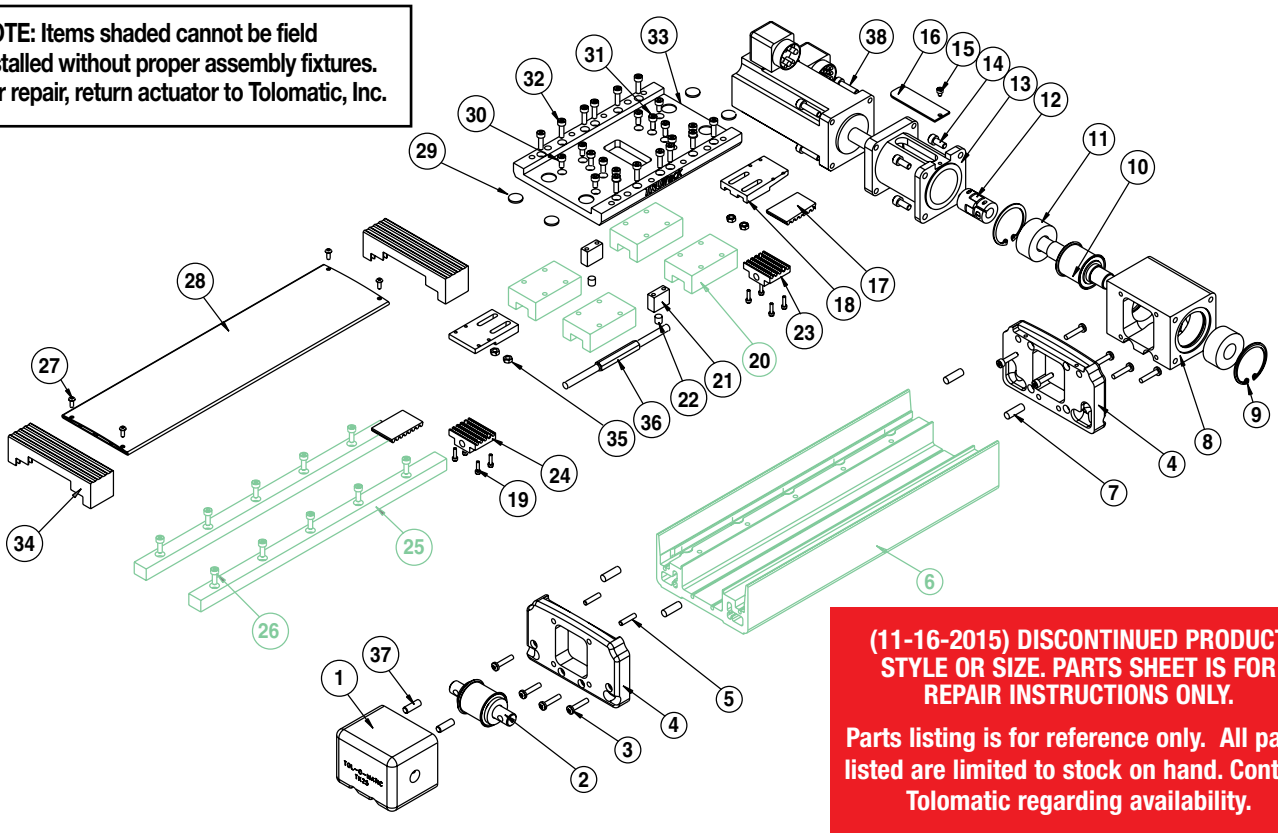
Tolomatic™
EXCELLENCE *IN MOTION*

Parts Sheet

3600-4625_07

TruTrack Belt-Drive Actuator TKB50

NOTE: Items shaded cannot be field installed without proper assembly fixtures. For repair, return actuator to Tolomatic, Inc.



(11-16-2015) DISCONTINUED PRODUCT STYLE OR SIZE. PARTS SHEET IS FOR REPAIR INSTRUCTIONS ONLY.

Parts listing is for reference only. All parts listed are limited to stock on hand. Contact Tolomatic regarding availability.

List of Parts

Item	Part No.	Description	MRV21,22,23,24	MRV31,32,33	MRS341,342,343	GEARHEAD23	GEARHEAD34	REVERSE PARALLEL
1	0603-2021	ADAPTER, IDLE HEAD	1	1	1	1	1	1
2	0603-9300	IDLE PULLEY ASSEMBLY	1	1	1	1	1	1
3	0604-1025	SCREW, PAN, M6 x 25mm, SST	8	8	8	8	8	8
4	0603-2007	HEAD, DRIVE, IDLE	2	2	2	2	2	2
5	2212-1101	SHCS, M6 x 20mm, SST	8	8	8	8	8	8
6	0603-2001	BASE, MACHINED	1	1	1	1	1	1
7	0602-1049	BUMPER	4	4	4	4	4	4
8	0603-2020	ADAPTER, DRIVE HEAD	1	1	1	1	1	1
9	2317-1083	RET. RING, 5002-137 SST.	2	2	2	2	2	2
10	0603-9820	STUB-SHAFT MRV23, MRV,MRS34	1	1	1			
	0603-9823	STUB-SHAFT GH34					1	
	0603-9824	STUB-SHAFT GH23				1		
	0603-9822	STUB-SHAFT RP						1
11	0602-2031	BEARING, I.D. .56	2	2	2	2	2	2
12	3600-9252	COUPLER KIT	1	1		1	1	
	3600-9253	COUPLER KIT			1			
13	0602-2042	SPACER, MRV23	1			1		
	0603-2033	SPACER, MRV,MRS34		1	1		1	
14	2212-1097	SHCS, M5 x 16mm, SST.	4	4	4	4	4	4
15	0601-2041	SHCS, M3 x 4mm, SST.	1	1	1	1	1	1
16	0603-2034	SPACER COVER, MRV23	1			1		
	0603-2035	SPACER COVER, MRV,MRS34		1	1		1	
17	0603-2049	BELT, TIMING, MACHINED	1	1	1	1	1	1

Item	Part No.	Description	MRV21,22,23,24	MRV31,32,33	MRS341,342,343	GEARHEAD23	GEARHEAD34	REVERSE PARALLEL
18	0603-2085	CLAMP, BELT, UPPER	2	2	2	2	2	2
19	2212-1112	SHCS, M3 x 12mm, SST	12	12	12	12	12	12
20	0602-1006	BLOCK, THK LINEAR	4	4	4	4	4	4
21	0602-1013	MAGNET BLOCK	2	2	2	2	2	2
22	2224-1016	MAGNET ROD	2	2	2	2	2	2
23	0603-2086	CLAMP, BELT, LOWER, RIGHT HD	1	1	1	1	1	1
24	0603-2087	CLAMP, BELT, LOWER, LEFT HD	1	1	1	1	1	1
25	0603-1013	RAIL MACHINED	2	2	2	2	2	2
26	2212-1093	SHCS, M4 x 12, SST	AR	AR	AR	AR	AR	AR
27	0603-1036	SCREW BUTTON M3 x 10, SST	4	4	4	4	4	4
28	0603-1003	COVER	1	1	1	1	1	1
29	0601-2090	PAD	4	4	4	4	4	4
30	0602-1030	SHCS, M4 x 8mm, SST	8	8	8	8	8	8
31	2212-1096	SHCS, M5 x 12mm, SST	4	4	4	4	4	4
32	0602-1029	SHCS, M4 x 18mm, SST	12	12	12	12	12	12
33	0603-2084	CARRIER	1	1	1	1	1	1
34	0603-9830	BELLOWS KIT	1	1	1	1	1	1
35	0603-2089	NUT, HEX, M5	4	4	4	4	4	4
36	0603-2088	SCREW, TENSIONING	1	1	1	1	1	1
37	2317-1062	SCREW, SET,1/4-20 x .38	2	2	2	2	2	2
38	2212-1098	SCHS, M5 x 20, SST	4					
	2212-1097	SCHS, M5 x 16, SST		4		4	4	
	2212-1096	SCHS, M5 x 12, SST			4			

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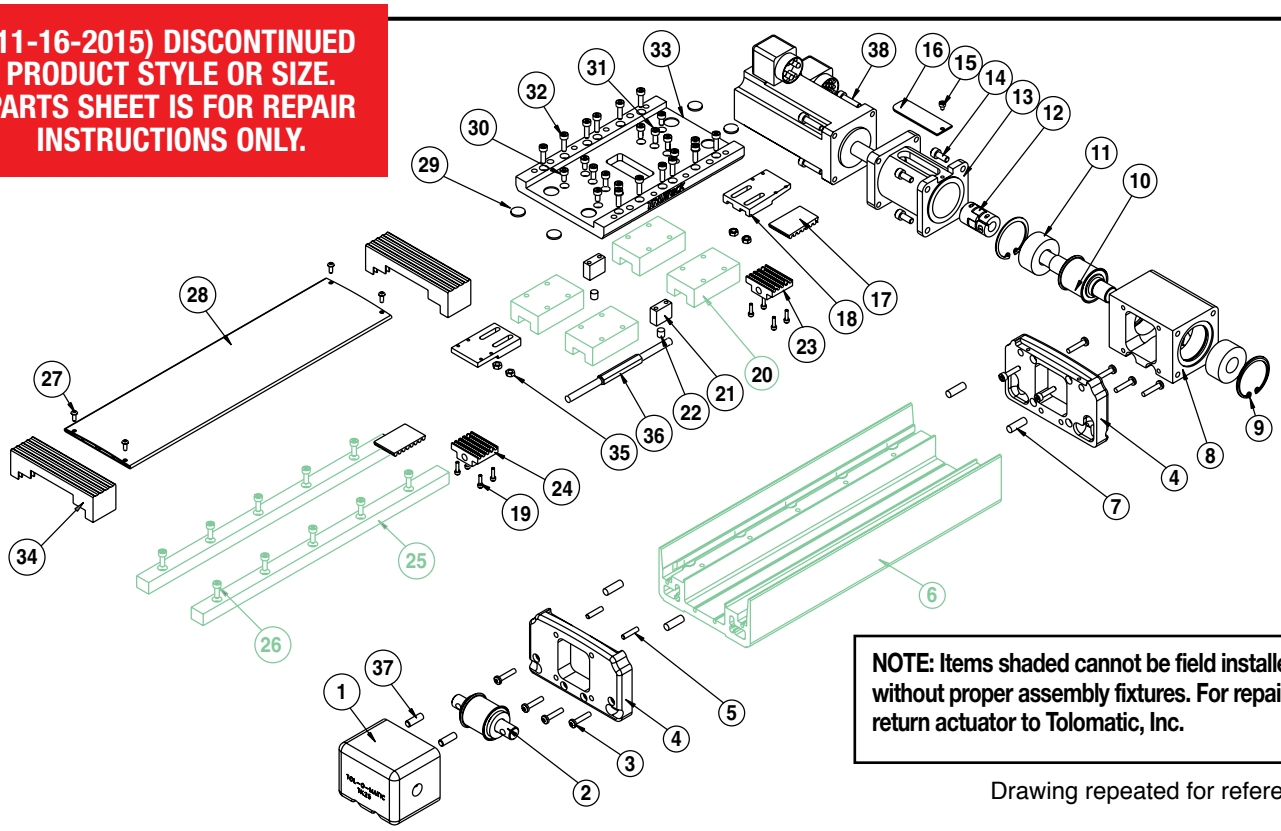


General Cylinder Disassembly Instructions

Begin with a clean work area. Be sure all replacement parts are present and have no visual damage or defects. The following tools are recommended for proper disassembly and assembly.

* Metric Allen Wrench Set
* SAE Allen Wrench Set
* Torx Bit Set
* Metric Socket Set
* Metric Combination Wrench Set

1. Remove Carrier and Head Adapters. Remove Cover Screws (27) and remove the Cover (28). Remove all Cap Screws (30,31) that attach Carrier (33) to THK Blocks (20). Remove Cap Screws (32) that attach Carrier to Belt Clamps (18). Remove the Belt Tension Bolts, (note that these bolts will be contained by the tension posts [23]). Lift Carrier from THK Blocks. Remove Cap Screws (5) to remove Head Adapters (1,8).

2. Remove Belt and Heads. Remove Cap Screws (19) to release the Belt Clamps (18,24). The Belt (17) can now be removed from the assembly. Remove Cap Screws (3) to allow the Heads (4) to be removed. The THK blocks are now free to come off the rails if need be. Note that the balls in the Bearing are contained within the Bearing.

3. Head Adapter Disassembly. The drive shaft assembly is a slip fit into the Drive Head Adapter. Removal of the Snap Rings (9) will allow the Bearings (11) and Stub Shaft (10) to slide out. The bearings are a press fit onto the shaft, contact factory about replacement. There are two set screws that hold the Idle Pulley Assembly (2) in the Idle Head Adapter (1). Remove these screws and the shaft can be removed. The Idle Pulley Assy (2) has Bearings pressed into the Pulley. Contact factory about replacement assembly.

General Cylinder Assembly Instructions

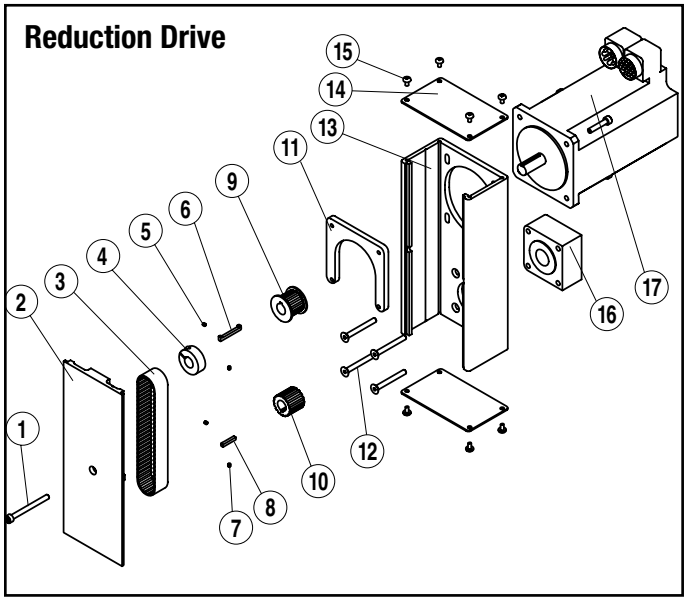
1. Head Adapter Assembly. On the Drive Head Adapter, install the first Snap Ring (9) on the side of the Head that will have the stub shaft exposed. Slide the bearing/shaft assembly into the head adapter. Install the second snap ring. Insert the idle pulley shaft part way into the Idle Head Adapter. Locate a spacer over the shaft and then position the pulley/bearing assembly over the shaft. Slide the shaft through the bearing and locate another spacer between the pulley and inside of the adapter housing. With the shaft ends flush with the outside of the Head Adapter, tighten the set screws into the housing to lock the shaft in position. Notice the pilots in the shaft for the set screws.

2. Install Heads, Carrier and Belt. Position the Carrier on the THK blocks and attach with Cap Screws. Torque to 25 in-lbs. (2.82 N-m). Attach the Heads to the Base (6). Torque Pan Head Screws to 100 in-lbs. (11.30 N-m). Feed belt through each of the Heads and through the pulleys in each Head Adapter. Attach each Head Adapter to the Head. Attach the Belt Clamps to the Belt with the cap screws, and start the tension bolts into the Belt Clamps.

3. Tension Belt. To measure the belt tension, position the edge of the carrier that is nearest the Head 6" from the inside edge of the Head (from either end of actuator). Locate a force gage on the belt 2" from the inside edge of the Head. Deflect the belt 3/8" in either direction. The force gage should read between 14 and 18 lbs.

4. When proper belt tension is attained, tighten the belt clamps to the carrier with Cap Screws (32).

5. Install Cover. Attach the Cover to the unit with Cap Screws (27).



List of Parts

Item	Part No.	Description	1:1 Ratio			2:1 Ratio		
			MRV21,22,23,24	MRV31,32,33	MRS341,342,343	MRV21,22,23,24	MRV31,32,33	MRS341,342,343
1	3420-1640	SHCS, M5 X 0.8, 50 MM LONG, SST	1			1		
	3420-1639	SHCS, M5 X 0.8, 55 MM LONG, SST		1	1		1	1
2	0601-1615	COVER, TKS50/75-23 FRAME	1			1		
	0602-1615	COVER, TKS50/75-34 FRAME		1	1		1	1
3	2133-1025	TIMING BELT, 330-5M-19	1	1	1			
	2164-1007	TIMING BELT, 375-5M-19				1	1	1
4	2312-1005	CLAMP COLLAR, Ø.500			1			1
5	4415-1015	SET SCREW, M3 X 0.5 X 3 MM LONG	2	2		2	2	
6	2132-1021	KEY, SPECIAL, .125 X .125	1	1		1	1	
7	4415-1015	SET SCREW, M3 X 0.5 X 3 MM LONG	2	2	2	2	2	2
8	2100-1021	KEY, .125 X .125 X .75 LONG	1	1	1			
	1004-7706	KEY, .125 X .125 X 1.00 LONG				1	1	1
9	2132-1002	PULLEY, 16 TEETH, 19 MM WIDTH	1	1		1	1	
	0602-9850	PULLEY, 16 TEETH, 19 MM WIDTH			1			1
10	0603-1053	PULLEY, 16 TEETH, 19 MM WIDTH	1	1	1			
	0603-1054	PULLEY, 32 TEETH, 19 MM WIDTH				1	1	1
11	0601-1053	PLATE, MOTOR, 23 FRAME	1			1		
	0602-1057	PLATE, MOTOR, 34 FRAME		1	1		1	1
12	0603-2031	SFHCS, M5 X 0.8 X 45 MM LONG, SST	4	4	4	4	4	4
13	0601-1607	HOUSING, TKS25-23 FRAME	1			1		
	0602-1607	HOUSING, TKS25-34 FRAME		1	1		1	1
14	0601-1602	END CAP	2			2		
	0602-1602	END CAP		2	2		2	2
15	0601-1625	SCREW, #6 X .25, SELF-TAPPING, SST	8	8	8	8	8	8
16	0603-2054	SPACER,TKB50/75	1	1	1	1	1	1
17	2212-1099	SHCS, M5 X 0.8 X 25 MM LONG, SST	4	4	4	4	4	4

Reverse Parallel Disassembly Instructions:

1. Remove End Caps (14). Release tension on belt by breaking loose the motor fasteners (17).
2. Remove RP Cover (2).
3. Remove both drive pulley (9) and driven pulley (10) from their respective shafts. The belt (3) will come off with the pulleys.
4. Remove motor fasteners (17) to remove motor from RP case.
5. Remove the RP case (13) from the head by removing fasteners (12).

Reverse Parallel Assembly Instructions:

*Apply Loctite #242 to all fasteners upon installation

1. Install RP case (13) to the head with cap screws (12).
2. Install the motor to the RP case with fasteners (17). Do not tighten the fasteners at this time.
3. Locate the belt (3) over the pulleys and slide the drive (9) and driven (10) pulleys over their respective shafts. Tighten each pulley to it's shaft with either trantorque or collar clamp. If trantorque, utilize torque wrench to apply appropriate torque.
   1/2" hex on trantorque apply 75 in-lbs (8.47 N-m).
   5/8" hex on trantorque apply 100 in-lbs (11.3 N-m).
4. Verify that there is clearance between the inside of the RP case and each pulley. Verify that the pulleys are aligned to each other.
5. Position the cover (2) in mating slot of the RP case and install the SHCS (1) to hold in place.
6. Tension the belt by pulling the motor away from the drive shaft with the appropriate force in the chart below. Tighten the motor fasteners while this force is applied to the motor.

Motor Frame	Tension Force
MRB23, MRS23	10 lbf (44.48 N)
MRV23, MRS34	20 lbf (88.96 N)
MRV34, MRB34	30 lbf (133.45 N)

7. Install both end caps (14) with the screws (15) to finalize assembly.

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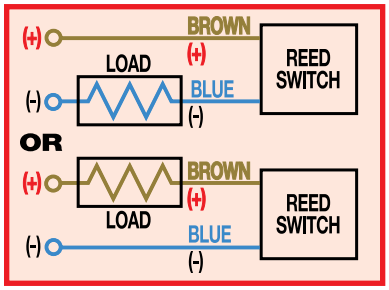
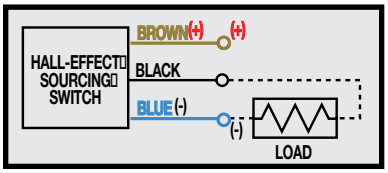
WIRING DIAGRAMS

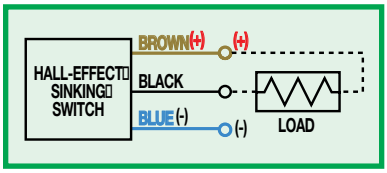
RT DC REED, FORM A



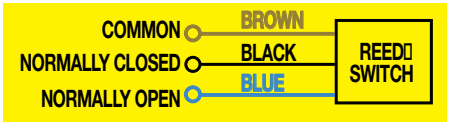
TT HALL-EFFECT, SOURCING, PNP



KT HALL-EFFECT, SINKING, NPN



BT DC REED, FORM C



INSTALLATION INFORMATION

THE NOTCHED FACE OF THE SWITCH INDICATES THE SENSING SURFACE AND MUST FACE TOWARD THE MAGNET.

Some actuators may require switch mounting on a specific side of the assembly. Call Tolomatic for details.

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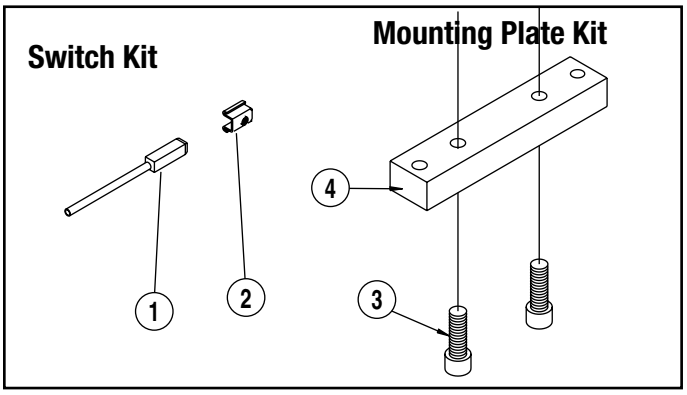

List of Parts

Item	Part No.	Description	QTY.
		SWITCH KIT	
2	0601-9901	SWITCH HARDWARE KIT	1
1	3600-9082	SWITCH, REED, FORM A, 5M WIRE	
	3600-9084	SWITCH, REED, FORM C, 5M WIRE	
	3600-9088	SWITCH, SOURCE, HALL, 5M WIRE	
	3600-9090	SWITCH, SINKING, HALL, 5M WIRE	
		MOUNTING PLATES	
3	2212-1101	SHCS, M8 X 18	2
4	0603-1080	MOUNTING PLATE, TK75	1

SWITCH TYPE CODE

BT	(Form C Reed Switch with 5-meter lead)
RT	(Form A Reed Switch with 5-meter lead)
KT	(Hall-effect Switch (Sinking) 5-meter lead)
TT	(Hall-effect Switch (Sourcing) 5-meter lead)

OPTIONAL ACCESSORY ASSEMBLY INSTRUCTIONS

1. **MOUNTING PLATES.** Mounting Plates should be secured at the required distances determined for the application to prevent tube deflection. Apply Loctite #242 to Screws and secure Mounting Plates to tube, aligning holes in tube with holes in Mounting Plates.

2. **SWITCHES**
   NOTE: Form A Reed Switches should not be used in TTL logic circuits. A voltage drop caused by the L.E.D. indicator will result. For applications where TTL circuits are used, please contact the factory.

   WARNING: An ohmmeter is recommended for testing Reed Switches. NEVER use an incandescent light bulb as a high current rush may damage the switch.

   Reed switches are only recommended for signalling position, not directly powering solenoids. For shifting a solenoid, a relay or resistor is recommended between it and the Reed Switch. Switch ratings must not be exceeded at any time.

NOTE: The side of the switch with the groove indicates the sensing surface. This must face toward the magnet.

For complete Switch Performance Data, refer to the TKS & TKB Actuators catalog #3600-4179.

TO ORDER RETROFIT KITS:
SW (then the model number and base size, and code for type of switch needed).

EXAMPLE: SWTK50BT
Where SW is the switch kit, TK is the model, 50 is the 2" size, and BT is a Form C Reed Switch with 5-meter lead.

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