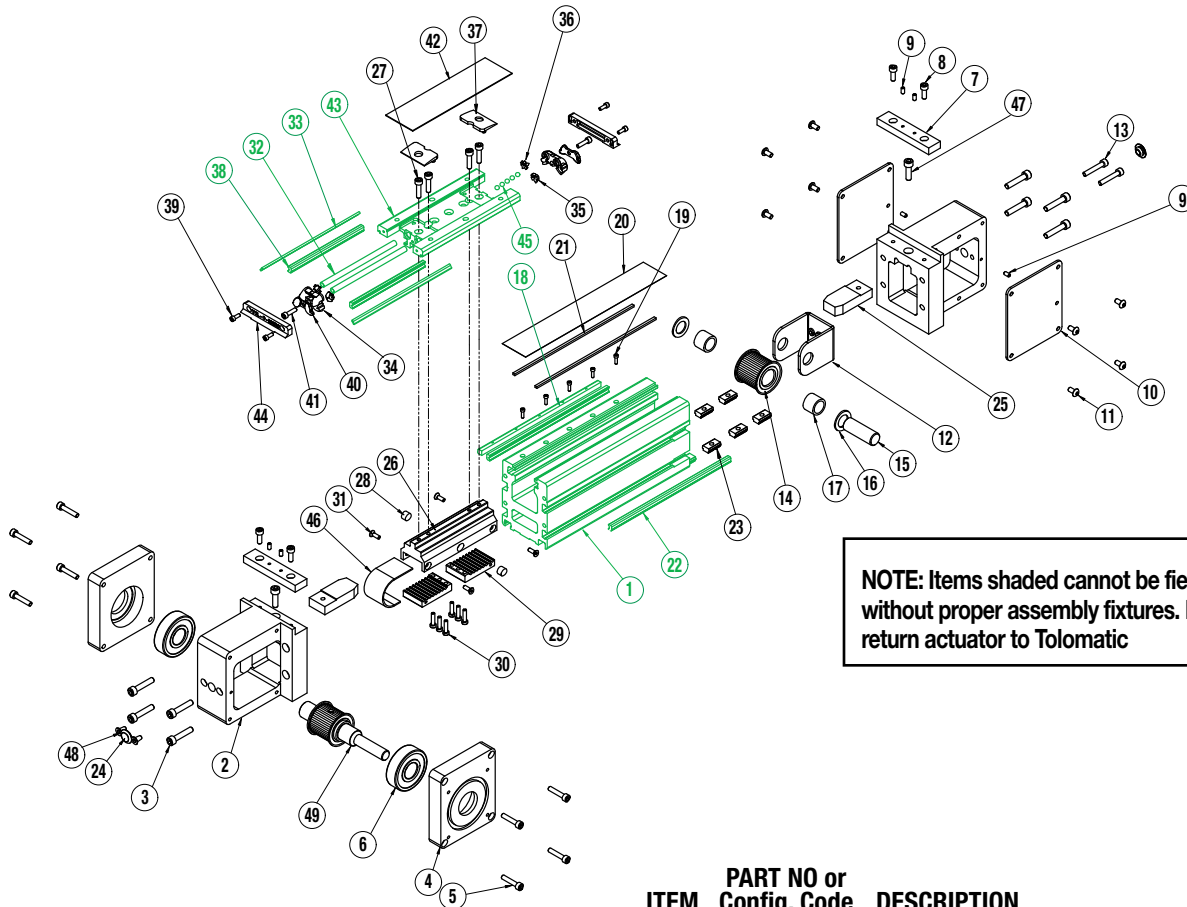


Belt-Drive Actuator Wedge-Style

B3W15/M3W15 1-1/2"/40mm Size



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

*Specify stroke length when ordering A/R = As Required

List of Parts

ITEM	PART NO or Config. Code	DESCRIPTION	B3W15	M3W15
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	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

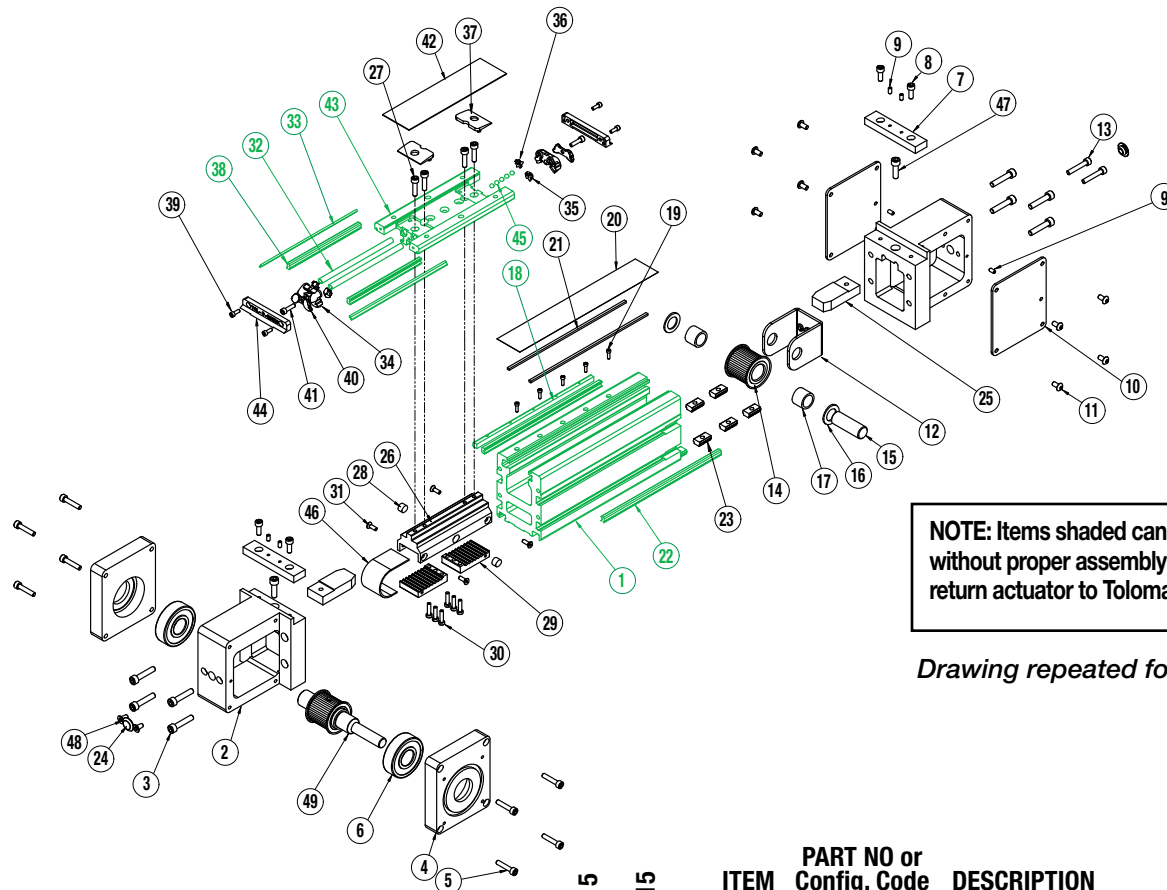
ITEM	PART NO or Config. Code	DESCRIPTION	B3W15	M3W15
12	3415-3006	Yoke	1	1
13	4510-1040	Socket Head Cap Screw	2	2
14	3415-3008	Pulley	1	1
15	3415-3009	Idle Shaft	1	1
16	3415-3027	Thrust Washer	2	2
17	1029-7720	Needle Bearing	2	2
18	3415-3020	Wedge	A/R	A/R
19	3410-1685	Socket Head Cap Screw	A/R	A/R
*20	NDBB3W15	New Dust Band (3415-3021)	1	1
*21	NMMB3W15	New Magnet Band, 2 included (3415-3022)	2	2
22	3415-3023	Rail Way	2	2
23	3415-1013	T-nut	8	
	4415-1013	T-nut (metric)		8
24	3410-1431	Plug	2	2
25	4415-9209	Bumper	2	2
26	3415-3005	Belt Bracket	1	1

*COMMON REPLACEMENT PARTS:

Ordering replacement belt: To order replacement belt use the following configuration code: **RBB3W15BWS30SK_** (note: the letters SK indicate stroke, follow these letters with the stroke length in decimal inches.) If the actuator has the dual carrier option add the code **DC_** (note: follow the letters DC with the distance between the carriers in decimal inches.)

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:**
 (#20) **NDBB3W15SK_** Dust Band (3415-3021, indicate stroke length)
 (#39) **0910-1040** Socket Head Cap Screws, quantity 4
 (#44) **3415-2024** End Cap, quantity 2



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

Drawing repeated for reference

ITEM	PART NO or Config. Code	DESCRIPTION	B3W15	M3W15
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

ITEM	PART NO or Config. Code	DESCRIPTION	B3W15	M3W15
*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	1	
	4415-1235	Carrier (metric)		1
*44	3415-2024	End Cap	2	2
45	3415-1009	Ball	114	114
†46	RBB3W15	Replacement Belt (3415-3018)	1	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 Assy (dual)	1	1

***COMMON REPLACEMENT PARTS:**

Ordering replacement belt: To order replacement belt use the following configuration code: **RBB3W15BWS30SK_ _ _** (note: the letters SK indicate stroke, follow these letters with the stroke length in decimal inches.) If the actuator has the dual carrier option add the code **DC_ _ _** (note: follow the letters DC with the distance between the carriers in decimal inches.)

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:**
 (#20) **NDBB3W15SK_ _ _** Dust Band (3415-3021, indicate stroke length)
 (#39) **0910-1040** Socket Head Cap Screws, quantity 4
 (#44) **3415-2024** End Cap, quantity 2

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:

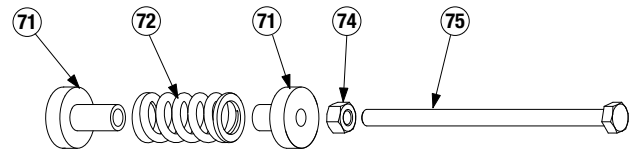
*Apply Loctite #242 to all fasteners upon installation

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

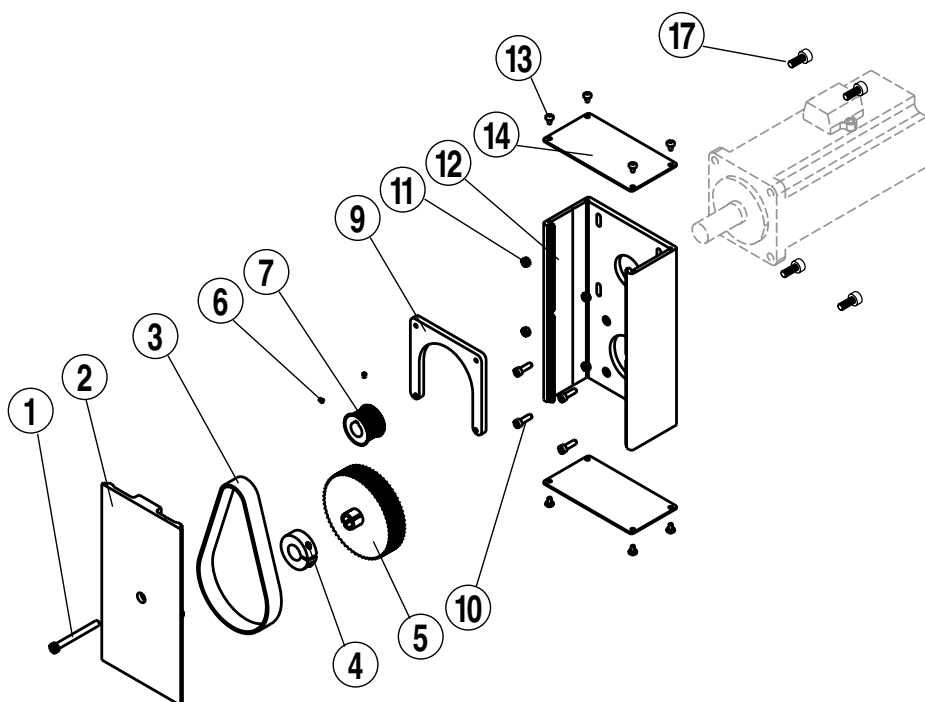
the bore of the Bearing Plate (4) making sure it is completely bottomed out. Wipe away any excess loctite.

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):



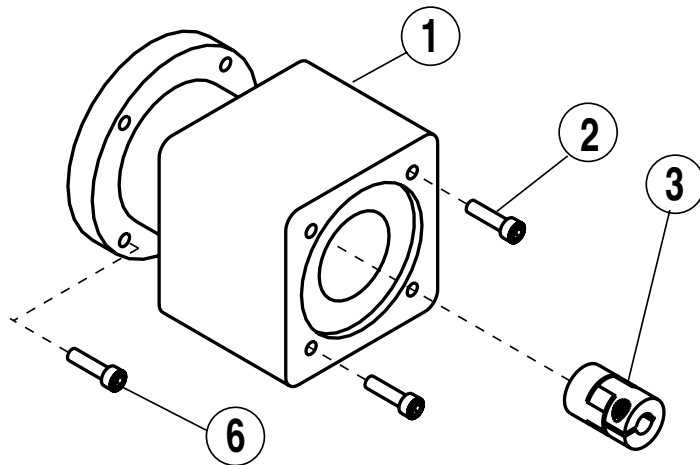
1. On the belt tension tool ensure that the Nut (74) is positioned on the Tension Screw (75) such that it is making contact with the head of the Tension Screw (75). Thread it into this position as needed.
2. Thread the belt tension tool assy into the Yoke (12) at the idle end until the face of the Spring 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).



3:1 Reduction Drive Parts Listing

Item	Part No.	Description	BCW15			MCW15		
			MRV21,22,23,24	MRV31,32,33	MRV51	MRV21,22,23,24	MRV31,32,33	MRV51
1.	3420-1641	LHCS, M6 X 1.0, 60 MM LONG	1	1	1	1	1	1
2.	3420-1613	COVER, B3W-23 FRAME	1			1	1	
	3420-1614	COVER, B3W-34 FRAME		1	1			1
	3420-1616	COVER, B3W-51 FRAME			1			1
3.	3415-1441	TIMING BELT, 425-5M-19	1	1		1	1	
	3415-1453	TIMING BELT, 535-5M-19			1			1
4.	0520-1067	CLAMP COLLAR, Ø.688	1	1	1	1	1	1
5.	3415-1439	PULLEY, 60 TEETH, 19MM WIDTH	1	1	1	1	1	1
6.	0610-1190	SET SCREW, 6-32, .188 LONG	2	2	2	2	2	2
7.	3415-1438	PULLEY, 20 TEETH, 19 MM WIDTH	1	1		1	1	
	3420-1438	PULLEY, 20 TEETH, 19 MM WIDTH			1			1
9.	0602-1057	PLATE, MOTOR, 34 FRAME		1			1	
	3420-1625	PLATE, MOTOR, 51 FRAME			1			1
10.	3410-1229	BHCS, TORX, #10-24 x.50	4	4	4			
	3420-1645	LHCS, M5 X 0.8, 16 MM LONG				4	4	4
11.	0603-2089	NUT, HEX, M5 X 0.8	4			4		
12.	3420-1603	HOUSING, B3W-23 FRAME	1			1		
	3420-1604	HOUSING, B3W-34 FRAME		1			1	
	3420-1606	HOUSING, B3W-51 FRAME			1			1
13.	0601-1625	SCREW, #6 X .25, SELF-TAPPING	8	8	8	8	8	8
14.	3420-1602	END CAP	2	2	2	2	2	2
17.	2212-1098	SHCS, M5 x 0.8, 20 MM LONG	4			4		
	2212-1099	SHCS, M5 X 0.8, 25 MM LONG		4			4	

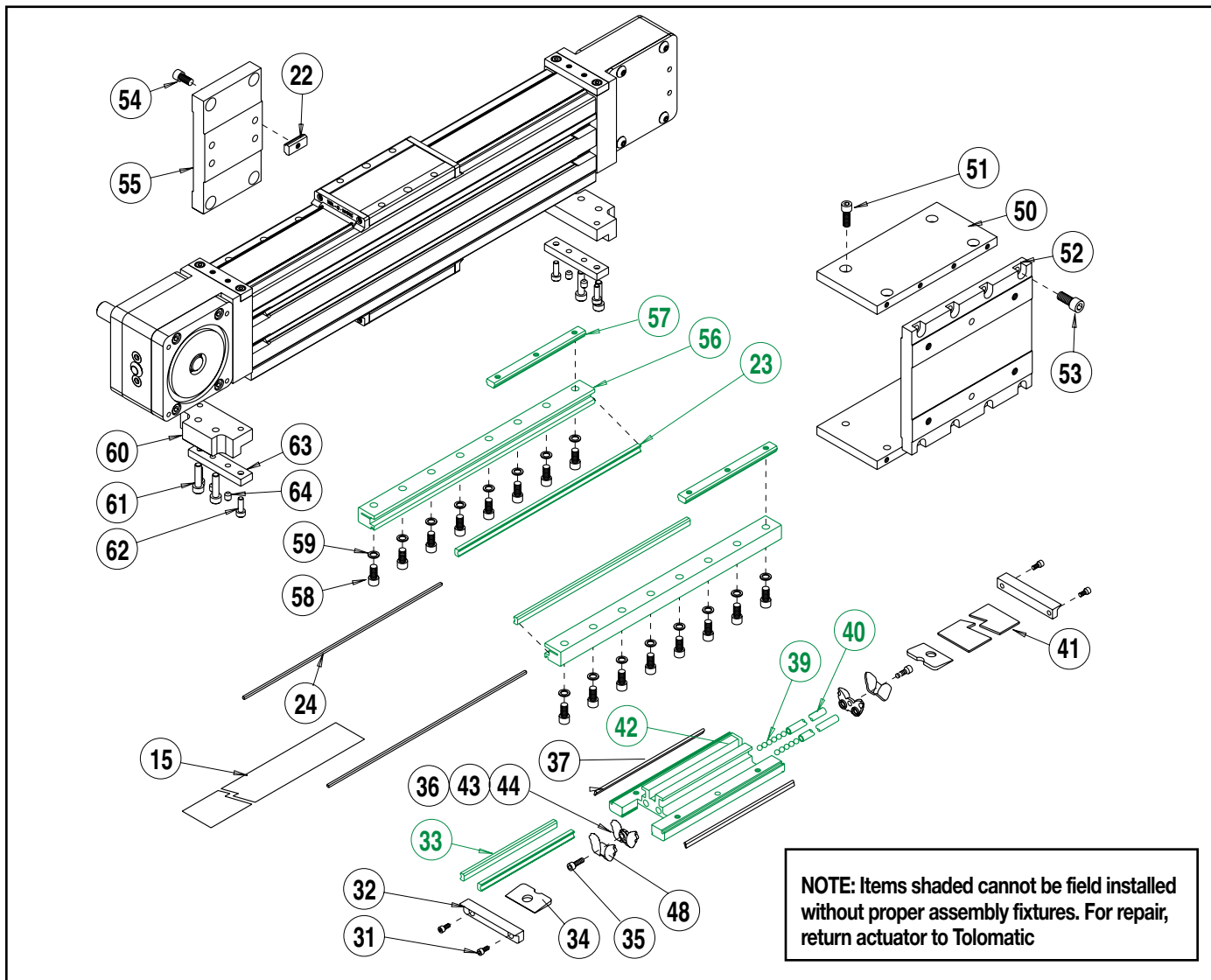
Direct Drive



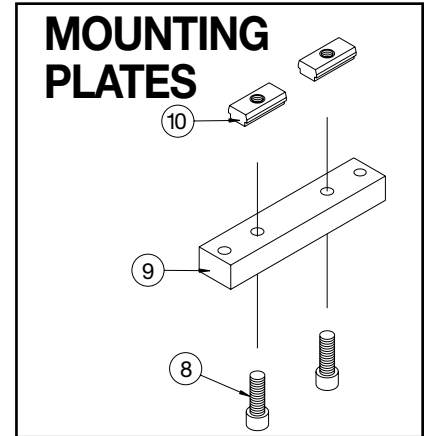
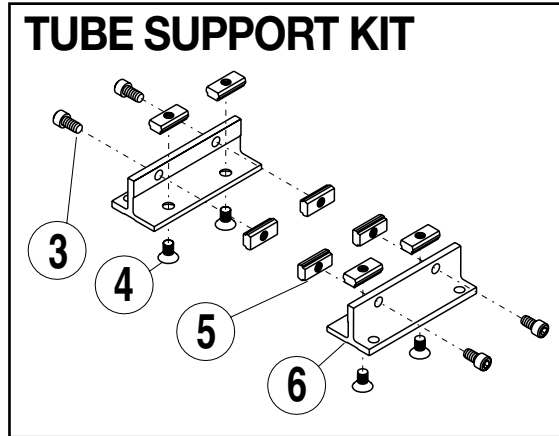
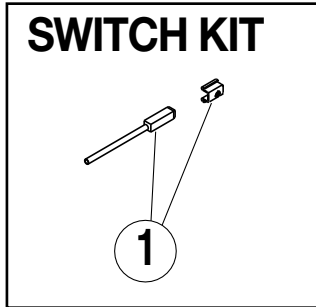
	Motor	Gearhead			
	MRV34X	MRV23_ W / GHJ20, GHJ21, GHK20	MRV34_ W/GHJ3	MRV34 W/GHJ30, GHJ31, GHK30	MRV34_ W / GHJ31

Direct Drive Parts Listing

Item	Part No.	Description	MRV34X	MRV23_ W / GHJ20, GHJ21, GHK20	MRV34_ W/GHJ3	MRV34 W/GHJ30, GHJ31, GHK30	MRV34_ W / GHJ31
1.	3410-1453	Motor Adapter, Mach, B3W	1				
	3410-1455	Motor Adapter, Mach, B3W			1	1	1
	3410-1456	Motor Adapter, Mach, B3W		1			
2.	1024-7711	SHCS, #10-24 x .88, BLK	4	4	4	4	
3.	3420-9041	Coupler	1	1	1	1	1
6.	4415-1020*	SHCS, M5 x .8 x 20, BLK	4	4	4	4	4
	1024-7711	SHCS, #10-24 x .88, BLK	4	4	4	4	4



Item	B3W15D Part No.	M3W15D Part No.	Description	Dual 180° Option QTY.	Item	B3W15D Part No.	M3W15D Part No.	Description	Dual 180° Option QTY.
15.	3415-1339	3415-1339	Dust Band	1	48.	3415-1109	3415-1109	PLT Ball Return	2
22.	3415-1013	4415-1013	Nut	4	50.	3415-1049	4415-1049	Plate, Conn., Dual Carrier	2
23.	3415-1341	3415-1341	Rail Way	2	51.	2317-1014	4415-1000	Socket Head Cap Screw	8
24.	3415-1340	3415-1340	Band Magnet	2	52.	3415-1048	4415-1048	Plate, Dual Carrier	1
31.	0910-1040	4415-1001	Socket Head Cap Screw	4	53.	2317-1014	2517-1108	Socket Head Cap Screw	8
32.	3415-2024	3415-2024	End Cap	2	54.	0801-1251	4415-1005	Socket Head Cap Screw	4
33.	3415-1024	3415-1024	Carrier Way	2	55.	3415-1053	3415-1053	Tube Support	1
34.	3415-1047	3415-1047	Upper Band Ramp	2	56.	3415-1342	3415-1342	Machined Rail	2
35.	2307-1021	4415-1024	Socket Head Cap Screw	2	57.	3415-1215	4415-1215	Rail Nut	AR
36.	3415-1014	3415-1014	Ball Return	2	58.	3415-1077	4415-1000	Socket Head Cap Screw	AR
37.	3415-1510	3415-1510	Wiper	2	59.	3415-1059	3415-1059	Washer	AR
39.	3415-1009	3415-1009	Ball	114	60.	3415-3026	3415-3026	Bracket, Band Clamp	2
40.	3415-1019	3415-1019	Ball Return Tube	2	61.	4510-1040	4510-1040	Socket Head Cap Screw	2
41.	3415-2022	3415-2022	Carrier Cover	1	62.	1124-1034	1124-1034	Socket Head Cap Screw	4
42.	3415-2021	4415-1235	Machined Carrier	1	63.	3415-3003	3415-3003	Band Clamp	2
43.	3415-1015	3415-1015	Right Ball Race	2	64.	3410-3029	3410-3029	Set Screw	4
44.	3415-1032	3415-1032	Left Ball Race	2					



Optional Accessories Parts Listing

	B3W15	M3W15				
ITEM	PART NO.	PART NO.	DESCRIPTION		QTY.	
SWITCH KIT						
1.	CONFIG. CODE ORDERING					
	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					
NOTE: Switch bracket, set screw, & mating QD cable is included						

	B3W15	M3W15			
ITEM	PART NO.	PART NO.	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: SWB3W15RT

(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.

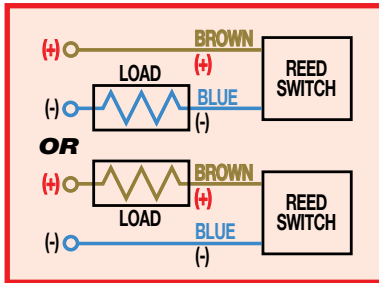
WARNING: An ohmmeter is not recommended for testing Reed Switches. NEVER use an incandescent light bulb as a high current rush may damage the switch.

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.

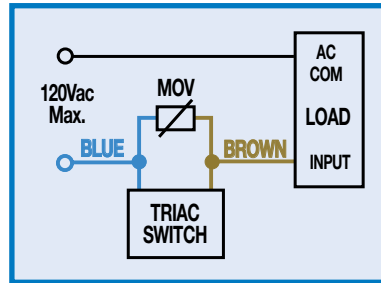
NOTE: For Hall Effect Switch Magnet, be sure the S pole of the magnet (indicated with black dot) is facing toward the switch (down).

WIRING DIAGRAMS

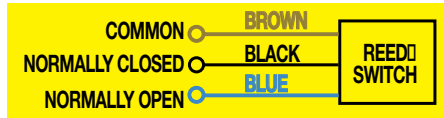
R T & R M DC REED, FORM A



C T & C M AC REED, TRIAC

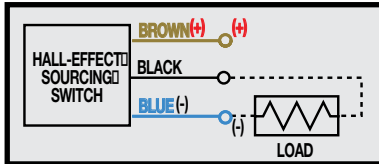


B T & B M DC REED, FORM C

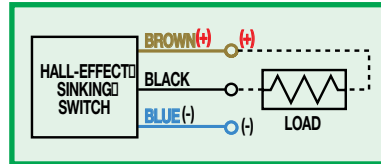


Some actuators may require switch mounting on a specific side of the assembly. Call Tolomatic for details.

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.

CURRENT Quick disconnect Wiring

BLACK SIGNAL

OLD Quick disconnect Wiring

BLACK SIGNAL

Female Connector 5M

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.

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3800 County Road 116, Hamel, MN 55340 USA
<http://www.tolomatic.com> • Email: Help@Tolomatic.com
 Phone: (763) 478-8000 • Fax: (763) 478-8080 • Toll Free: 1-800-328-2174

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