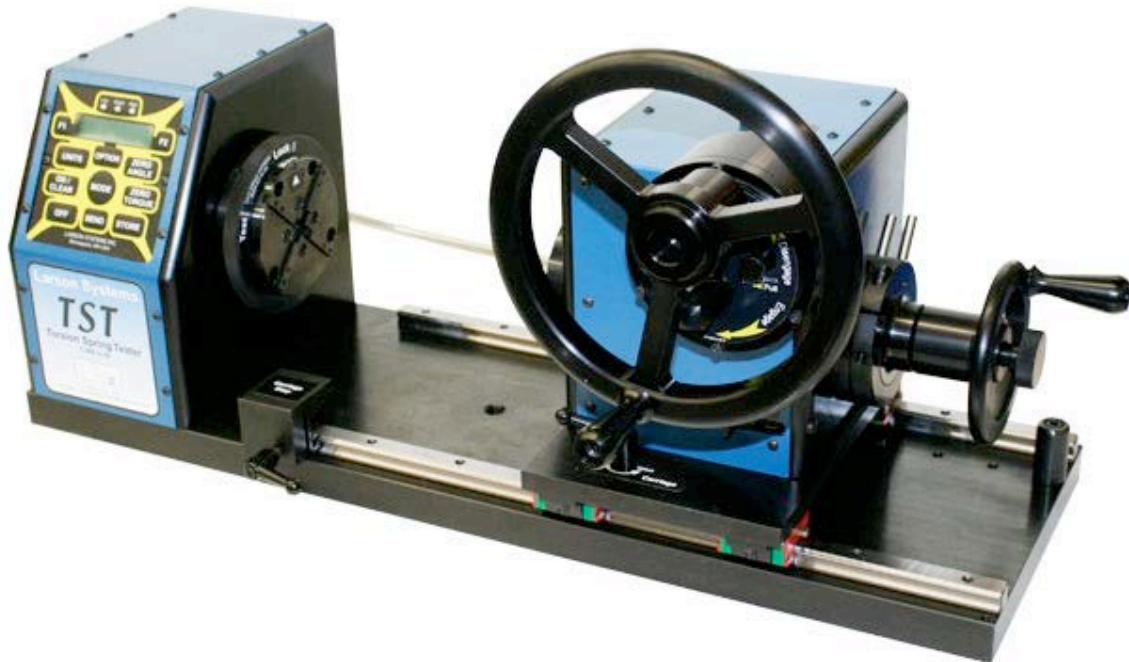
Larson Systems Inc.



TST 1300 Parts List

050-0000-0081-00

Torsion Spring Tester 1,300 in-lb. Capacity





050-0000-0081-00 D

Parts List

TST 1300 - Torsion Spring Tester, SDHT Electronics

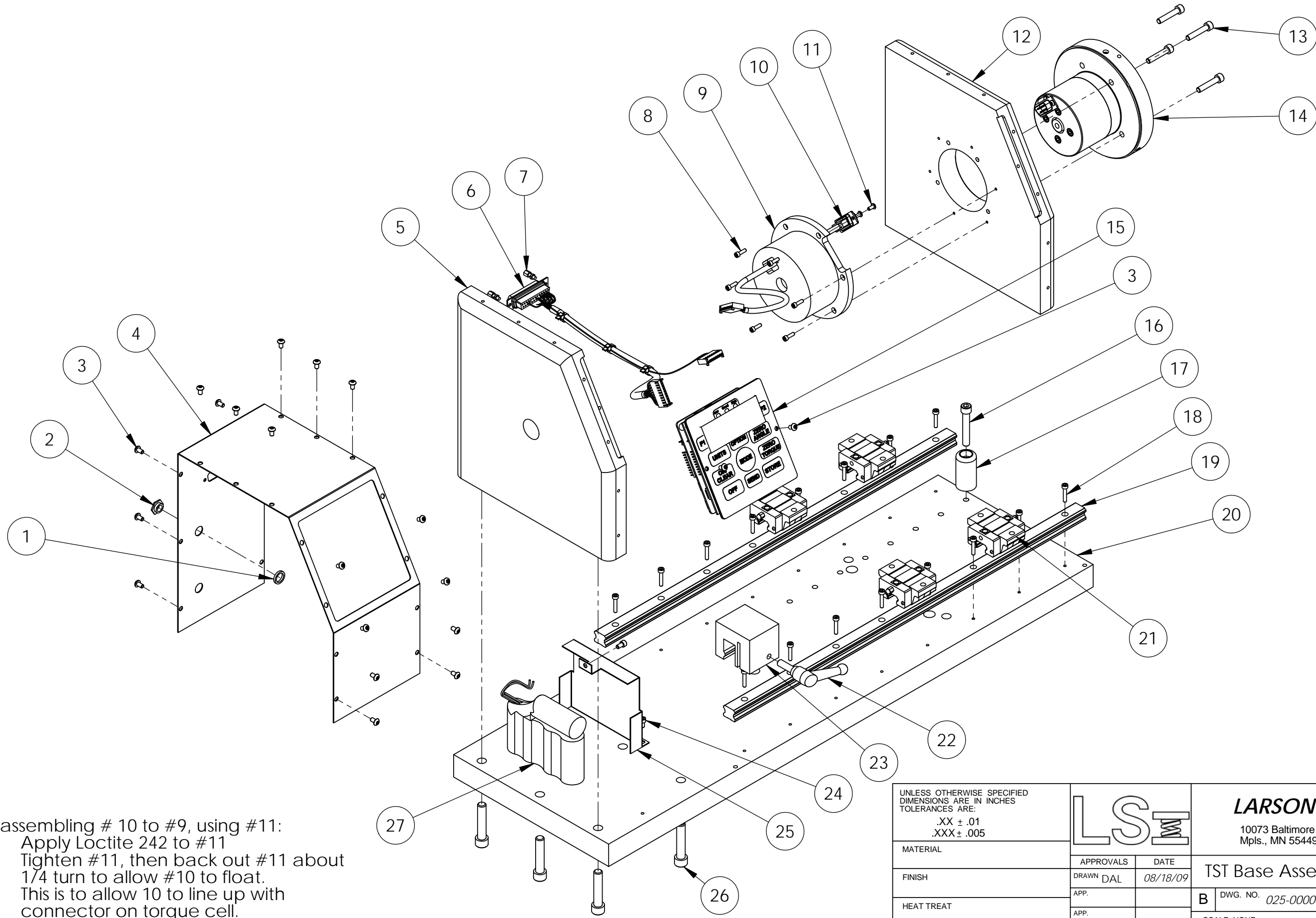
Rev	By	Date	Description
A	WRD		Added all load cartridges
B	MDL	11-29-2002	Added 025-6000-0010-00
C	DAL	04-09-2003	Added 60-2000-2-00, 59-0-36-00 was 59-0-36-00
D	KMP	04-15-2005	Redesign Tailstock

Item	Qty	Part Number	Rev	Part Name	PCB Location	Part Length
1	1	025-0000-0336-01	P	TST Base Assembly		in.
2	1	025-0000-0633-01	E	TST 1300 Tailstock w/ Micro Adjust		in.
3	1	025-0000-0388-00	H	Gear Reduction Assembly Micro adjust		in.
4	1	025-0000-0369-00	D	TST Cable Armor Assembly, Std		in.
5	1	060-1000-0040-00	D	User Manual - TST		in.
6	1	059-0000-0037-00	C	Shipping Crate - TST Series		in.
7	1	025-1000-0396-00		Power Supply, 100-240 VAC 50-60 Hz (USA Plug)		in.
8	1	025-6000-0010-00	A	Sticker Assembly - TST 1300		in.
9	1	060-2000-0002-00		Parts List - TST 1300		in.


Approved by: 

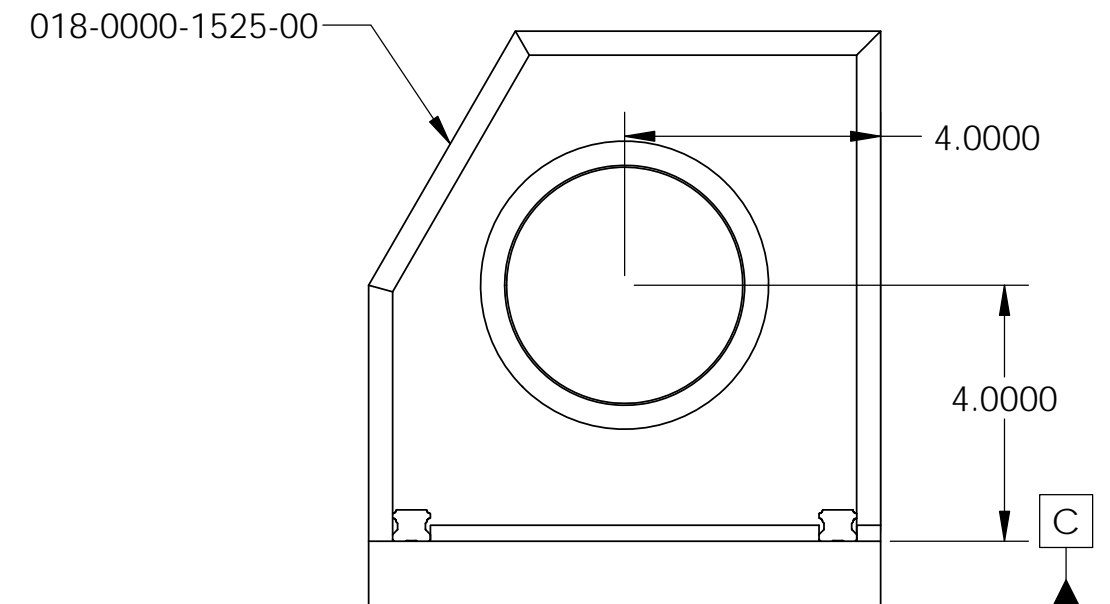
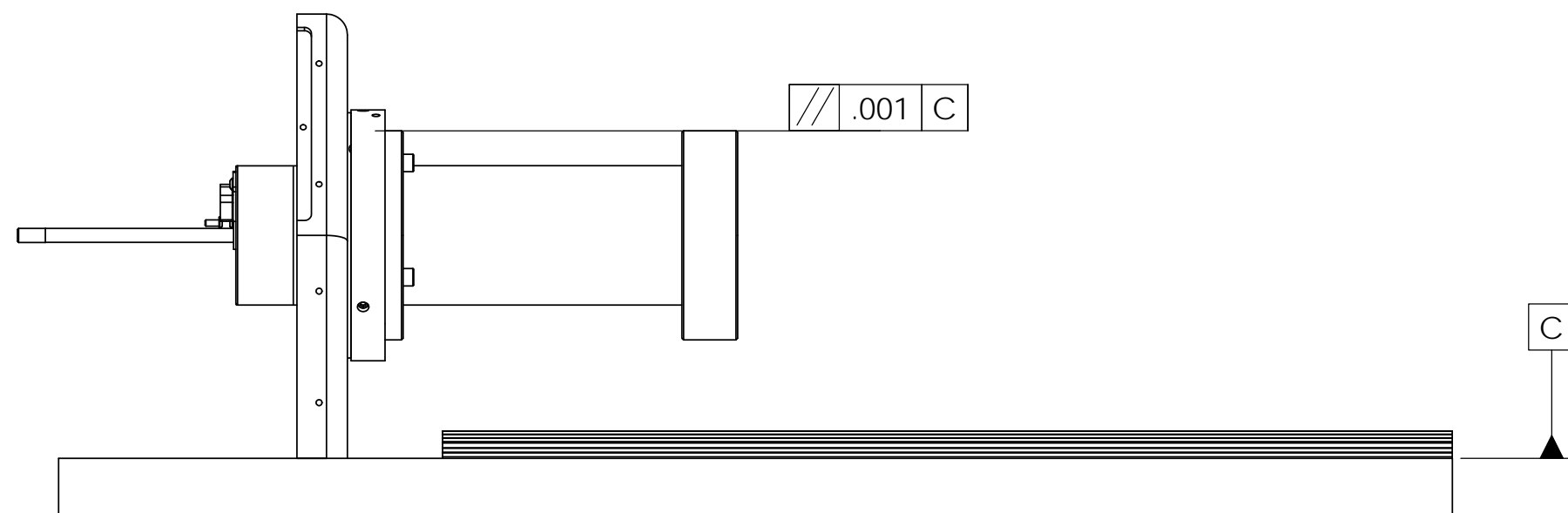
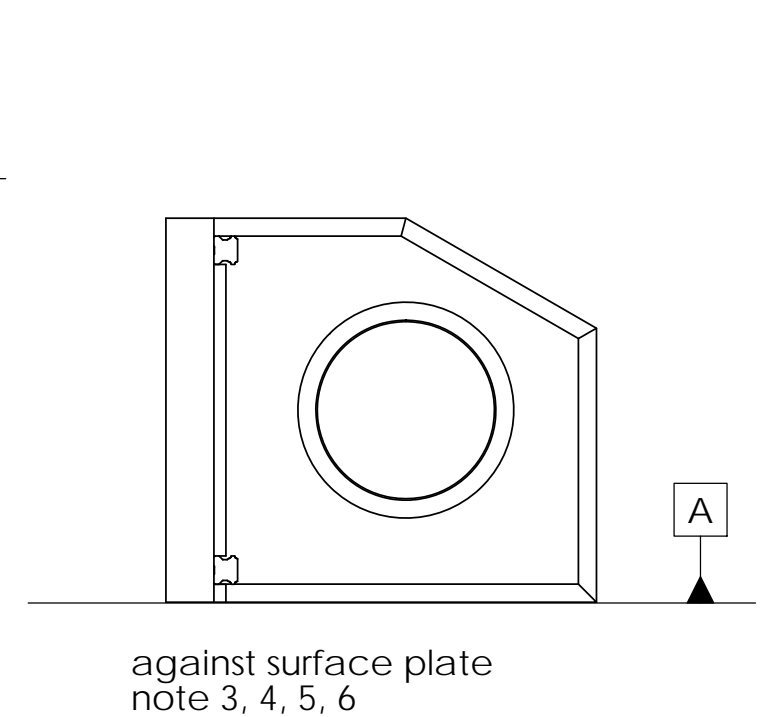
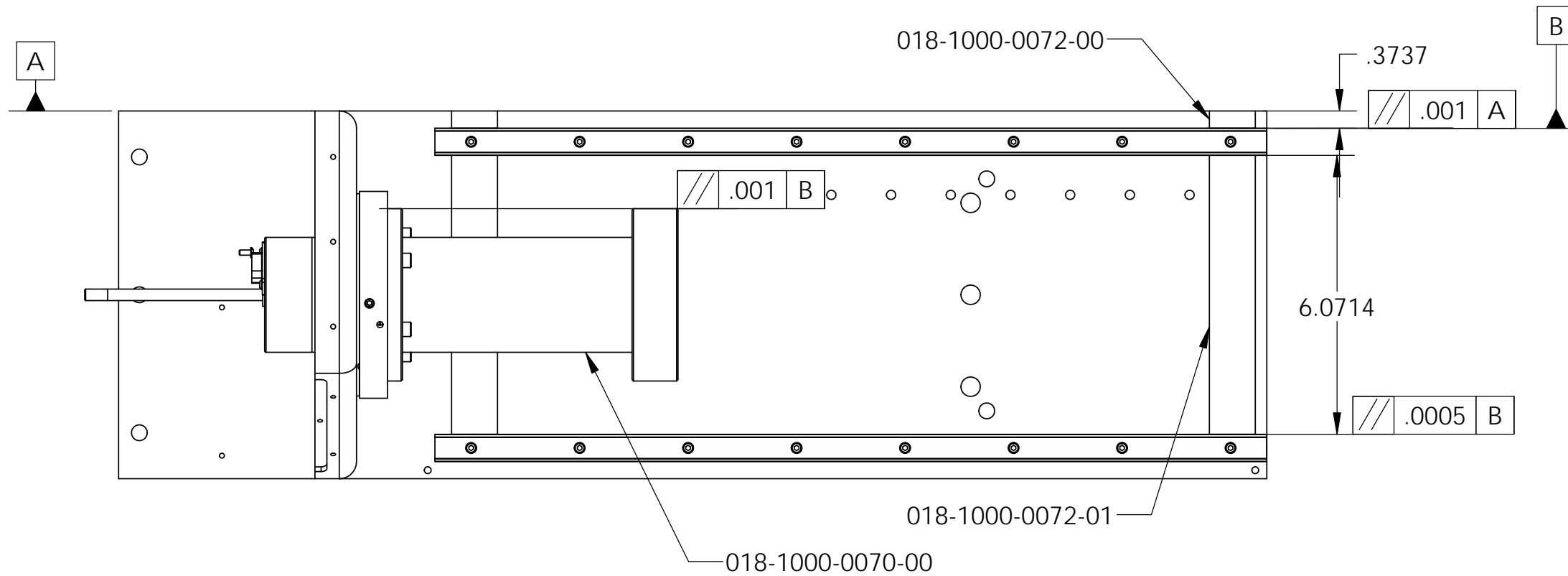
Date: May 3, 2005

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			LARSON SYSTEMS INC. 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 SHEET 1 OF 3	
HEAT TREAT	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, moxex connector		in.

Approved by: 

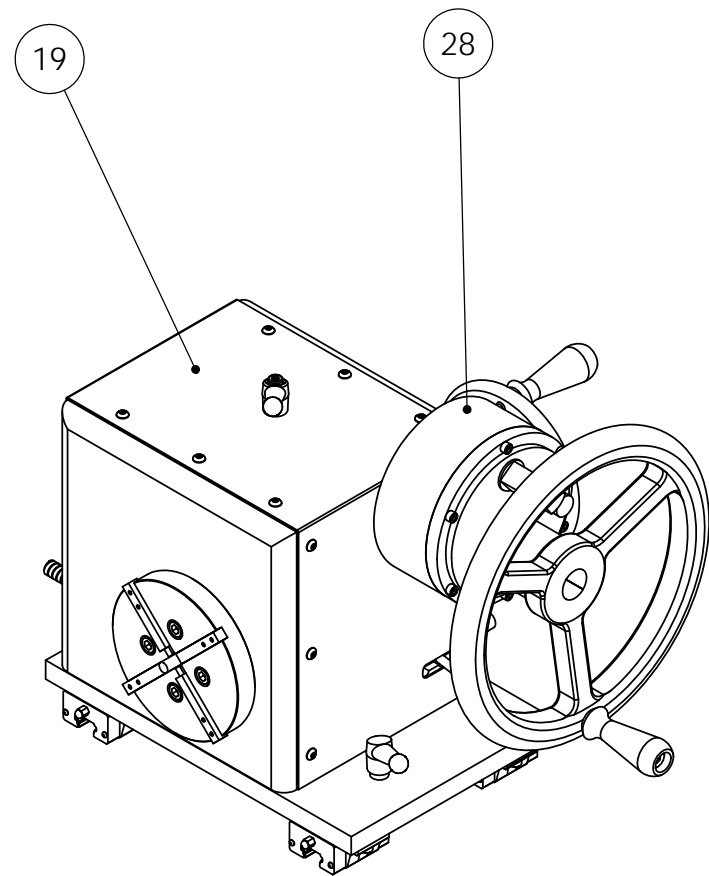
Date: July 22, 2013

SEE ATTACHED 2 DRAWINGS

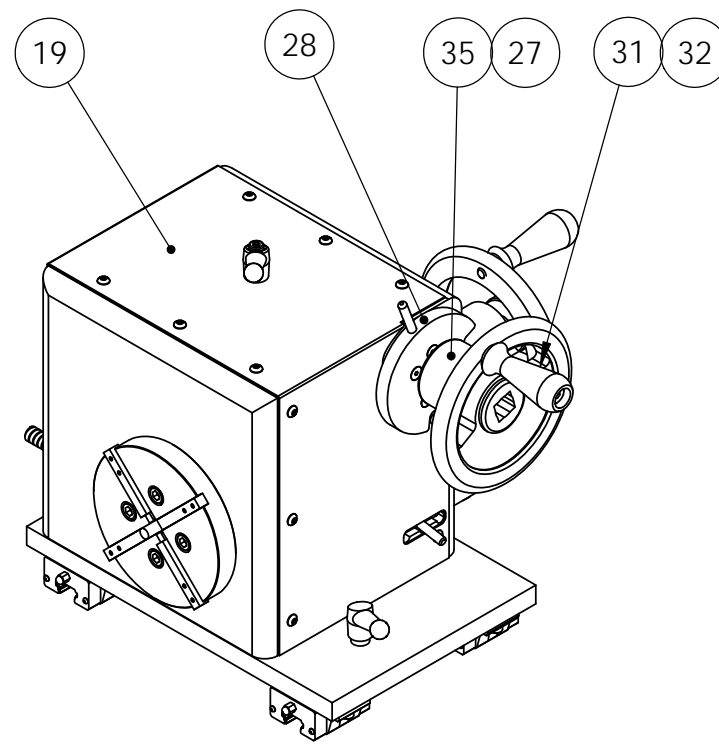
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Page 3 of 3

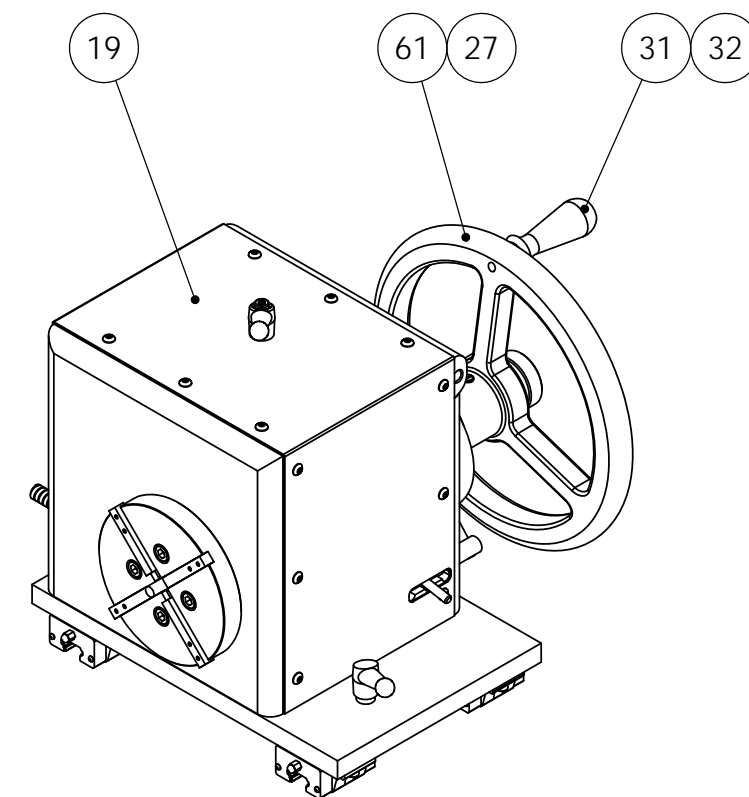
REV	DATE	DESCRIPTION	DRW	APP
		SEE SHEET 2		




-01
1300 in-lb tailstock

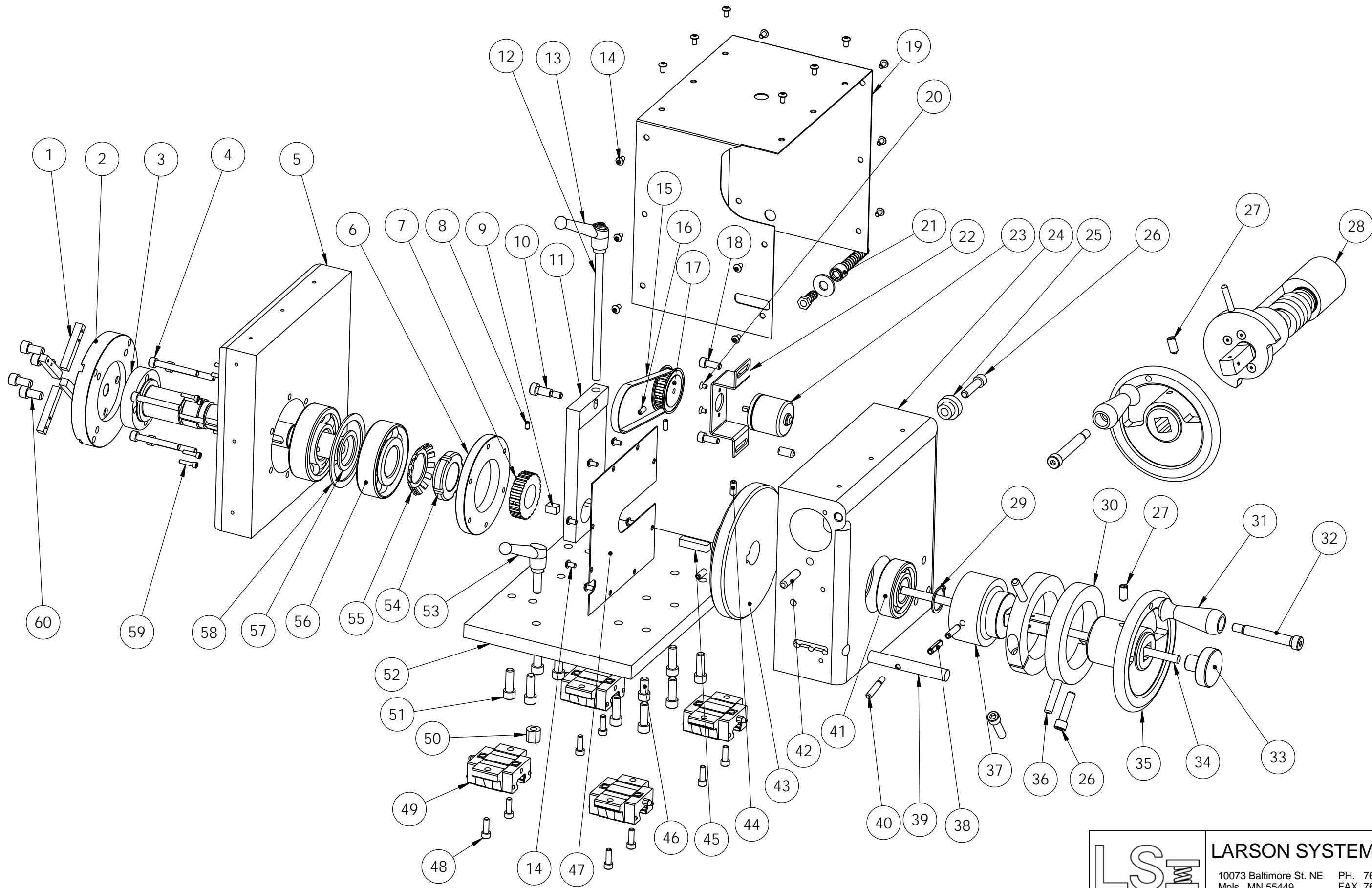


-02
200 in-lb tailstock



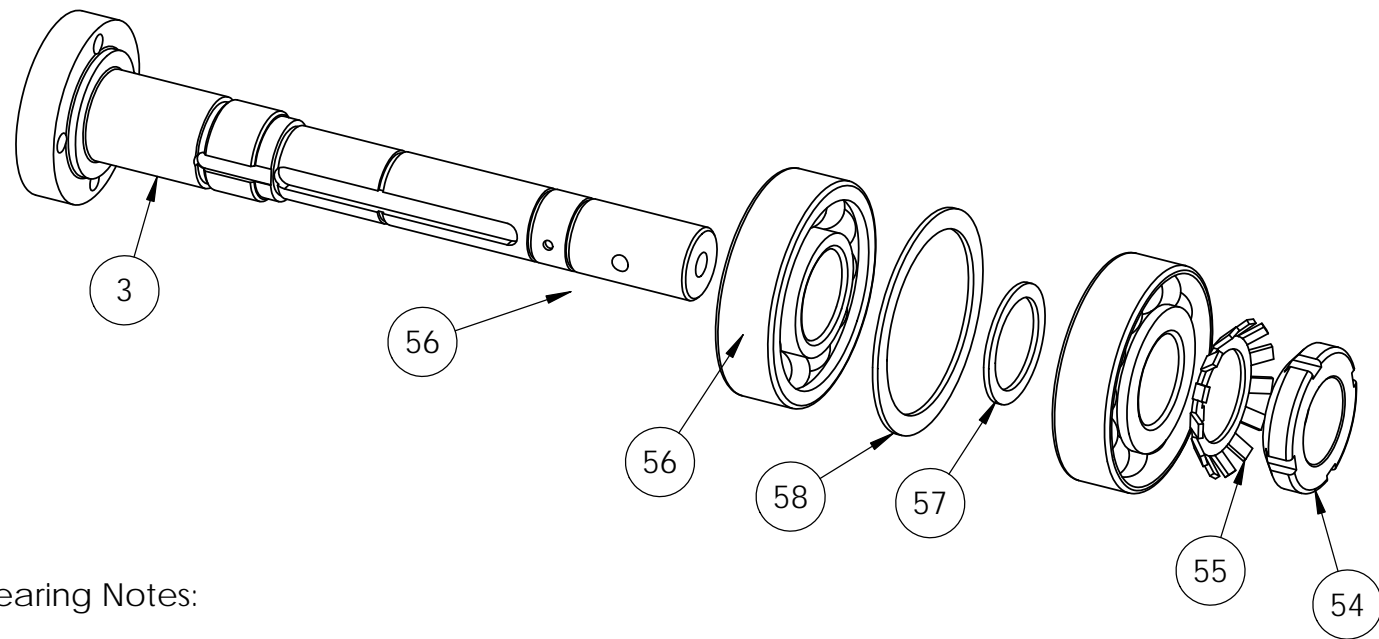
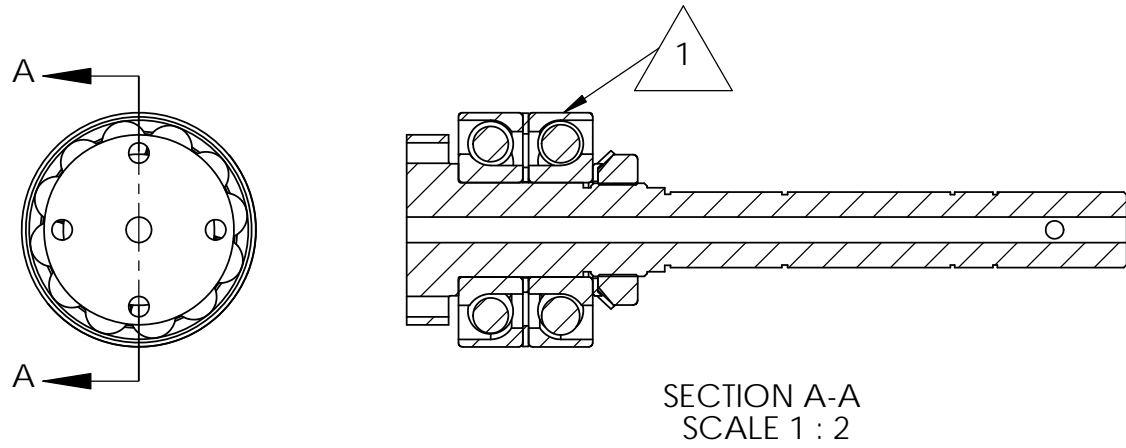
-03
100 in-lb tailstock

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: .XX ± .01 .XXX ± .005			LARSON SYSTEMS INC.	
MATERIAL See Parts List			10073 Baltimore St. NE PH. 763-780-2131 Mpls., MN 55449 FAX. 763-780-2182	
FINISH	None	APPROVALS	DATE	TAILSTOCK, TST 200 WITH FINE ADJUST
HEAT TREAT	None	DRAWN KMP	3-8-05	
		APP.		B DWG. NO. 025-0000-0633-01, -02, -03E
		APP.		SCALE: NONE SHEET 1 OF 7



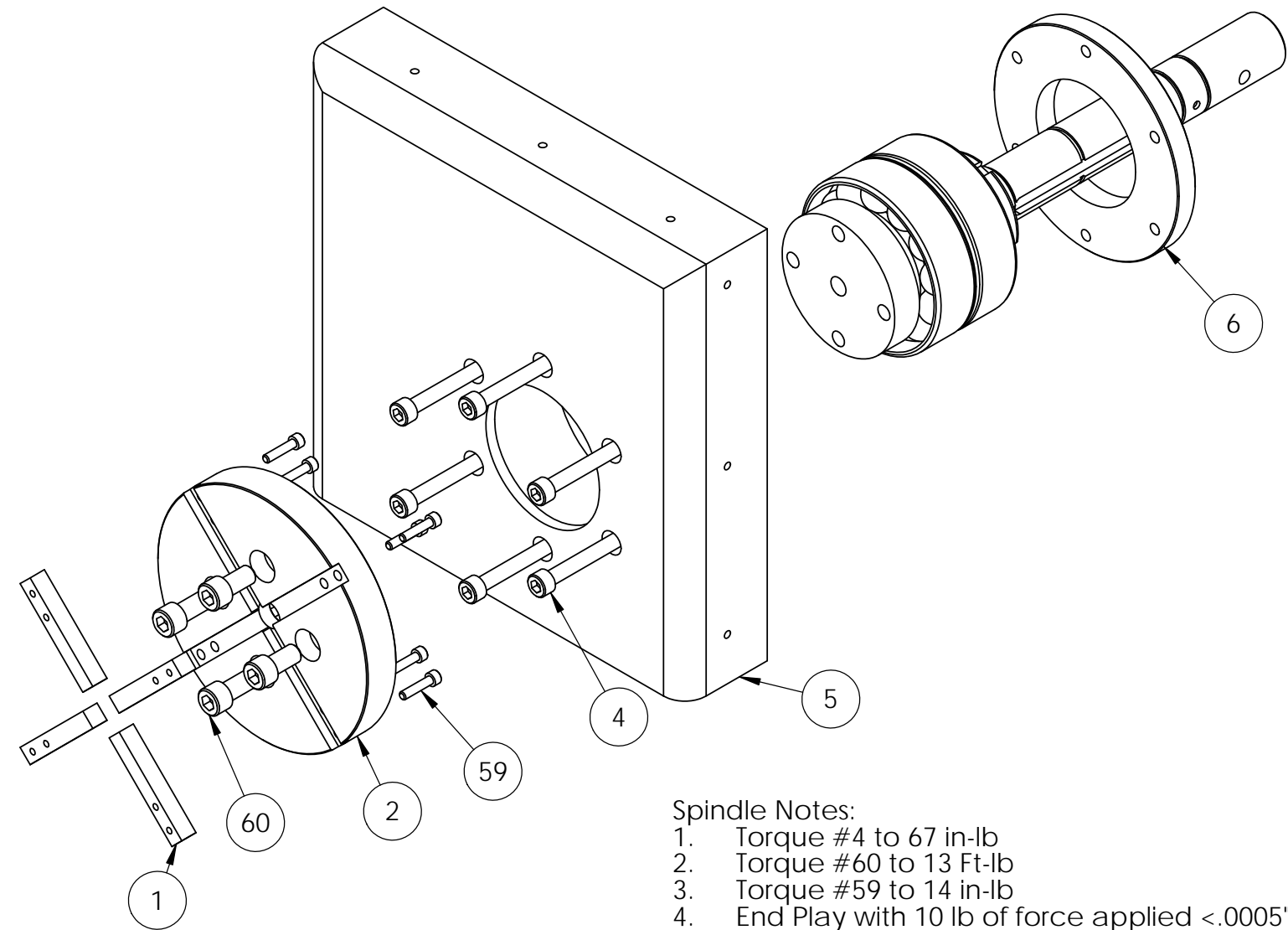
LARSON SYSTEMS INC.

10073 Baltimore St. NE PH. 763-780-2131
 Mpls., MN 55449 FAX. 763-780-2182



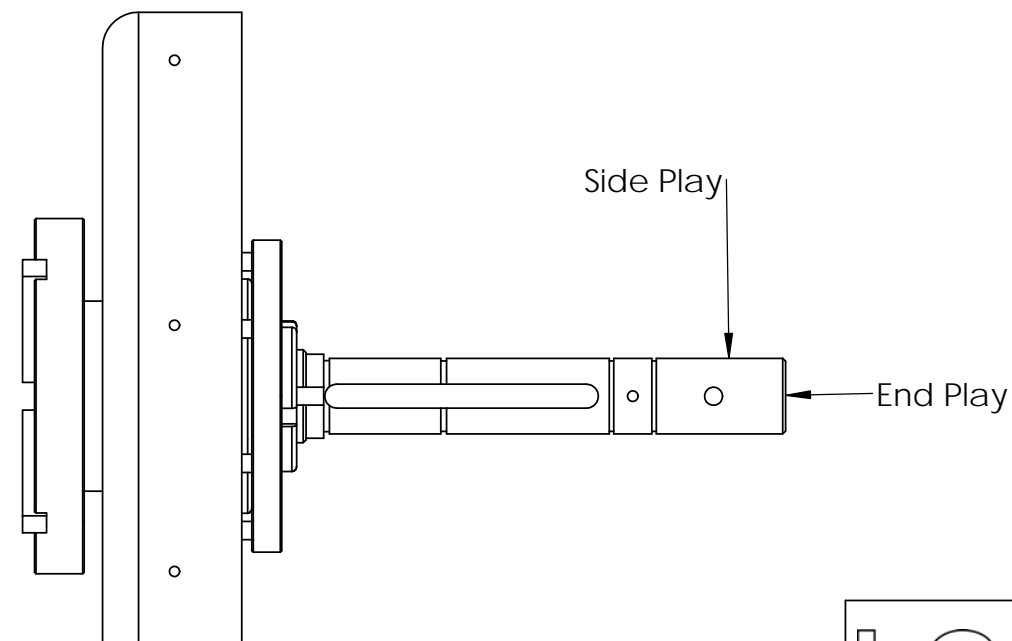
Bearing Notes:

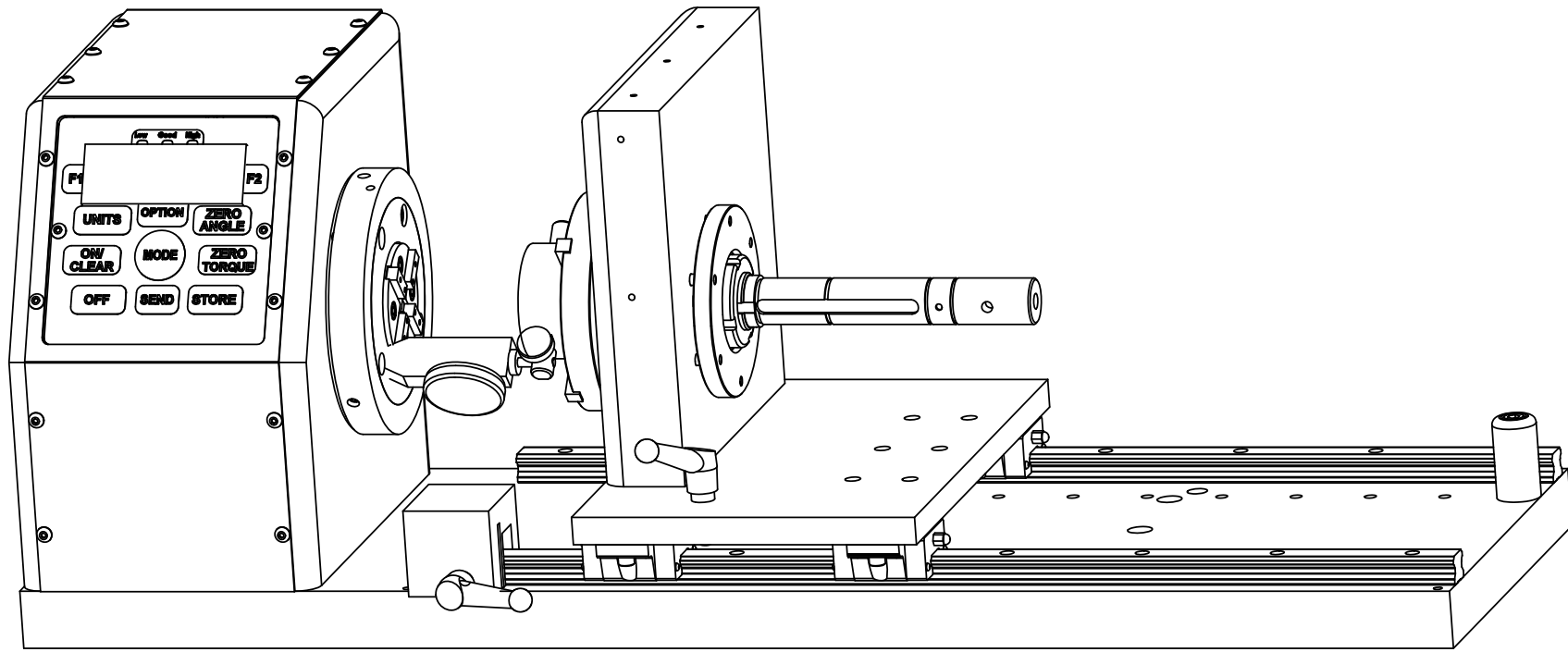
- 1. Bearing orientation Back to Back
- 2. Select fit #57 should be .0005" thinner than #58
- 3. Torque to turn #3 should be between 5 and 10 in-lb after #54 is torqued
- 4. Grease items #56, 55, 54 at assembly
- 5. Torque #54 to 40 ft-lb



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"



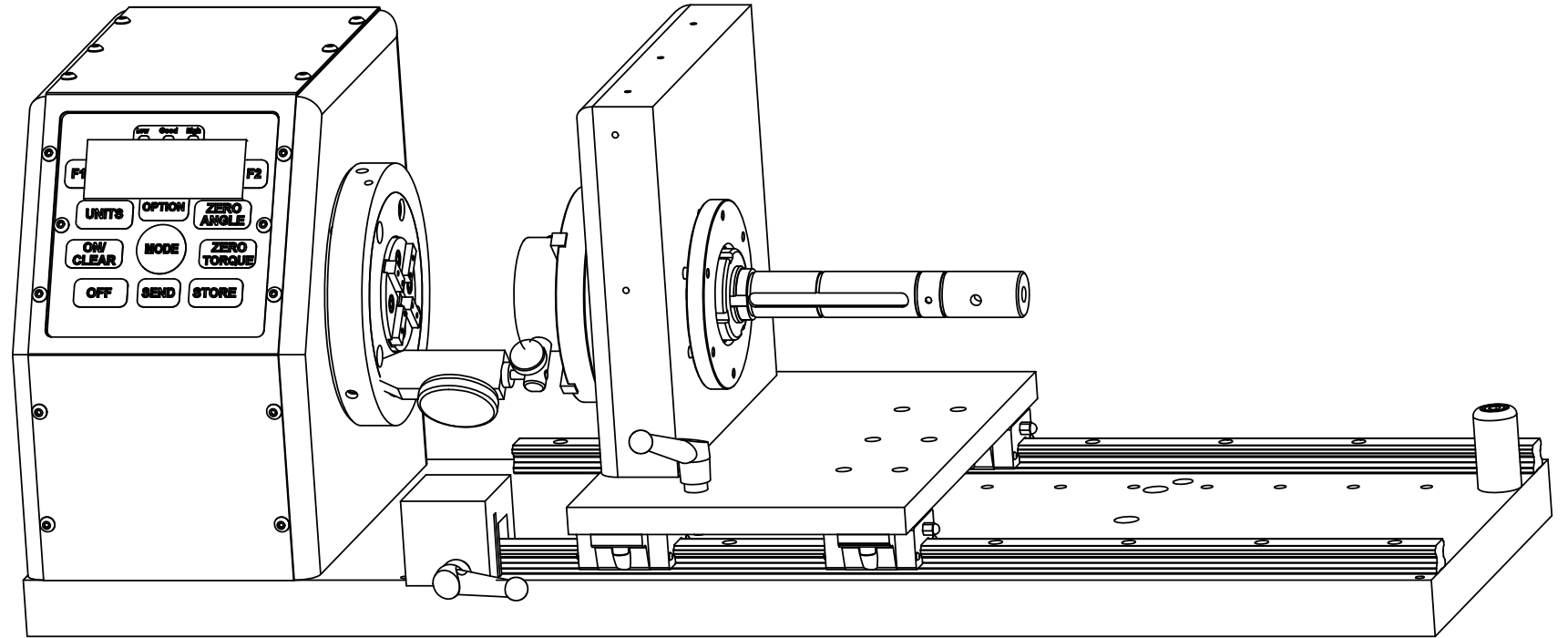


Face Squareness Alignment

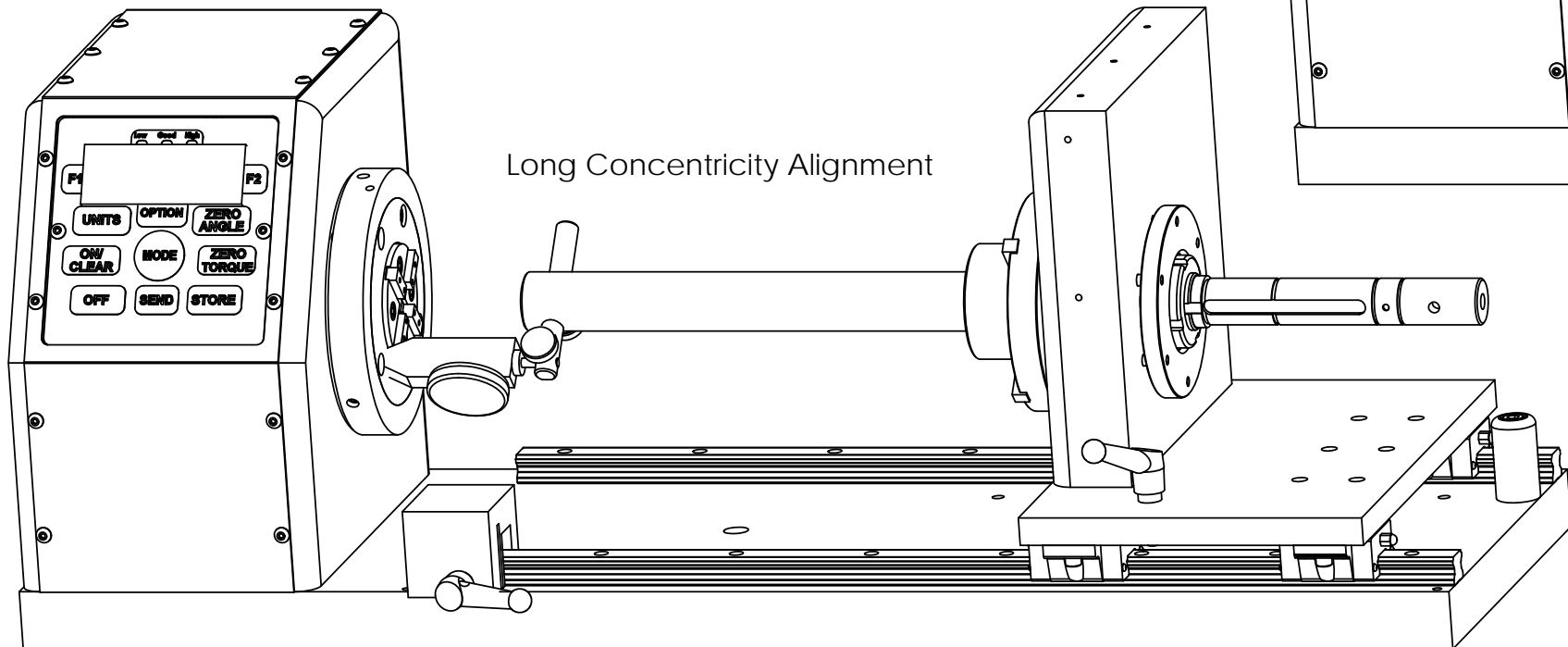
Note:

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





025-0000-0633-01 E

Parts List

TST 1300 Tailstock w/ Micro 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
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	1	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	2	013-2000-0327-00		Ball Plunger 1/4-20		in.
28	1	025-0000-0388-00	H	Gear Reduction Assembly Micro adjust		in.
29	1	013-2000-0316-00		Snap Ring,		in.
30	2	018-0000-1857-00	C	Stop Clamp		in.

Noet for 500-1300 in-lb torque cells use #61 (8" Hand wheel)
and for smaller than 500 in-lb torque cells use #35 (4" hand wheel)

Approved by: 

Date: July 22, 2013

SEE ATTACHED 4 DRAWINGS



025-0000-0633-01 E

Parts List

TST 1300 Tailstock w/ Micro 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 0287 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
31	1	018-0000-1688-00	C	Revolving Handle		in.
32	1	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	1	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	013-2000-0065-00		1/4 O.D. X .875" 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.

Noet for 500-1300 in-lb torque cells use #61 (8" Hand wheel)
and for smaller than 500 in-lb torque cells use #35 (4" hand wheel)

Approved by: 

Date: July 22, 2013

SEE ATTACHED 4 DRAWINGS

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Page 6 of 7



025-0000-0633-01 E

Parts List

TST 1300 Tailstock w/ Micro 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 0287 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
61	Ref	018-0000-1710-00	F	Handwheel 8" Torsion Tester		in.
62	Ref	060-4000-0220-00		Assembly Specification for the TST		in.

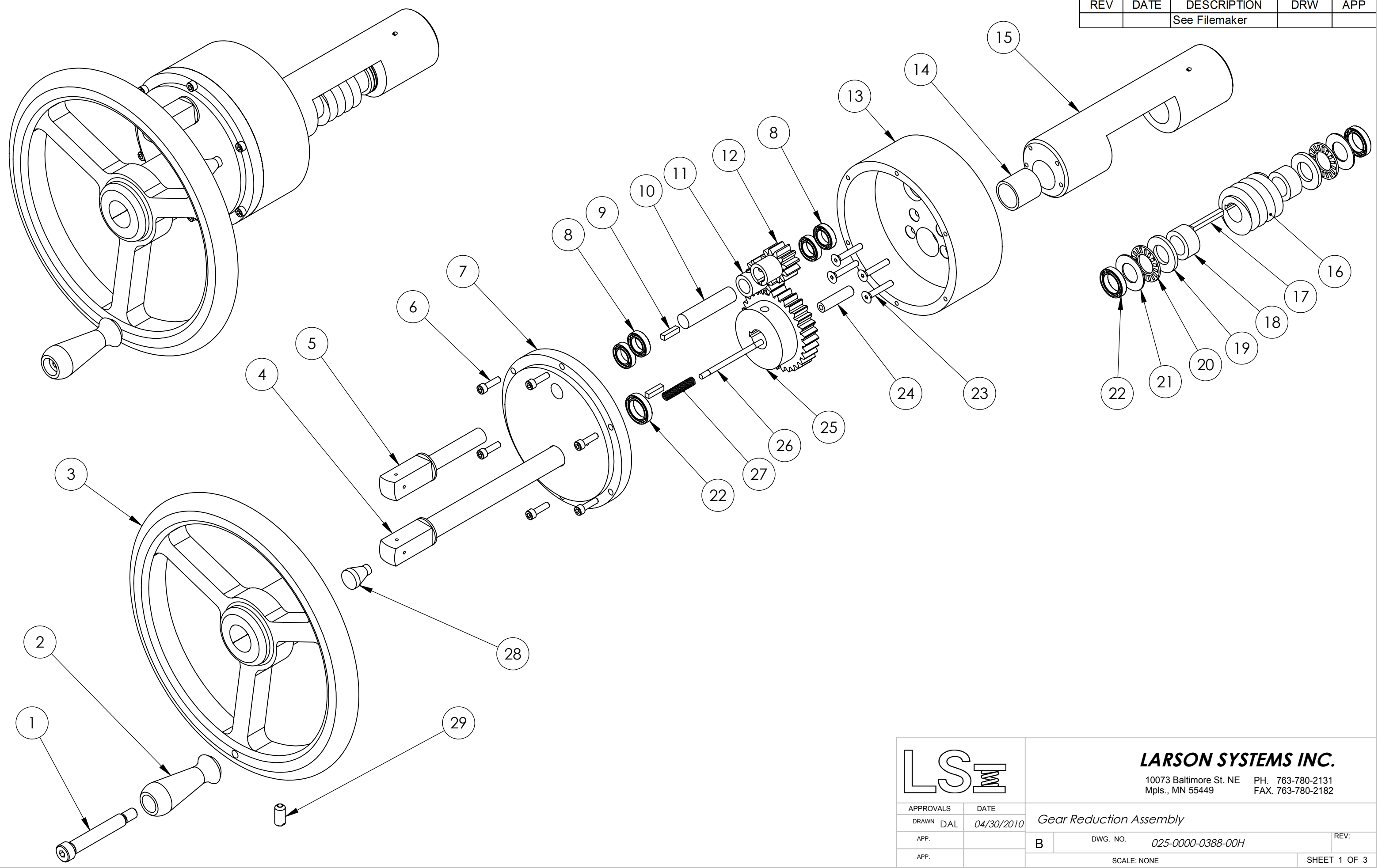
Noet for 500-1300 in-lb torque cells use #61 (8" Hand wheel)
and for smaller than 500 in-lb torque cells use #35 (4" hand wheel)

Approved by: 

Date: July 22, 2013

SEE ATTACHED 4 DRAWINGS

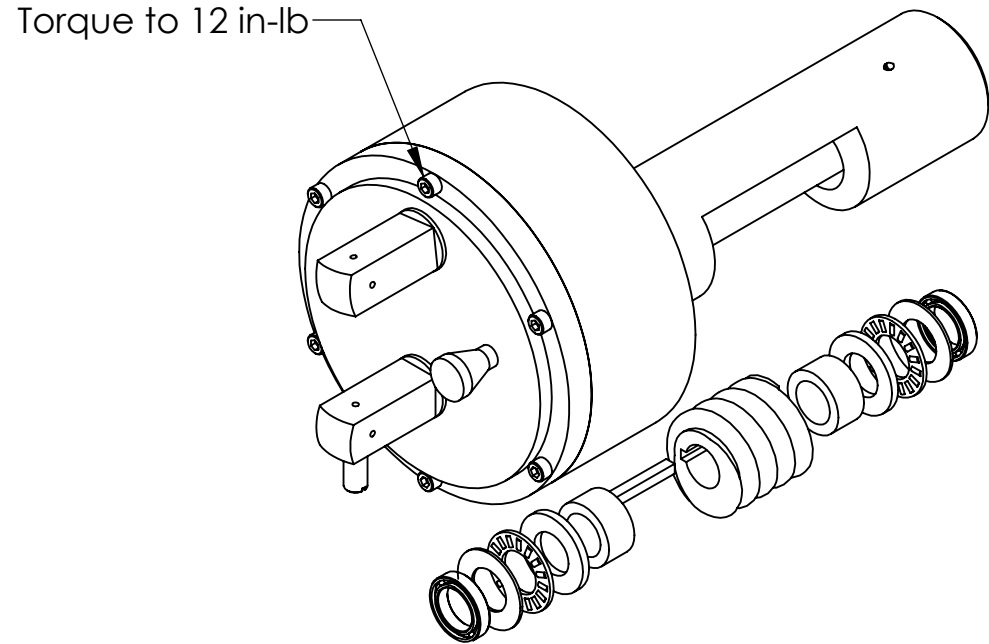
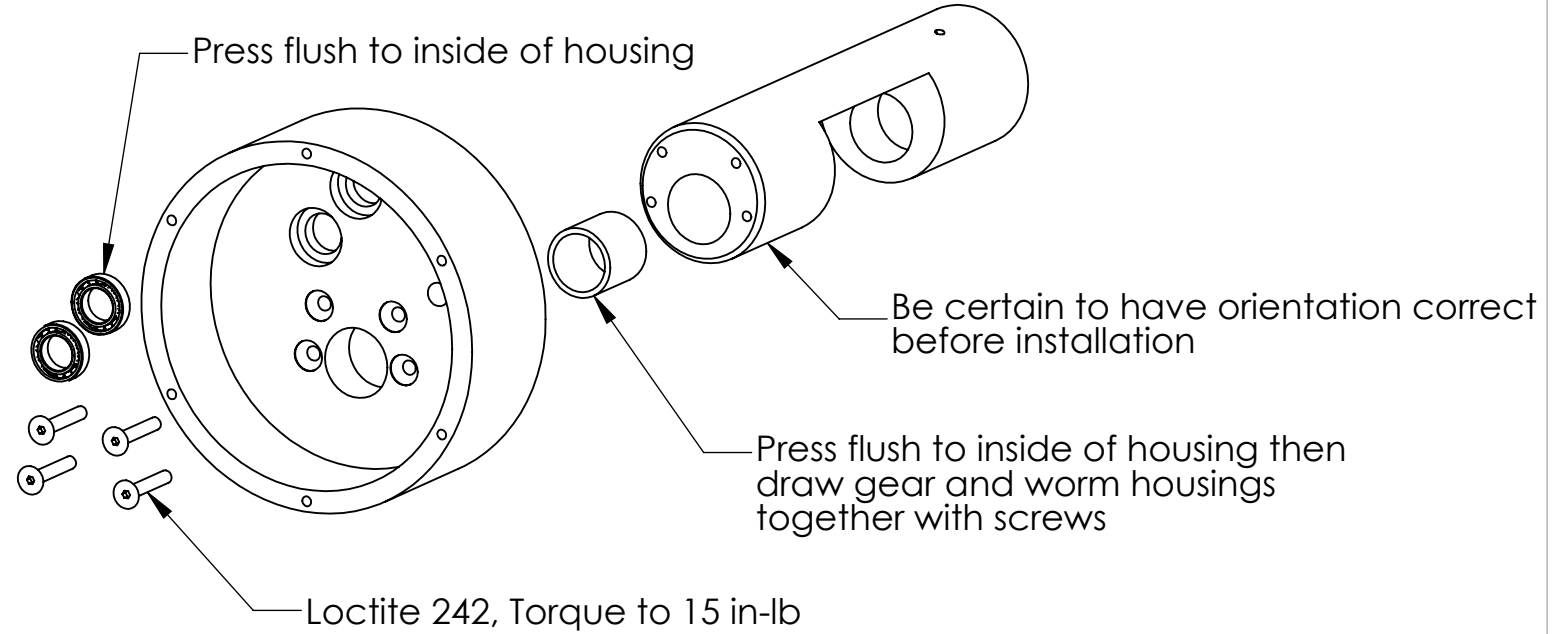
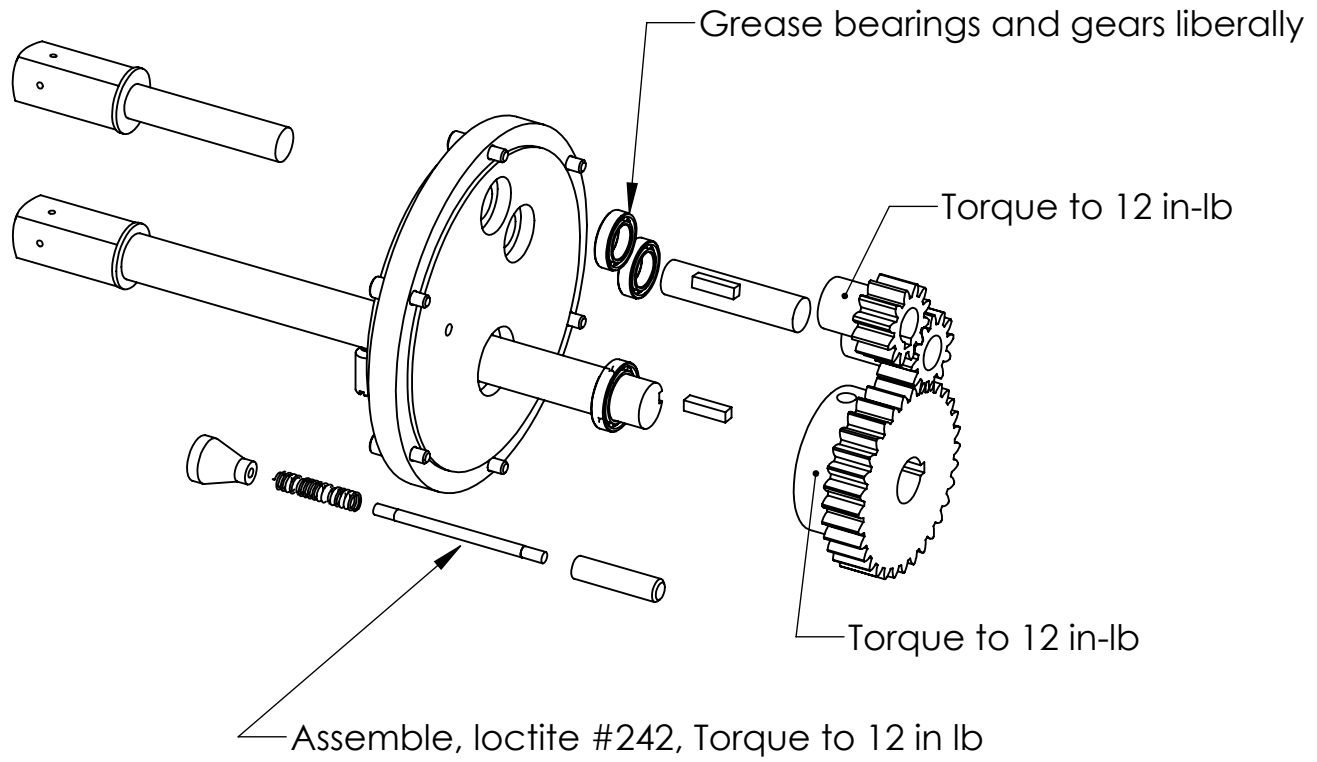
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		See Filemaker		




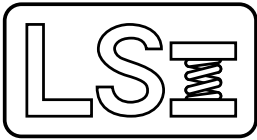
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APPROVALS	DATE
DRAWN DAL	04/30/2010
APP.	
APP.	

LARSON SYSTEMS INC.	
10073 Baltimore St. NE PH. 763-780-2131 Mpls., MN 55449 FAX. 763-780-2182	
Gear Reduction Assembly	
B	DWG. NO. 025-0000-0388-00H
SCALE: NONE	
REV: SHEET 1 OF 3	

REV	DATE	DESCRIPTION	DRW	APP
		See Filemaker		



		LARSON SYSTEMS INC. 10073 Baltimore St. NE PH. 763-780-2131 Mpls., MN 55449 FAX. 763-780-2182	
APP.		B DWG. NO. 025-0000-0388-00H	REV:
APP.			SCALE: NONE



025-0000-0388-00 H

Parts List

Gear Reduction Assembly Micro adjust

Rev	By	Date	Description
E	SMH	03-06-2000	Item 20 was 18-0-1327-02
F	SMH	04-14-2000	Item 13 was 13-2000-186
G	DAL	03-22-2003	Item 29, 18-0-1689 was 18-0-1679, Entered Parts list on Filemaker
H	DAL	04-30-2010	#18 018-0000-1711-00 was 1 ea is 2 ea, redraw using solidworks

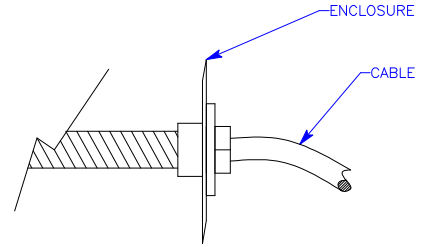
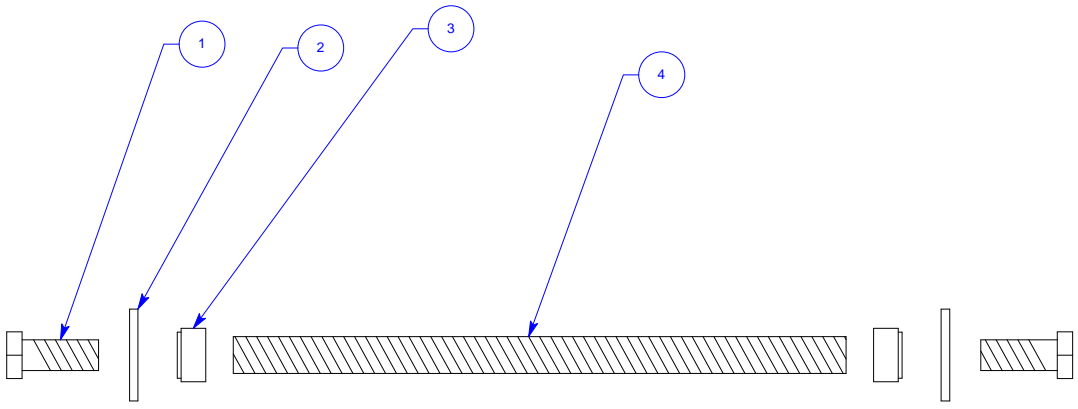
Item	Qty	Part Number	Rev	Part Name	PCB Location	Part Length
1	1	013-0000-0285-00		5/16 X 1 3/4 SHSS		in.
2	1	018-0000-1688-00	C	Revolving Handle		in.
3	1	018-0000-1710-00	E	Handwheel 8" Torsion Tester		in.
4	1	018-0000-1709-00	D	Worm Shaft (1300 In-lb)		in.
5	1	018-0000-1698-00	B	Shaft, 12 Tooth Spur Gear		in.
6	6	013-0000-0084-00		6-32 X 1/2 SHCS		in.
7	1	018-0000-1696-00	D	Gear Box Lid (for 1300)		in.
8	4	013-2000-0190-00		Ball Bearing		in.
9	2	018-0000-1327-00	C	Key 1/8 X 1/8 X .500		in.
10	1	018-0000-1704-00	A	Idler Shaft, Gear Box		in.
11	1	013-5000-0120-00		12 Tooth 16 DP Spur Gear, 14.5 Degree PA		in.
12	1	018-0000-1735-00	A	12 Tooth Gear Mods		in.
13	1	018-0000-1695-00	E	Gear Box (spurs For 1300)		in.
14	1	018-0000-1737-00		Bushing 5/8 Id 750 Od X 3/4		in.
15	1	018-0000-1689-00	D	Worm Housing (1300 In-lb)		in.
16	1	013-5000-0118-00		Worm 12dp Single		in.
17	1	018-0000-1327-03	C	Key 1/8 X 1/8 X 1.00		in.
18	2	018-0000-1711-00	C	Worm Spacer (1300 In-lb)		in.
19	2	013-2000-0185-00		Thrust Washer, 1/2 x 15/16 x .092		in.
20	2	013-2000-0183-00		NeedleThrust Bearing		in.
21	2	013-2000-0184-00		Thrust Washer, 1/2 x 15/16 x .031 TRA-815		in.
22	3	013-2000-0191-00		Ball Bearing		in.
23	4	013-0000-0042-00		6-32 X 3/4 Flat Head Cap Screw		in.
24	1	018-0000-1694-00		End Pin (1300 In-lb)		in.
25	1	018-0000-1736-00	A	32 Tooth Gear Mods		in.
26	1	018-0000-1693-00		Locking Pin (1300 In-lb)		in.
27	1	013-2000-0188-00		Spring .180 OD, Wire .022, 1.750 Free Lngth		in.
28	1	018-0000-1715-00		Knob For Locking Pin		in.
29	1	013-2000-0327-00		Ball Plunger 1/4-20		in.

Approved by: 

Date: April 30, 2010

SEE ATTACHED 2 DRAWINGS

REV	DATE	DESCRIPTION	DRW	APPR
		See Filemaker		



NOTES:
1 ASSEMBLE AT INSTALLATION

LARSON SYSTEMS INC.		
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



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