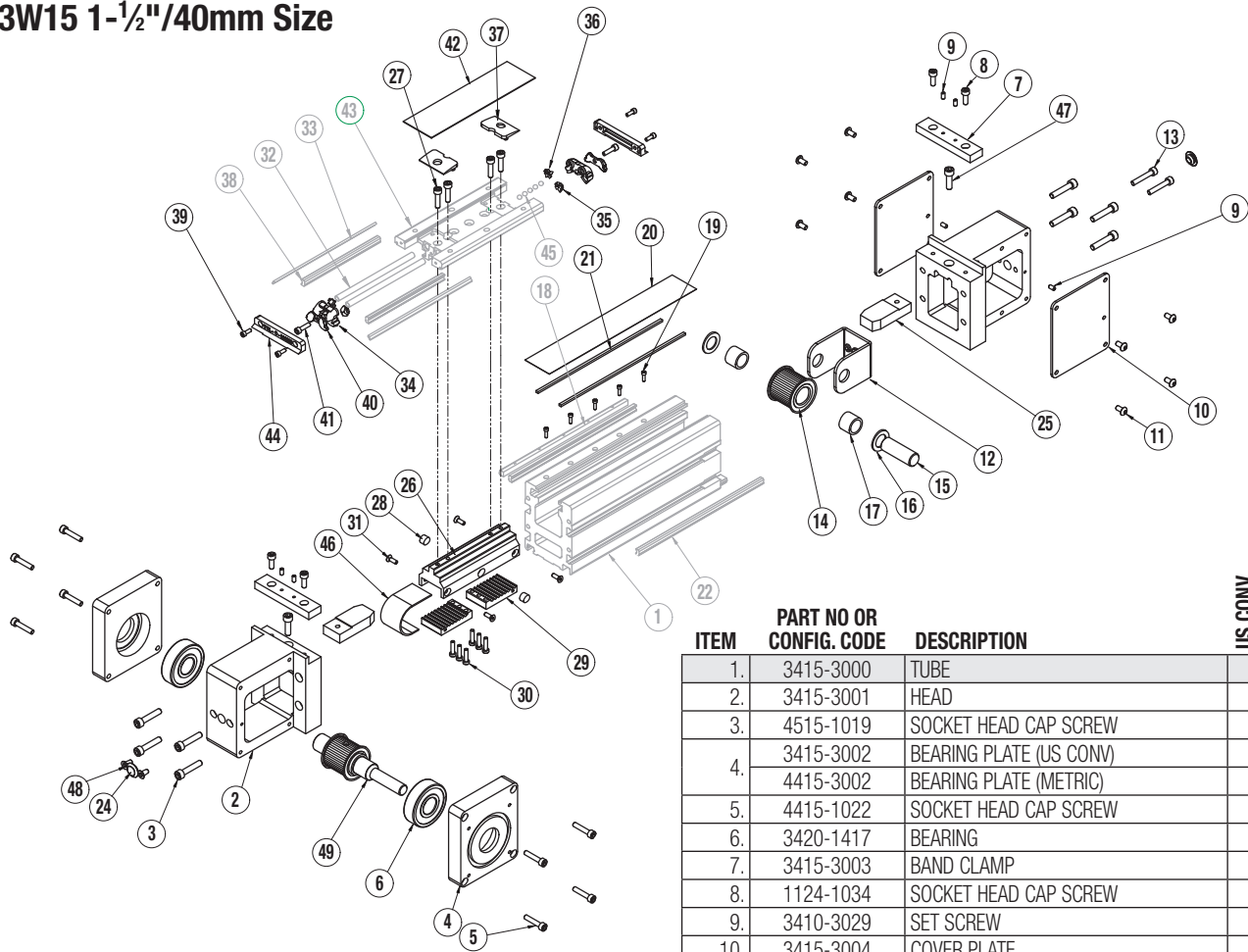


Belt-Drive Actuator Wedge-Style



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

22

ITEM	PART NO OR CONFIG. CODE	DESCRIPTION	US CONV (SK)	METRIC (SM)
1.	3415-3000	TUBE	1	1
2.	3415-3001	HEAD	2	2
3.	4515-1019	SOCKET HEAD CAP SCREW	8	8
4.	3415-3002	BEARING PLATE (US CONV)	2	
	4415-3002	BEARING PLATE (METRIC)		2
5.	4415-1022	SOCKET HEAD CAP SCREW	8	8
6.	3420-1417	BEARING	2	2
7.	3415-3003	BAND CLAMP	2	2
8.	1124-1034	SOCKET HEAD CAP SCREW	4	4
9.	3410-3029	SET SCREW	6	6
10.	3415-3004	COVER PLATE	2	2
11.	4912-1005	BUTTON HEAD CAP SCREW	8	8
12.	3415-3006	YOKE	1	1
13.	4510-1040	SOCKET HEAD CAP SCREW	2	2
14.	3415-3008	PULLEY	1	1
15.	3415-3009	IDLE SHAFT	1	1
16.	3415-3027	THRUST WASHER	2	2
17.	1029-7720	NEEDLE BEARING	2	2
18.	3415-3020	WEDGE	A/R	A/R
19.	3410-1685	SOCKET HEAD CAP SCREW	A/R	A/R
120.	NDBB3W15_SK_	DUST BAND (US CONV)	1	
	NDBB3W15_SM_	DUST BAND (METRIC)		1
121.	NMBB3W15_SK_	MAGNET BAND (US CONV)	2	
	NMBB3W15_SM_	MAGNET BAND (METRIC)		2

A/R = As Required

¹ Replacement ordering method:

			B	3	W	1	5	D	S	K					D	C		Y	M				
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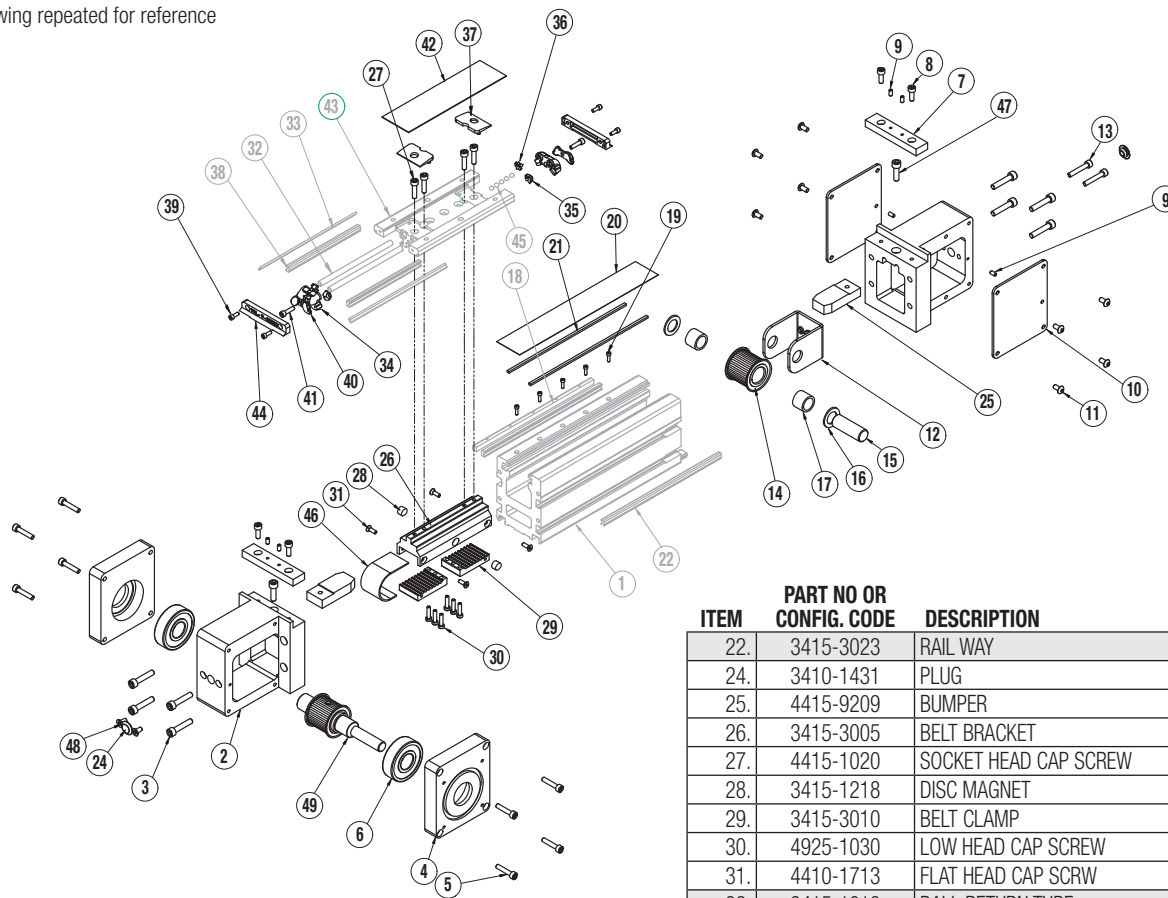
EXAMPLE: NDB B3W15 D SK21 .25 DC7 YM_TBD_

Dust Band (NDB); Magnet Band Kit (NMB) (includes 2 magnet bands) Model Stroke Length Aux. Carrier Motor Code

Auxiliary Carrier Option Note: If replacing a Magnet Band (21.) or Dust Band (20.) on an actuator that has an Auxiliary Carrier, be sure to add "DC ___" to the end of the configuration string when ordering. "DC" indicates the need for additional length and "___" indicates the measurement of space between carriers (in inches [SK] or millimeters [SM]) as indicated earlier in the configuration string).

Dual 180 Carrier Option Note: If equipped with the optional dual 180 carrier, add the letter "D" between the Model & Size and Stroke Length.

Drawing repeated for reference



ITEM	PART NO OR CONFIG. CODE	DESCRIPTION	US CONV (SK)	METRIC (SM)
22.	3415-3023	RAIL WAY	2	2
24.	3410-1431	PLUG	2	2
25.	4415-9209	BUMPER	2	2
26.	3415-3005	BELT BRACKET	1	1
27.	4415-1020	SOCKET HEAD CAP SCREW	4	4
28.	3415-1218	DISC MAGNET	2	2
29.	3415-3010	BELT CLAMP	2	2
30.	4925-1030	LOW HEAD CAP SCREW	6	6
31.	4410-1713	FLAT HEAD CAP SCRW	4	4
32.	3415-1019	BALL RETURN TUBE	2	2
33.	3415-1025	WIPER	2	2
34.	3415-1014	BALL RETURN	2	2
35.	3415-1015	BALL RACE, RIGHT	2	2
36.	3415-1032	BALL RACE, LEFT	2	2
37.	3415-1047	UPPER BAND RAMP	2	2
38.	3415-1024	CARRIER WAY	2	2
39.	0910-1040	SOCKET HEAD CAP SCREW	4	4
40.	3415-1109	PLT, BALL RETURN	2	2
41.	2307-1021	SOCKET HEAD CAP SCREW	2	
	3212-1025	SOCKET HEAD CAP SCREW (METRIC)		2
42.	3415-2022	CARRIER COVER	1	1
43.	3415-2021	CARRIER (US CONV)	1	
	4415-1235	CARRIER (METRIC)		1
44.	3415-2024	END CAP	2	2
45.	3415-1009	BALL BEARING	114	114
2, 3, 46.	RBB3W15_SK_	BELT (US CONV)	1	
	RBB3W15_SM_	BELT (METRIC)		1
47.	4420-1002	SOCKET HEAD CAP SCREW	A/R	A/R
48.	0778-1013	PLUG	2	2
49.	3415-9401	DRIVESHAFT/BEARING ASSEMBLY	1	1
	3415-9402	DRIVESHAFT/BEARING ASSEMBLY (DUAL)	1	1

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

³ A recommended option to include with the replacement of the belt is the **belt tensioning kit**. (Kit #3415-9410) To order use the configuration code: **BK** at the end of the configuration string.

It is also recommended to **replace these parts when replacing belt**:

(#39) **0910-1040** Socket Head Cap Screws, quantity 4

(#44) **3415-2024** End Cap, quantity 2

A/R = As Required

Belt Tensioning Kit ¹

² Replacement Belt ordering method: **RB B3W15 D BWS SK DC BK**

EXAMPLE: **RB B3W15 D BWS SK DC7 BK**

Belt Model & Size Belt Size Stroke Length Aux. Carrier

Dual 180 Carrier Option Note: If equipped with the optional dual 180 carrier, add the letter "D" between the Model & Size and Stroke Length.

General Disassembly Instructions

1. Remove the Band Clamps (7) to free the ends of the Dust Band (20). If desired, the Dust Band (20) can be completely removed after removing both End Caps (44) from the Carrier (43).
2. Remove idle head Cover Plates (10). Remove Set Screws (9), then both belt Tension Screws (13).
3. Remove any motor mounting hardware to expose the Driveshaft (49). Remove Fasteners (5) holding the drive Bearing Plates (4) on the Head (2).
4. Pull one drive Bearing Plate (4) off of the Head (2). It may be necessary to press on one end of the Driveshaft (49) to push the Driveshaft Assembly (49) out of the Bearing Plate (4). The Bearing Plates (4) are held to the drive Bearings (6) with Loctite 641 retaining compound. Note that the Bearing (6) may come off the Driveshaft (49), in which case the Bearing (6) can then be pressed out of the Bearing Plate (4) from the opposite side.
5. Remove the other Bearing Plate (4) and/or Driveshaft Assembly (49). The Driveshaft Assembly (49) can then be pressed out of the Bearing Plate (4).
6. At the idle end, the Pulley (14), Bearings (17), and Spacers (16) can now be removed by sliding the Idle Shaft (15) out of the Yoke (12).
7. Remove the head Fasteners (3) and the drive end Head (2). Remove the Fasteners (27) to free the Belt Bracket (26) from the Carrier (43). Position the Belt Bracket (26) all the way to the end of Tube (1) where the Head (2) has been removed, to expose all fasteners. Remove the belt clamp Fasteners (30,31), from one end of the Belt (46). The Belt Bracket (26) and the Belt (46) can now be removed from the assembly.
8. Remove the other belt clamp Fasteners (30,31) and remove all hardware from the Belt (46).

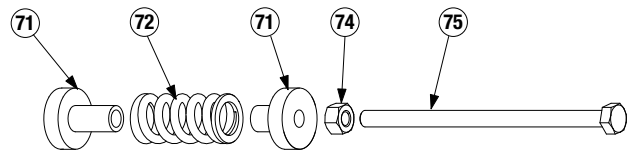
General Assembly Instructions:

*Apply Loctite #242 to all fasteners upon installation

1. Slide the Belt (46) through the bottom section of the Tube (1) TEETH FACING UP.
2. Attach both ends of the Belt (46) to the Belt Bracket (26) using the 2 Belt Clamps (29) and the Low Head Cap Screws (30) through the Belt Clamp (29), and the Flat Heads Screws (31) into the sides of the Belt Clamp (29).
3. The teeth of the Belt (46) should mate with the teeth of the Belt Clamp (29), and be inserted into the Belt Clamp (29) as far as possible to maximize engagement of the teeth.
4. *Orientation of Heads (2) on the Tube (1), when viewed from motor end of actuator with primary Carrier (43) up, the wedge side will be to the left.
5. Position the Idle Pulley (14) inside the Belt (46) at the end of the Tube (1). Position the Yoke (12) over the Pulley (14), and slide the Idle Shaft (15) through the Yoke (12) such that a Spacer (16) is on either side of the Pulley (14) yet inside the Yoke (12).
6. Position the Head (2) over the Pulley (14)/Yoke (12) and install Head (2) onto Tube (1) with 4 Socket Head Cap Screws (3). Align the Head (2) to the Tube (1) using a flat plate, to ensure that the top of the Head (2) is aligned flush with the top of magnet band surface of the Tube Assembly (1).
7. Start the 2 belt Tension Screws (13) into the Yoke (12) through the Head (2).
8. Mount the drive Head (2) to the Tube (1) with Fasteners (3).
9. Apply a coating of loctite 641 and primer N to the OD of the Bearing (6) that's located against the shoulder of the Driveshaft (49). Apply a coating of loctite 641 to the ID bore of one of the drive Bearing Plates (4). Install the Bearing (6) into the bore of the Bearing Plate (4) making sure it is completely bottomed out. Wipe away any excess loctite.
10. Install the Bearing Plate/Driveshaft Assembly (49) onto the drive Head (2) with 4 Socket Head Cap Screws (5), positioning the pulley through the Belt (46). *Note that the center line of the Driveshaft (49) is not symmetrical within top and bottom of the Bearing Plate (4). Install so the Driveshaft (49) is nearest the bottom of the Head (2). *The side at which the assembly is

attached to the Head (2) determines left/right drive shaft orientation. Install in the desired orientation.

11. Apply a coating of loctite 641 and primer N to the OD of the exposed Bearing (6). Apply a coating of loctite 641 to the ID of the Bearing Plate (4) bore, and install the non-drive side Bearing Plate (4) onto the Head (2) with 4 fasteners (3).
12. Insert plastic Plugs (48) into the holes in the end of the drive Head (2).
13. Secure Carrier Assembly (43) to the Belt Bracket Assembly (26). If unit has an Auxiliary Carrier (43) attach Belt Bracket (26) to the Carrier (43) nearest the motor end.

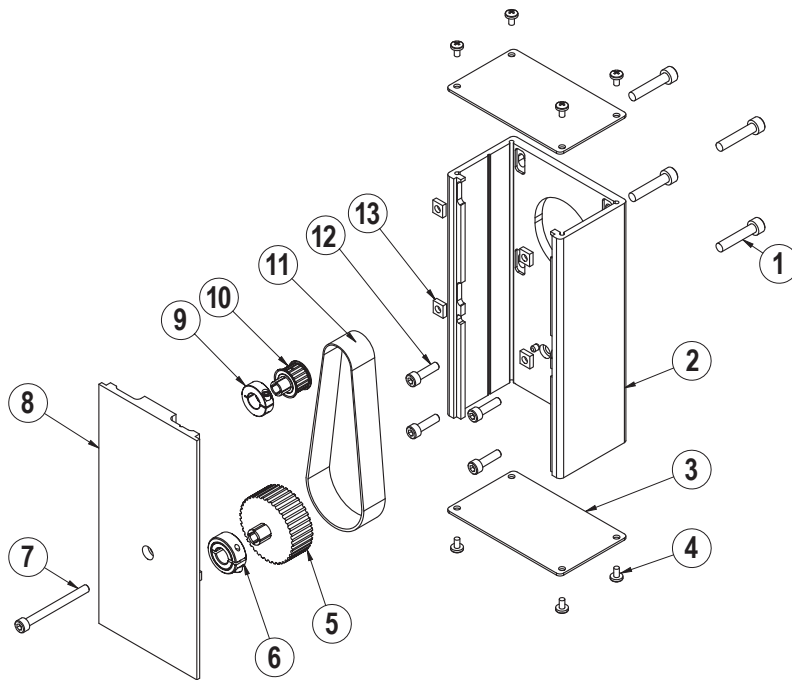
Belt Tensioning (Kit #3415-9410):

1. On the belt tension tool ensure that the Nut (74) is positioned on the Tension Screw (75) such that it is making contact with the head of the Tension Screw (75). Thread it into this position as needed.
2. Thread the belt tension tool assembly into the Yoke (12) at the idle end until the face of the Spring Standoff (71) makes contact with the actuator Head (2).
3. While holding the Tension Screw (75) from turning, thread the Nut (74) down the Tension Screw (75) until the Spring Standoff (71) makes contact with the opposing Spring Standoff (71). *Caution: Do not tighten past the point of contact being made. This will result in over tension.
4. Adjust the 2 Tension Screws (13) that hold the Yoke (12) in place. View the Yoke (12) through the side of the Head (2) and snug each fastener such that the Yoke (12) is visually parallel to the bottom surface of the Head (2).
5. Install and tighten down the 2 Set Screws (47) to hold the Tension Screws (13) in place.
6. Remove pressure from the tensioning tool and unscrew its shaft out of the Yoke (12).
7. Install plastic Plug (24) button into hole in end of the idler Head (2).
8. Attach the Bumpers (25) to drive and idler Heads (2) as needed.
9. Replace the ends of the Dust Band (20) to their location and install the Band Clamps (7).

Bearing lubrication

The bearing system is prelubricated at the factory with Mobil HP grease. Relubrication is recommended every .5-1 million cycles using a lithium-soap base grease for optimal bearing performance. To relubricate, remove Set Screws (9) and SHCS (8), Band Clamp (7). Lift back Dust Band (20) and apply grease directly to the stationary ball ways.

Reverse Parallel (RP) Mounting Option



ITEM	PART NO.	DESCRIPTION	QTY.
1.	CONFIGURED	MOTOR FASTENER	4
2.	CONFIGURED	RP HOUSING	1
3.	CONFIGURED	RP HOUSING END CAP	2
4.	CONFIGURED	END CAP SCREW	8
5.	CONFIGURED	DRIVE SHAFT PULLEY	1
6.	CONFIGURED	COLLAR CLAMP, DRIVE SHAFT	1
7.	CONFIGURED	RP COVER FASTENER	1
8.	CONFIGURED	RP COVER	1
9.	CONFIGURED	COLLAR CLAMP, MOTOR	1
10.	CONFIGURED	MOTOR PULLEY	1
11.	CONFIGURED	BELT	1
12.	CONFIGURED	RP PLATE FASTENER	4
13.	CONFIGURED	SQUARE NUT	4

♦ Part numbers varies depending on YMH (Your Motor Here).
Contact help@tolomatic.com for replacement part numbers.

Disassembly Instructions

1. Remove End Caps (3), and release the tension on the Belt (11) by breaking loose the motor fasteners (1).
2. Remove the RP Cover (8).
3. The Belt (11) can now be removed along with the Motor.
4. Remove both Pulleys (10) and (5) from their respective shafts.
5. Remove the RP Housing (2) from the actuator head by removing the Fasteners (12).

Assembly Instructions

Note: Apply Loctite #242 to all fasteners upon installation

1. Install RP Housing (2) onto the actuator Head with Fasteners (12).
Note: If the RP housing has a bearing in it do not fully tighten the fasteners at this time. Instead temporarily install the RP cover (8) onto the RP case, positioning the bearing over the leadscrew shaft. Hold the cover in place while tightening all the Fasteners (12) so that the case is snug. Then remove the RP cover and finish tightening the fasteners
2. Install the Motor to the RP Housing with Fasteners (1) and Square Nuts (13). Do not tighten the fasteners at this time.
3. Locate the Belt (11) over the Pulleys (10) and (5) and slide both pulleys over their respective shafts. Tighten each pulley to its shaft with the Collar Clamps (9) and (6).

4. Tension the Belt (11) by pulling the motor away from the drive shaft with the appropriate tension force shown in the chart below. While tensioning, the actuator should be positioned so the weight of the motor does not affect the belt tension. Tighten the Motor Fasteners (1) while the tensioning force is applied to the motor.

SMALLEST SHAFT DIAMETER (Motor or Actuator)		TOTAL WEIGHT TO APPLY	
Inches	mm	lbs	kgs
0.18 to 0.259	4.572 to 6.579	13	5.902
0.260 to 0.499	6.604 to 12.675	22	9.988
0.500 to 0.625	12.7 to 15.875	31	14.074
0.625 and larger	15.875 and larger	40	18.160

Additional tips are found in Tolomatic [Electric Actuator Motor Mounts Technical Note # 3600-4203](#).

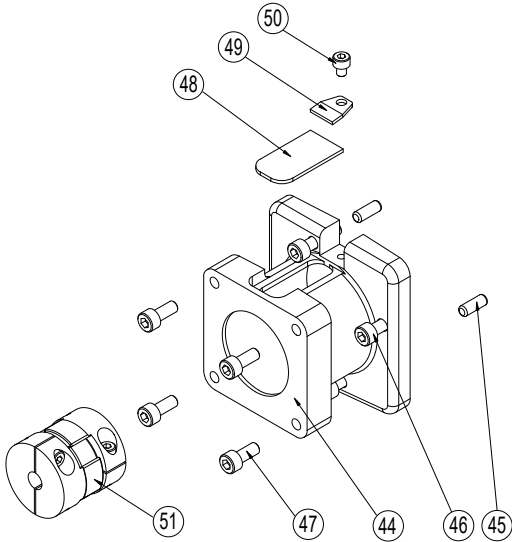
5. Verify that there is clearance between the inside of the RP case and each pulley. Verify the pulleys are aligned to each other.
6. Position the Cover (8) in the mating slot of the RP case and install the Fasteners (7) to hold it in place. Take care not to overtighten. If the cover is deflected, it can interfere with the leadscrew.
7. Install both End Caps (3) with the Screws (4) to finalize the assembly.

Direct Drive Motor Mounting Option

ITEM	PART NO.	DESCRIPTION	QTY
◊44.	CONFIGURED	MOTOR SPACER	1
◊45.	CONFIGURED	DOWEL PIN	2
◊46.	CONFIGURED	SCREW	4
◊47.	CONFIGURED	SCREW	4
◊48.	CONFIGURED	COVER	1
◊49.	CONFIGURED	CLAMP	1
◊50.	CONFIGURED	SCREW	1
◊51.	CONFIGURED	COUPLER	1

◊ Part number varies depending on YMH (Your Motor Here).
Contact help@tolomatic.com for replacement part number.

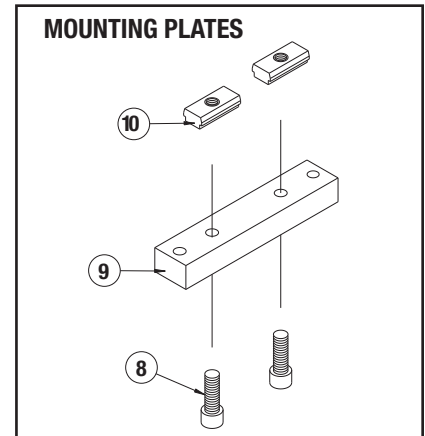
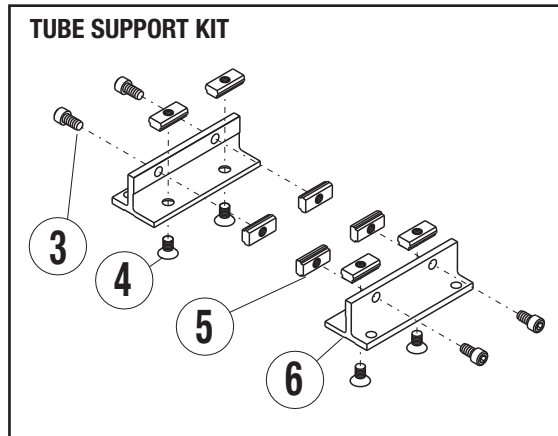
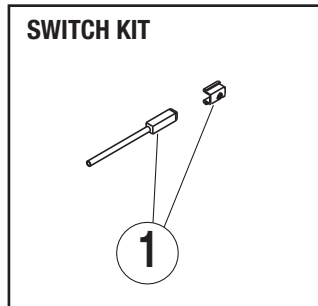
A replacement Motor Mount Kit contains all parts listed above.



Replacement Motor Mount Kits ordering method: **MMK B3W15** **SD** **LMI YM** **OTBD0**

EXAMPLE: **MMK B3W15 SD LMI YM OTBD0**

Motor Mount Kit Model & Size Mounting Style Motor Orientation Motor Code



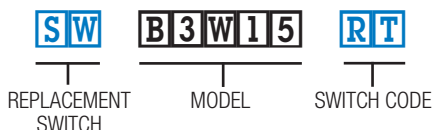
Optional Accessories Parts Listing

ITEM																							
1.	SWITCH KIT SWB3W15SK (US CONV.) SWB3W15SM (METRIC)																						
	CONFIG. CODE ORDERING																						
	<table> <tr> <th>CODE</th><th>DESCRIPTION</th></tr> <tr> <td>BT</td><td>SWITCH KIT, REED, FORM C, 5M</td></tr> <tr> <td>BM</td><td>SWITCH KIT REED, FORM C, QUICK DISCONNECT</td></tr> <tr> <td>RT</td><td>SWITCH KIT, REED, FORM A, 5M</td></tr> <tr> <td>RM</td><td>SWITCH KIT, REED, FORM A, QUICK DISCONNECT</td></tr> <tr> <td>CT</td><td>SWITCH KIT, TRIAC, 5M</td></tr> <tr> <td>CM</td><td>SWITCH KIT, TRIAC, QUICK DISCONNECT</td></tr> <tr> <td>KT</td><td>SWITCH KIT, HALL-EFFECT, SINKING, 5M</td></tr> <tr> <td>KM</td><td>SWITCH KIT, HALL-EFFECT, SINKING, QUICK DISCONNECT</td></tr> <tr> <td>TT</td><td>SWITCH KIT, HALL-EFFECT, SOURCING, 5M</td></tr> <tr> <td>TM</td><td>SWITCH KIT, HALL-EFFECT, SOURCING, QUICK DISCONNECT</td></tr> </table>	CODE	DESCRIPTION	BT	SWITCH KIT, REED, FORM C, 5M	BM	SWITCH KIT REED, FORM C, QUICK DISCONNECT	RT	SWITCH KIT, REED, FORM A, 5M	RM	SWITCH KIT, REED, FORM A, QUICK DISCONNECT	CT	SWITCH KIT, TRIAC, 5M	CM	SWITCH KIT, TRIAC, QUICK DISCONNECT	KT	SWITCH KIT, HALL-EFFECT, SINKING, 5M	KM	SWITCH KIT, HALL-EFFECT, SINKING, QUICK DISCONNECT	TT	SWITCH KIT, HALL-EFFECT, SOURCING, 5M	TM	SWITCH KIT, HALL-EFFECT, SOURCING, QUICK DISCONNECT
CODE	DESCRIPTION																						
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TT	SWITCH KIT, HALL-EFFECT, SOURCING, 5M																						
TM	SWITCH KIT, HALL-EFFECT, SOURCING, QUICK DISCONNECT																						
	NOTE: Switch bracket, set screw, & mating QD cable is included																						

ITEM	US CONV	METRIC	DESCRIPTION	QTY.
TUBE SUPPORT KIT				
	3415-9006	4415-9006	KIT INCLUDES ALL PARTS LISTED BELOW	
3	0801-1251	4415-1005	SHCS, 10-24 X .44/ M5 X 10	4
4	3415-1046	4415-1014	SFHCs, 10-24 X .38/ M5 X 10	4
5	3415-1013	4415-1013	T NUT	4
6	3415-1044	3415-1044	TUBE SUPPORT	2
MOUNTING PLATE KIT				
	3415-9056	4415-9030	KIT INCLUDES ALL PARTS LISTED BELOW (1/2" THICK)	
8.	3415-1013	4415-1013	T NUT	4
9.	3415-1332	3415-1332	MOUNTING PLATE	1
10.	0801-1251	4415-1005	SOCKET HEAD CAP SCREW	4
	3415-9057	4415-9031	KIT INCLUDES ALL PARTS LISTED BELOW (1" THICK)	
8.	3415-1013	4415-1013	T NUT	4
9.	3415-1333	3415-1333	MOUNTING PLATE	1
10.	1310-1015	4415-1022	SOCKET HEAD CAP SCREW	4

Switch Ordering NOTES:

To order field retrofit switch and hardware kits for all Tolomatic actuators: SW (Then the model and bore size, and type of switch required) Example below.



(Hardware and Form A Reed switch with 5 meter lead for 1-1/2" size B3W actuator)

Mounting hardware is required if replacing switch for any actuator manufactured before 7/1/97

OPTIONAL ACCESSORY ASSEMBLY INSTRUCTIONS

1. TUBE SUPPORTS. Four T-Nuts (5) are required on each side of the Tube, two T-Nuts on bottom of Tube and two in lower slots on tube sides. Tube Supports should be secured at the required distances determined for the application to prevent Tube deflection. Apply Loctite #242 to Screws (3, 4) and secure Tube Supports (6) to Tube aligning holes in T-Nuts with holes in Tube Supports.
2. Switches. Secure Switch (1) to magnet side of Tube with Switch Clamp (2) and Set Screw.

3. 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.

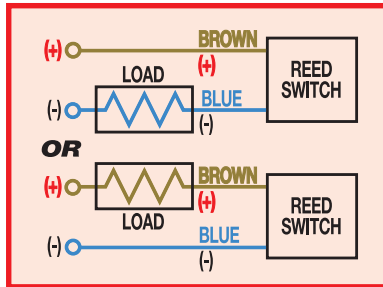
WARNING: An ohmmeter is recommended for testing Reed Switches. NEVER use an incandescent light bulb as a high current rush may damage the switch.

Reed and TRIAC 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.

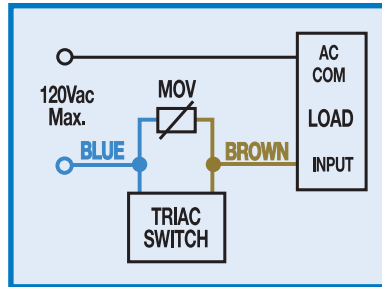
NOTE: For Hall Effect Switch Magnet, be sure the S pole of the magnet (indicated with black dot) is facing toward the switch (down).

WIRING DIAGRAMS

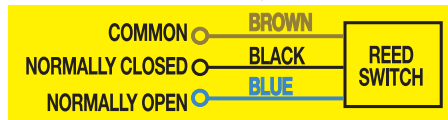
R T & R M DC REED, FORM A



C T & C M AC REED, TRIAC

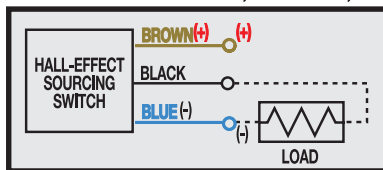


B T & B M DC REED, FORM C

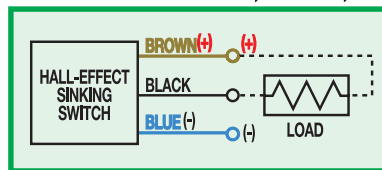


Some actuators may require switch mounting on a specific side of the assembly. Call Tolomatic for details.

T T & T M HALL-EFFECT, SOURCING, PNP



K T & K M HALL-EFFECT, SINKING, NPN



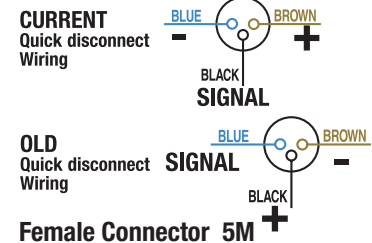
INSTALLATION INFORMATION



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

REPLACEMENT OF QD SWITCHES MANUFACTURED BEFORE JULY 1, 1997:

It will be necessary to replace or rewire the female end coupler.



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Mobil grease® HP is a registered trademark of Mobil Oil Corporation, www.mobil.com

TolomaticTM
EXCELLENCE IN MOTION

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