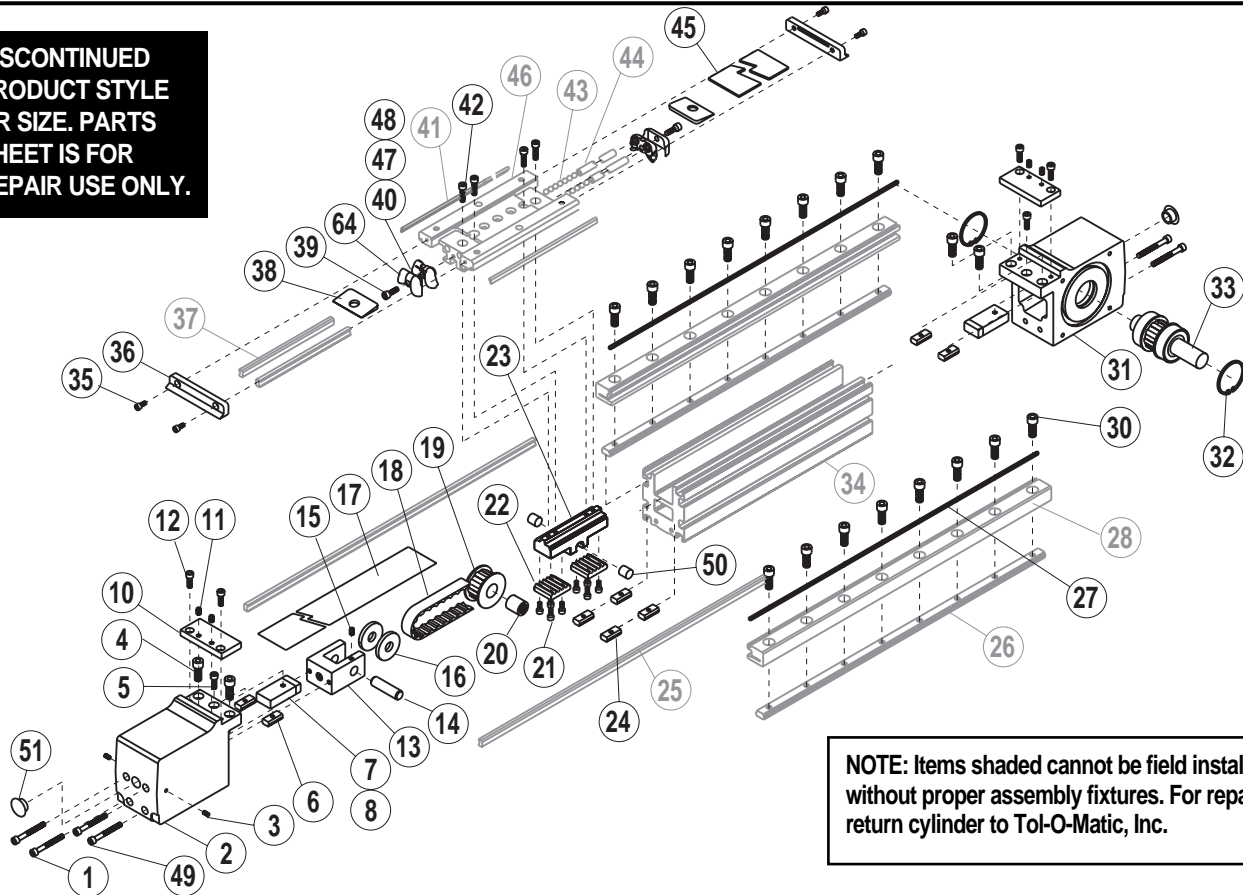




Axidyne® Belt-Drive Actuator

B3B20/M3B20 2"/50mm Bore

**DISCONTINUED
PRODUCT STYLE
OR SIZE. PARTS
SHEET IS FOR
REPAIR USE ONLY.**

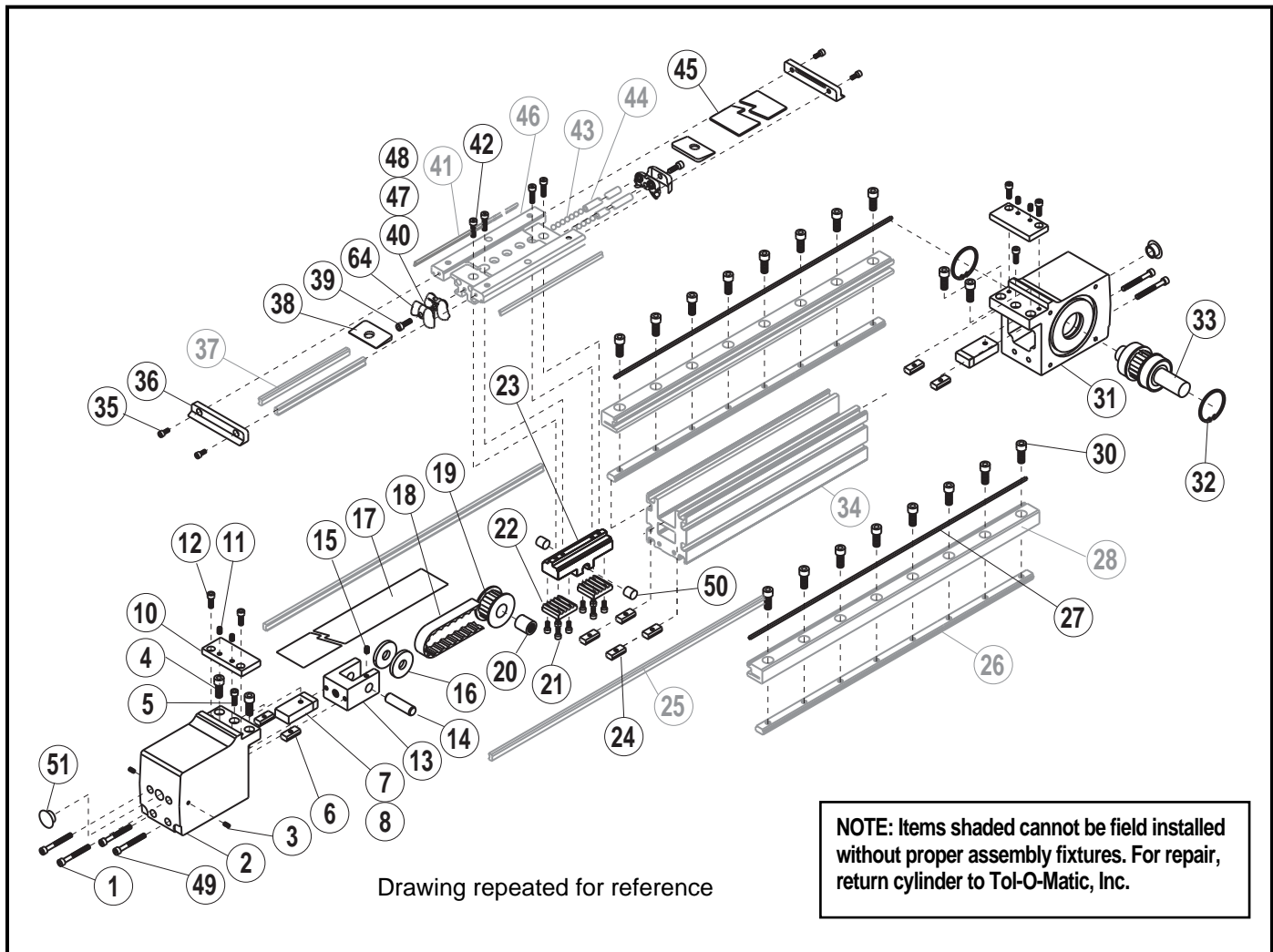


NOTE: Items shaded cannot be field installed without proper assembly fixtures. For repair, return cylinder to Tol-O-Matic, Inc.

List of Parts

ITEM	PART NO.	DESCRIPTION	B3B20	M3B20
1.	1408-3412	SHCS, #10-24 x 1.50	2	
	4910-1061	SHCS, M5 x .8 x 40mm		2
2.	3420-1401	Head Idler	1	
	4420-1401	Head Idler		1
3.	0905-1077	Set Screw, #6-32 x .50, cone	2	
	0610-1046	Set Screw, M4 x 0.7 x 6		2
4.	1310-1015	SHCS, 1/4-20 x 1.00	4	
	4420-1002	SHCS, M6 x 1.0 x 20		4
5.	0802-1252	SHCS, 5/16 x .75	4	
	4920-1048	SHCS, M8 x 1.25 x 20mm		4
6.	3420-1013	Nut, BC320	4	
	4420-1013	Nut, MC320		4
7.	3420-9209	Bumper Mount, B3B20	2	
	4420-9219	Bumper Mount, M3B20		2
8.	3415-1415	Rubber Bumper	2	2
10.	3420-1404	Band Clamp	2	
	4420-1404	Band Clamp		2
11.	2317-1062	Set Screw, 1/4-20 x .38	4	
	4915-1044	Set Screw, M6 x 1.0 x 6mm		4

ITEM	PART NO.	DESCRIPTION	B3B20	M3B20
12.	0707-1010	SHCS, #10-24 x .63	4	
	4415-1016	SHCS, M5 x .8 x 16mm		4
13.	3420-1411	Yoke, B3B20	1	
	4420-1411	Yoke, M3B20		1
14.	3420-1410	Shaft, Idler, Ø .625, B3B20	1	1
15.	2002-1010	Set Screw, #8-32 x .19	2	
	0610-1046	Set Screw, M4 x 0.7 x 6		2
16.	1029-7723	Spacer Washer, Oillite	2	2
17.	3420-1424	Upper Dust Band	A/R	A/R
18.	3420-1421	Belt, 5mm pitch, 1.25" wide, neoprene	A/R	A/R
19.	3420-1406	Pulley, Idler, Mach, 28 T, HTD	1	1
20.	1029-7720	Needle Bearing, Ø .625	2	2
21.	1307-2018	SHCS, #6-32 x .50	12	
	4415-1023	SHCS, M4 x .7 x 12mm		12
22.	3420-1409	Belt Clamp, 5mm pitch 1" wide	1	1
23.	3420-1408	Belt Bracket	1	
	4420-1408	Belt Bracket		1
24.	3420-1013	Nut, B320	4	
	4420-1013	Nut, M320		4



ITEM	PART No.	DESCRIPTION	B3B20	M3B20
25.	3420-1426	Rail Way	A/R	A/R
26.	3420-1428	Nut, Rail	A/R	
	4420-1428	Nut, Rail		A/R
27.	3420-1425	Magnet, Band	A/R	A/R
28.	3420-1427	Machined Rail	A/R	A/R
30.	0802-1252	SHCS, 5/16 x .75	A/R	A/R
	4418-1018	SHCS, M8 x 1.25 x 18		A/R
31.	3420-1403	Head, Drive	1	
	4420-1403	Head, Drive		1
32.	2600-1005	Retaining Ring	2	2
33.	3420-9151	Pulley/Shaft/Bearing Assembly	1	1
34.	3420-1422	Tube, Machined	1	
	4420-1422	Tube, Machined		1
35.	0605-1046	SHCS, #8-32 x .38	4	
	4415-1001	SHCS, M4 x .7 x 10mm		4
36.	3420-2024	End Cap	2	2
37.	3420-1024	Way Carrier	2	2
38.	3420-1047	Band Ramp	2	2

ITEM	PART No.	DESCRIPTION	B3B20	M3B20
39.	2307-1021	SHCS, #8-32 x 0.63	2	
	4415-1018	SHCS, M8 x 1.25 x 18		2
40.	3420-1014	Ball Return	2	2
41.	3420-1025	Wiper	2	2
42.	2317-1014	SHCS, 1/4- 20 x .63	4	
	4415-1000	SHCS, M6 x 1.0 x 16mm		4
43.	3420-1009	Ball	92	92
44.	3420-1019	Tube, Ball	2	2
45.	3420-2022	Cover, Carrier	1	1
46.	3420-2021	Carrier	1	
	4420-1235	Carrier		1
47.	3420-1015	Right Ball Race	2	2
48.	3420-1032	Left Ball Race	2	2
49.	6000-1473	SHCS, #10-24 x 1.38	4	
	4510-1040	SHCS, M5 x .8 x 30mm		4
50.	2410-1008	Magnet	2	2
51.	3420-1431	Button Plug	2	2
64.	3420-1069	PLT Ball Return	2	2

General 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 (exact wrench sizes will vary depending on actuator size)

Allen wrench set / Internal retaining ring pliers / Rubber hammer / Loctite #242

1. Remove any motor mounting hardware and/or adapter plates.
2. Release carrier assembly:
Remove screws(35) from end caps(36) and remove end caps. Remove carrier cover(45). Loosen and remove dust band clamp(10) on idler and drive head by removing SHCS(12). Remove the dust band (17).

Remove 4 SHCS's(42) that hold the carrier(46) to the belt bracket(23).
3. Remove idler head
Loosen the two set screws(3). Remove 2 SHCS(1) in the idler head that hold the tensioning yoke in. Remove 2 SHCS(49) that hold head to bottom of tube. Loosen SHCS(5) that hold head to top of tube. Remove head.

Loosen 2 sets screws(15) in yoke that hold shaft in. Remove shaft from yoke.
4. Remove belt
Remove SHCS(21) on both belt clamps(22) of belt bracket(23)
5. Remove drive head
Remove 2 SHCS(49) that hold the head to the bottom of the tube.
Loosen SHCS(5) that hold the head to the top of the tube. Remove head.
Pull belt through actuator and head.
6. Optional removal of drive pulley/shaft(33) from drive head.
**Note: Do not remove carrier(46) from rail system.
Balls contained in rail way will fall out.**

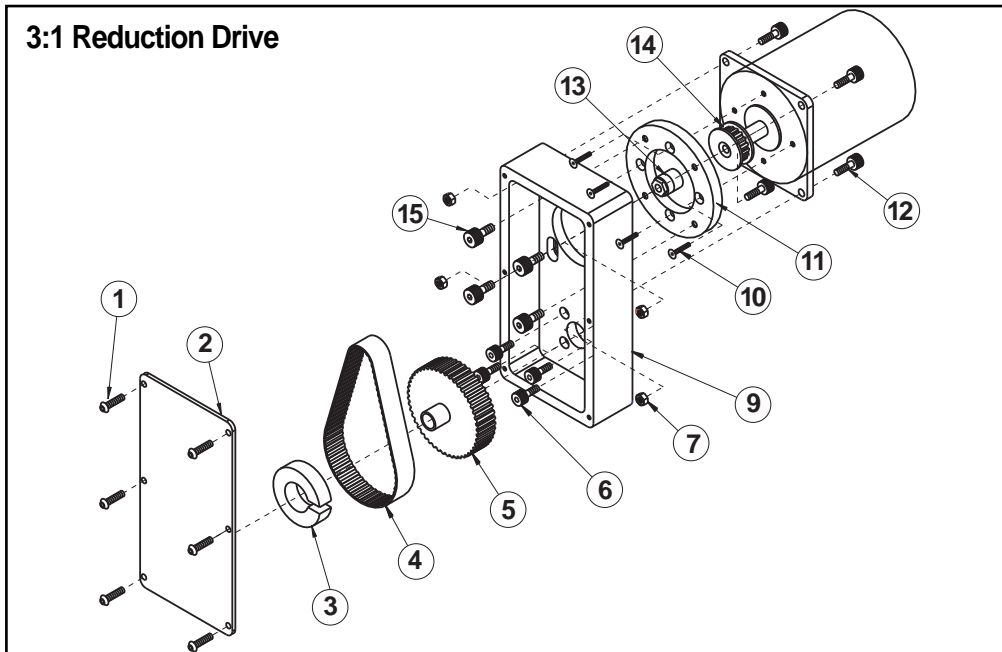
General Assembly Instructions

Any time SHCS are being installed, apply Loctite #242 to the threads.

1. If drive pulley/shaft(33) was removed. Fold belt in half (teeth facing each other) and slip loop end into drive head.

Wrap belt in a loop and insert it into drive head. Teeth on belt to be facing each other.
Slide pulley/shaft(33) into drive head. **Note: press shaft in straight as possible. Make sure it is all the way against the retaining ring on the other side of the head. Install retaining ring into groove in head.**
2. Mount drive head to actuator:
Slide belt through tube and slide drive head onto tube using T-nuts as a guide. Install 2 SHCS(49) to hold head on bottom of tube. Tighten both SHCS(5) on top head.
- A. Direct Drive Option: Attach motor spacer (1) to actuator with fasteners (2). Attach coupler (3) to motor shaft. Slide motor/coupler into motor spacer (1). Through alignment hole in motor spacer, fasten coupler to shaft with allen wrench.
- B. Belt Reduction Option: Press a Bearing (#30) into the Drive Case (#21). Install and tighten the Reduction Housing to the left side of the Head, and large bore to the top, with four Socket Head Cap Screws (#23) & (#24) and Loctite #222. NOTE: This is the standard mount for the Motor and Reduction Housing. If application calls for a different mounting style, refer to Mounting Configuration diagrams in the Axidyne Belt-Drive Catalog. Insert the longer portion of the shaft of the Pulley/Shaft sub-assembly (#20) through the Head, through the bearing and into the Drive Case. Install the drive Belt over the Pulley. Install Axial Spacer (#22) onto the shaft protruding into the drive case. Install the large Reduction Pulley(#28), with the split hub facing out, onto the shaft protruding into the Drive Case until contact is made with Spacer (#22). There should be a 1/16" gap between the back of the pulley and the housing. The front of the split hub should be approximately flush with the end of the shaft when this gap is achieved.

Install a Collar (#26) over the split hub of the gear and tighten into position. Slide the Motor/Pulley sub-assembly (#29), with the Motor Leads facing down, partially into the large bore on the top of the Drive Case from the Head side. Install the Reduction Belt (#27) over the two Pulleys in the reduction housing. Apply Loctite #222 to a Socket Head Cap Screw (#23) then thread it part way into the Reduction Case through one of the upper holes of the Motor Flange. Complete the insertion of the Motor/Pulley sub-assembly into the Reduction Housing by rotating the Motor around the Cap Screw until the snout of the Motor can be inserted into the bore of the Reduction Housing. Apply Loctite #222 to the remaining Socket Head Cap Screws, then insert them through the flange and tighten all four Screws. Place the Drive Case Cover (#25) onto the Reduction Case and secure with six Button Head Cap Screws (#7).
3. Mount idler head to actuator:
Attach the belt(17) to the belt bracket(23) with the belt clamp(23) and SHCS(24). Place the idler pulley(19) inside the the belt loop. Install the idler shaft through the yoke(13) and the two spacer washers(16). Slide idler head onto tube using T-nuts as a guide. Install 2 SHCS(49) to hold head on bottom of tube. Tighten both SHCS(5) on top head. Install 2 SHCS(1) into yoke. Tighten both equal to achieve the desired belt tension. Note: Over tensioning of belt can cause it to stretch prematurely. Tighten both set screws(3).
4. Lubricate ballways:
Before installing the top dust band(17), lubricate the ballways with Mobil HP grease.
5. Attach Carrier to Belt Bracket:
Mount carrier(46) to belt bracket(23) with 4 SHCS(42).
6. Trim and Install Dust Band:
Install dust band(17) over carrier(46) centering it along the length of the actuator. With a tin snips, cut band down 1/16" from the heads. Slide carrier cover(45) into slots on top of carrier. Install carrier endcaps(36) with SHCS. Loosely install band clamps(10) onto each head with SHCS(12). Slide carrier to one end of actuator, and tighten SHCS(12). Slide carrier to other end of actuator and repeat.
7. Re-attach any motor adapter plates and/or hardware with actuator.

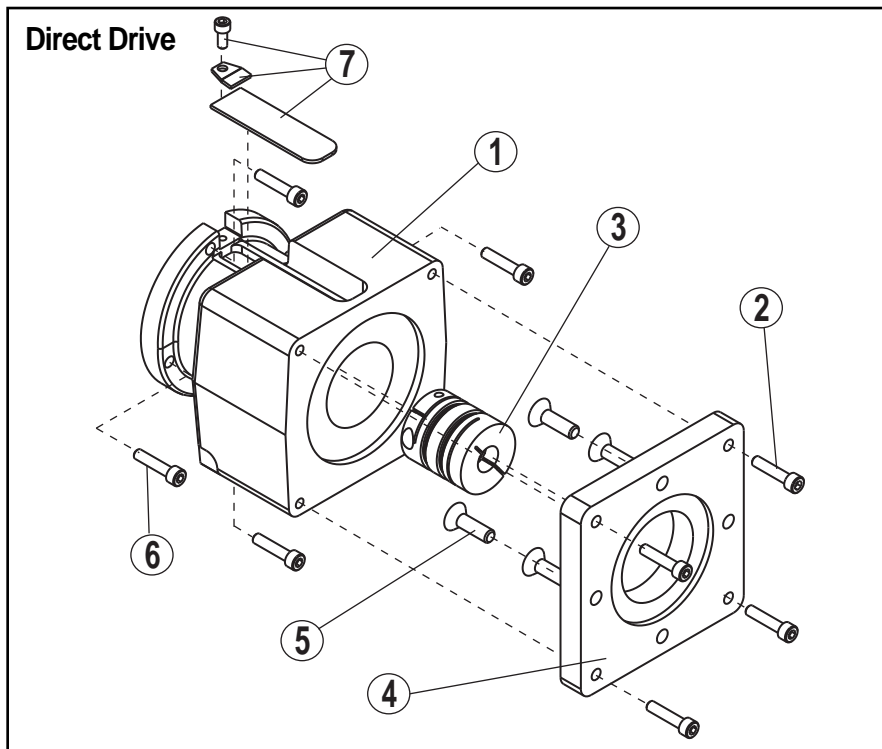


3:1 Reduction Drive Parts Listing

ITEM	PART No.	DESCRIPTION	MRS34X	MRV23X	MRV34X / MRB34x	MRB40X	MRV51	MRB21
1.	0925-1030	Pan Head Screw	6	6	6	6	6	6
2.	3420-1435	Cover	1	1	1	1		1
	3415-1454	Cover					1	1
3.	0520-1067	Clamp Collar, .688 Bore	1	1	1	1	1	1
4.	3415-1441	TMG Belt, 85T, 5mm P x 19mm	1	1	1	1		
	3415-1453	TMG Belt, 107T, 5mm P x 19mmW					1	
	3410-1441	TMG Belt, 85T, 5mm P x 9mm W						1
5.	3415-1439	TMG Pulley, 60T, 19mm W, DIA	1	1	1	1	1	
	3410-1439	TMG Pulley, 60T, 9mm W, DIA						1
6.	0707-1010	SHCS, #10-24 x 0.63, BLK	4	4	4	4	4	4
	4910-1004*	SHCS, M5x0.8 x 12, BLK	4	4	4	4		4
7.	2506-1007	Nut, Jam	4	4	4			4
	3420-1095	R/P Slot Nut				4	4	
9.	3420-1430	Case, 3:1, Reduction, 23 FRM		1				1
	3420-1444	Case, 3:1, Reduction, 56 FRM					1	1
	3420-1433	Case, 3:1, Reduction, 34 FRM	1		1			
	3420-1429	Case, 3:1, Reduction, 40 FRM				1		
10.	6000-1731	SFHCS, 1/4-20-7/8, BLK				4		
	6930-1023	SFHCS, 3/8-16 x 1.00, BLK					4	
11.	0515-1488	Adapter Plate, MRB 40x, RPM				1		
	3420-1443	Adapter Plate, 56x, RPM					1	
12.	1024-7711	SHCS, #10 24 x 0.88, BLK	4	4	4			4
	1310-1015	SHCS, 1/4-20 x 1.00, BLK				4		
13.	0515-1181	Trantorq, .375 BORE	1					
	0510-1111	Trantorq, .250 BORE						1
14.	3415-1445	TMG Pulley, 20T, 19mm W, DIA .750	1					
	3415-1444	TMG Pulley, 20T, 19mm W, DIA .625						1
	3410-1437	TMG Pulley, Keyed, 20T, 9mm W		1				
	3415-1438	TMG Pulley, Keyed, 20T, 19mm W, DIA .500			1	1	1	
15.	2212-1010	SFHCS, 1/4-20 x .75				4		
	3420-1223	SFHCS, 1/4-20 x 1.00 Lg, BLK					4	

Note: For Belt Tensioner Kit,
Please refer to part sheet number 3600-4602.

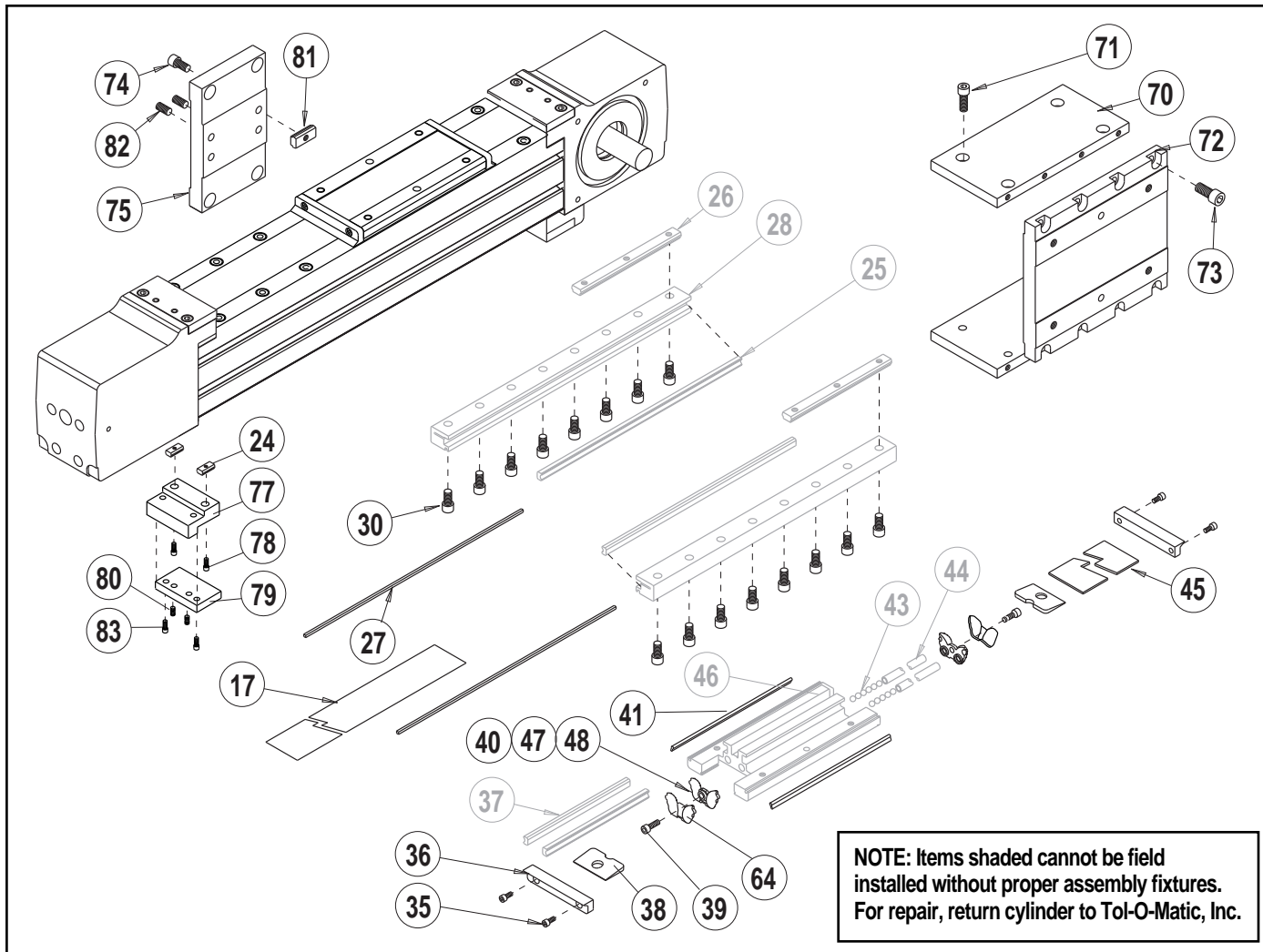
* Used on the M3B10 actuator.



Direct Drive Parts Listing

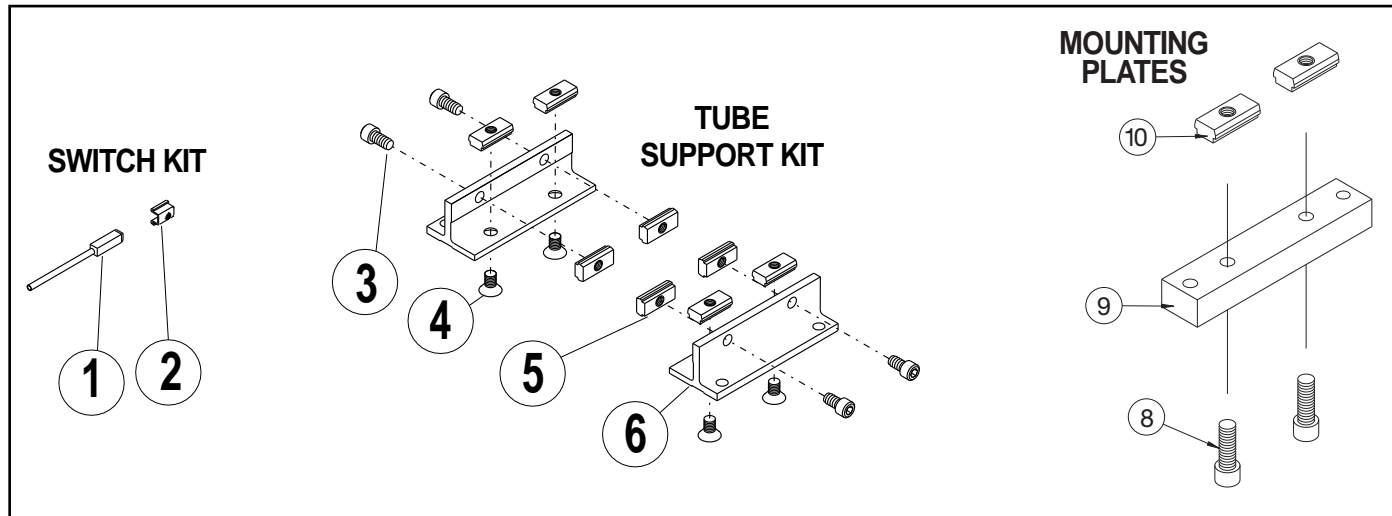
ITEM	PART No.	DESCRIPTION	Motor					Gearhead					
			MRB21	MRS34X	MRB34X	MRV34X	MRB40X	MRS23_	MRV23_	MRB23 W/GHJ20, GHJ21, GHK20	MRV34_ W/GHJ30	MRB34_	MRV34_ W/GHJ31
1.	3410-1452	Motor Adapter, Mach, B3B		1									
	3410-1451	Motor Adapter, Mach, B3B	1										
	3410-1453	Motor Adapter, Mach, B3B			1	1							
	3410-1457	Motor Adapter, Mach, B3B					1						
	3410-1455	Motor Adapter, Mach, B3B							1	1	1		
	3410-1456	Motor Adapter, Mach, B3B						1					
2.	0910-1314	SHCS, #10-24 x 0.75, BLK	4	4	4	4	4	4	4	4	4	4	4
3.	3600-9216	Coupler, Guardian		1									
	3600-6163	Coupler, Zero-Max	1										
	3600-6174	Coupler, Zero-Max				1							
	3600-6175	Coupler, Zero-Max											1
	3420-9041	Coupler, Guardian								1			
	3600-6176	Coupler, Zero-Max							1				
	3600-6177	Coupler, Zero-Max						1					
	3600-9219	Coupler, Guardian			1								
	3600-9218	Coupler, Guardian					1						
4.	3410-1445	Motor Adapter Plate, MRB40X					1						
5.	0920-1024	SFCHS, 1/4-20 x .63, BLK					4						
6.	4415-1020*	SHCS, M5 x .8 x 20, BLK	4	4	4	4	4	4	4	4	4	4	4
	0910-1314	SHCS, #10-24 x .75, BLK	4	4	4	4	4	4	4	4	4	4	4
7.	3410-9325	Cover Kit		1									
	3410-9327	Cover Kit	1										
	3410-9323	Cover Kit			1	1							
	3410-9321	Cover Kit					1						
	3410-9320	Cover Kit							1	1	1		
	3410-9325	Cover Kit						1					

* Used on the M3B10 actuator.



Parts Listing

Item	B3B20D Part No.	M3B20D Part No.	Description	QTY.	Item	B3B20D Part No.	M3B20D Part No.	Description	QTY.
17.	3420-1424	3420-1424	Dust Band	1	46.	3420-2021	4420-1235	Machined Carrier	1
24.	3420-1013	4420-1013	Nut, B320 / M320	4	47.	3420-1015	3420-1015	Right Ball Race	2
25.	3420-1426	3420-1426	Rail Way	2	48.	3420-1032	3420-1032	Left Ball Race	2
26.	3420-1428	4420-1428	Rail Nut	AR	64.	3420-1069	3420-1069	PLT Ball Return	2
27.	3420-1425	3420-1425	Band Magnet	2	70.	3420-1049	4420-1049	Plate, Conn., Dual Carrier	2
28.	3420-1427	3420-1427	Machined Rail	2	71.	0920-1093	4415-1019	Socket Head Cap Screw	8
30.	3420-1077	4415-1018	Socket Head Cap Screw	AR	72.	3420-1446	4420-1446	Plate, Dual Carrier	1
35.	0605-1046	4415-1001	Socket Head Cap Screw	4	73.	0920-1093	4415-1019	Socket Head Cap Screw	8
36.	3420-2024	3420-2024	End Cap	2	74.	2317-1015	4920-1025	Socket Head Cap Screw	4
37.	3420-1024	3420-1024	Carrier Way	2	75.	3420-1453	3420-1453	Tube Support	1
38.	3420-1047	3420-1047	Upper Band Ramp	2	77.	3420-1448	4420-1448	PLT, Band, Dual 180° Carrier	2
39.	2307-1021	4418-1018	Socket Head Cap Screw	2	78.	0920-1093	4920-1048	Socket Head Cap Screw	4
40.	3420-1014	3420-1014	Ball Return	2	79.	3420-1404	4420-1404	Clamp, Dust Band	2
41.	3420-1025	3420-1025	Wiper	2	80.	2317-1062	4915-1044	Set Screw	4
43.	3420-1009	3420-1009	Ball	92	81.	3415-1013	4415-1013	Nut	4
44.	3420-1019	3420-1019	Ball Return Tube	2	82.	3415-1219	3415-1219	Set Screw	2
45.	3420-2022	3420-2022	Carrier Cover	1	83.	0707-1010	4415-1016	Socket Head Cap Screw	4



OPTIONAL ACCESSORY ASSEMBLY INSTRUCTIONS

- 1. TUBE SUPPORTS.** Four T-Nuts (45) are required on each side of the Tube (23), 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 (44) and secure Tube Supports (46) to Tube aligning holes in T-Nuts with holes in Tube Supports.
- 2. Switches.** Secure Switch (40) to magnet side of Tube with Switch Clamp (41) and Set Screw (42).

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).

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 Tol-O-Matic Axidyne Products catalog # 3600-4609.

TO ORDER RETROFIT KITS:

SW (then the model number and base size, and code for type of switch needed).

EXAMPLE: SWB3B20BT

Where **SW** is the switch kit, **B3B** is the model, **20** is the 2" size, and **BT** is a Form C Reed Switch with 5-meter lead.

Optional Accessories Parts Listing

Item	BC3B20 Part No.	MC3B20 Part No.	Description	QTY.
SWITCH KIT				
2	3420-9999	3420-9999	Switch Hardware Kit	1
1	3600-9082	3600-9082	Switch, Reed, Form A, 5M Wire	
	3600-9083	3600-9083	Switch, Reed, Form A, Male Conn.	
	3600-9084	3600-9084	Switch, Reed, Form C, 5M Wire	
	3600-9085	3600-9085	Switch, Reed, Form C, Male Conn.	
	3600-9086	3600-9086	Switch, TRIAC, 5M Wire	
	3600-9087	3600-9087	Switch, TRIAC, Male Connect	
	3600-9088	3600-9088	Switch, Source, Hall, 5M Wire	
	3600-9089	3600-9089	Switch, Source, Hall, Male Conn.	
	3600-9090	3600-9090	Switch, Sinking, Hall, 5M Wire	
	3600-9091	3600-9091	Switch, Sinking, Hall, Male	
TUBE SUPPORT KIT				
3	2317-1015	4415-1011	SHCS, 5/16-18 x .63/ M8 x 1.25 x 12	4
4	3415-1046	4415-1014	SFHCS, 1/4-20 x .44/ M6 x 1 x 10	4
5	3420-1013	4420-1013	B3B20 Nut	4
6	3420-1044	3420-1044	Tube Support	2
MOUNTING PLATES				
8.	2307-1018	2307-1018	SHCS, 5/16-18 x 0.63	4
	4415-1018	4415-1018	SHCS, M8 x 1.25 x 18	4
9.	3420-1232	3420-1232	Mounting Plate, B3B, 0.50	2
10.	3420-1013		Nut	4
		4420-1013	Nut, Metric	4

All Switch Kits come with 1 switch and mounting hardware.

HARDWARE ONLY KIT:
3420-9999

QUICK-DISCONNECTS:
2503-1025 Female Connector 5M

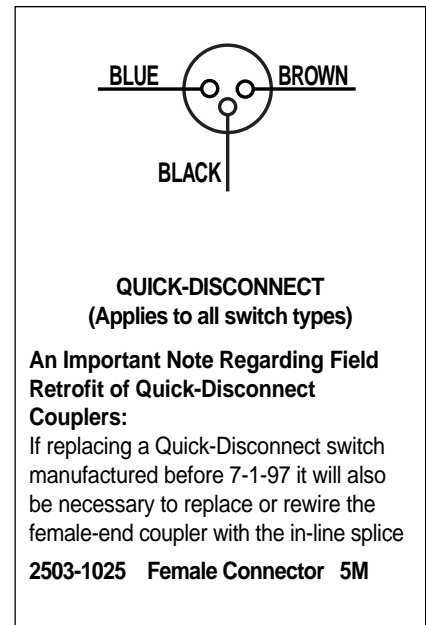
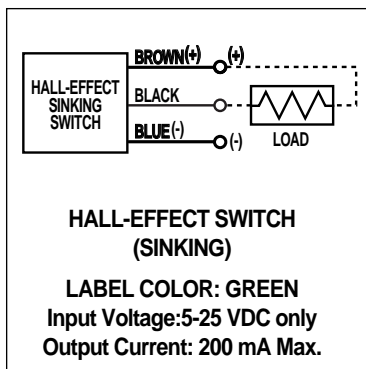
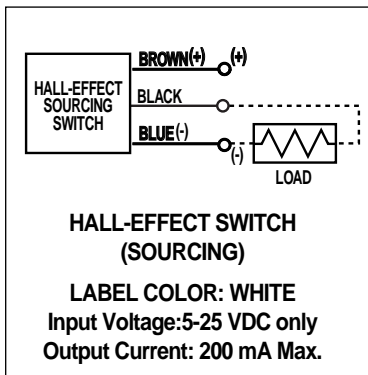
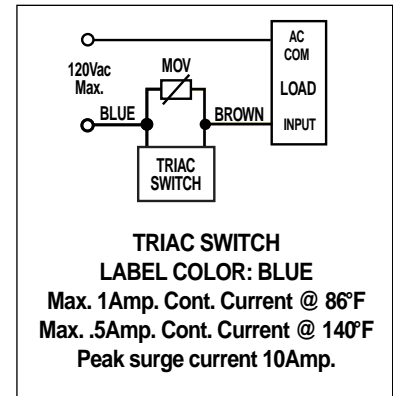
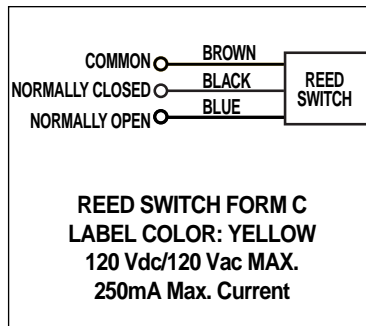
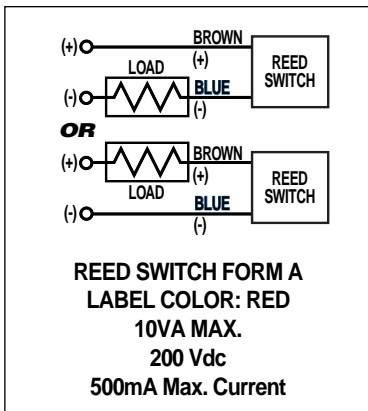
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Christo-Lube® is a registered trademark of Lubrication Technology, Inc., www.lubricationtechnology.com

Loctite® is a registered trademark of the Loctite Corporation, www.loctite.com

Magnalube®-G is a registered trademark of the Carleton-Stuart Corporation, www.magnalube-g.com

Universal Switch Wiring Diagrams and Label Color Coding



Description	SWITCH KIT		Switch Kit number (Hardware & switch)	
	Part Number	(SWB3B20_...)	Description	
Switch Only, Reed, Form C, 5m	3600-9084	BT	Form C, 5m lead	
Switch Only, Reed, Form C, Male Conn.	3600-9085	BM	Form C, 5m QD lead	
Switch Only, Reed, Form A, 5m	3600-9082	RT	Form A, 5m lead	
Switch Only, Reed, Form A, Male Conn.	3600-9083	RM	Form A, 5m QD lead	
Switch Only, Triac, 5m	3600-9086	CT	Triac switch, 5m lead	
Switch Only, Triac, Male Conn.	3600-9087	CM	Triac switch, 5m QD lead	
Switch Only, Hall-effect, Sinking, 5m	3600-9090	KT	Hall-effect, Sinking switch, 5m lead	
Switch Only, Hall-effect, Sinking, Male Conn.	3600-9091	KM	Hall-effect, Sinking switch, 5m QD lead	
Switch Only, Hall-effect, Sourcing, 5m	3600-9088	TT	Hall-effect, Sourcing switch, 5m lead	
Switch Only, Hall-effect, Sourcing, Male Conn.	3600-9089	TM	Hall-effect, Sourcing switch, 5m QD lead	
Connector (Female) 5 meter lead	2503-1025			



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