

Parts Sheet

3600-4016_04

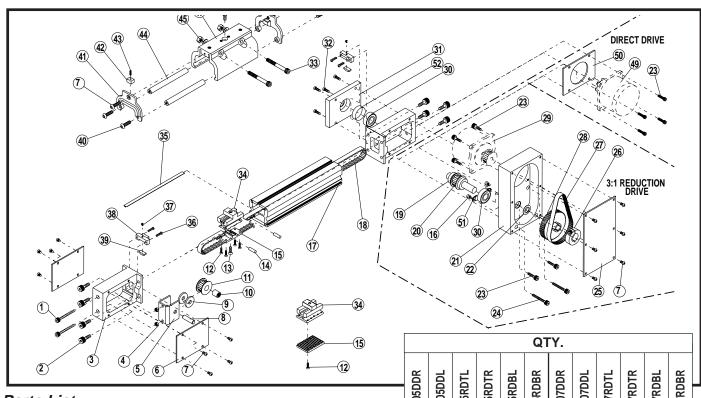
Axidyne® BCB15 Cylinder-Style Belt-Drive Actuators

1-1/2 INCH

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

Models:

BWP05DDR BWP05DDL BWP05RDTL BWP05RDTR BWP05RDBL BWP05RDBR BWN07DDR BWN07DDL BWN07RDTL BWN07RDTR BWN07RDBL BWN07RDBR



Parts List Item Part No. Description						BWP05RD	BWP05RD	BWP05RD	BWN07D	BWN07D	3WN07RE	BWN07RD	BWN07RD	BWN07RD
Item	Part No.	Description	(BCB15)	BWP05D	BWP05RI	BW	BW	BW	B	8	BW	BW	B	BW
1.	1308-1020	SHCS, #10-24 x 2.00 Long	2	2	2	2	2	2	2	2	2	2	2	2
2.	1004-1064	SHCS, 1/4-20 x .75 Long	8	8	8	8	8	8	8	8	8	8	8	8
3.	0515-1036	Head, Machined, BCB15	2	2	2	2	2	2	2	2	2	2	2	2
4.	2506-1007	Jam Nut	2	2	2	2	2	2	2	2	2	2	2	2
5.	0515-1031	Yoke, Tensioner, Sub Assembly BCB15 .50 WB	1	1			1	1			1	1		
	0515-1011	Yoke, Tensioner, Sub Assembly BCB15 .75 WB			1	1			1	1			1	1
6.	0515-1039	Plate, Idler Cover	2	2	2	2	2	2	2	2	2	2	2	2
7.	0910-1081	Button SHCS, #10-24 x .38 Long	1) 16	10	16	10	16	10	16	10	16	10	16
8.	0515-1027	Shaft, Idler Pulley .50 Wide Belt	1	1			1	1			1	1		
	0515-1095	Shaft, Idler Pulley .75 Wide Belt			1	1			1	1			1	1
9.	0515-1041	Washer, Spacer, 1.13 OD, .406ID, .140THK	2	2			2	2	2	2			2	
	0515-1019	Washer, Spacer, 1.0 OD, .51 ID, .045 THK			2	2								
10.	1001-1055	Bearing Needle .50 Wide Belt	1	1			1	1				1		
	0515-1024	Bearing Needle .75 Wide Belt			1	1			1	1				
11.	0515-1032	Pulley, Idler, Machined, 3/8P, .50 Wide 10 Teeth	1	1			1	1				1		
	0515-1224	Pulley, Idler, Machined, 5MMP, .75 Wide 18 Teeth			1	1			1	1				
12.	0605-1043	Flat SHCS, #6-32 x .50 Long	4	4			4	4				4		
	0910-1040	SHCS, #6-32 x .38 Long			10	10			10	10				
13.	0515-1042	Flat SHCS. #10-24 x .63 Long	1	1			1	1					1	
14.	0515-1176	Dowel Pin .219 x .750	2	2			2	2				2		
15.	0515-1026	Clamp, Belt, BCB15 .50	1	1			1	1				1		
	0515-1226	Clamp, Belt, BCB15 .75			1	1			1	1				
16.	0910-1166	SHCS 8-32 x .50			2	2	2	2			2	2	2	2
17.	0515-1002	Tube, Machined, BCB15 (Specify Stroke)		R A/I						A/R	A/R	A/R	A/R	A/R
18.	0515-1037	Cogbelt, 3/8P x .50 Wide (Specify Stroke)	A/	R A/F	R A/R	A/R	A/R	A/R						
	0515-1223	Cogbelt, 3/8P x .75 Wide (Specify Stroke)							A/R	A/R	A/R	A/R	A/R	A/R
19.	0515-1058	Spacer, Axial, .305 Thick			2	2	2	2						
	0515-1020	Spacer, Axial, .200 Thick									2	2	2	2
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Axidyne® Belt-Drive Actuators Assembly and Disassembly Instructions INTRODUCTION Clamp Assemblies (#38) for

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

Tolerance Ring

Trantorque

•Small torque wrench

•1/2" Socket

•Tape Measure

0515-1318

0515-1181

•Grease Gun Applicator

•Tin Snips

•Allen Wrenches–1/8", 5/32", 3/16", 1/4"

•5/64", 1/16" feeler gauge

DISASSEMBLY INSTRUCTIONS

- 1. Loosen all Dovetail Nuts and Clamps, then remove switches (if any).
- Remove Fasteners (#7 & #40) then remove Bearing Rods (#44) and End Caps (#41). Remove Flat Head Screw (#48) from Belt Bracket and Carrier. Loosen Set Screw (#37) located in top of the band clamp assemblies. Remove Button Head Cap Screws (#36), then remove Band

Clamp Assemblies (#38) from the front of the Heads. Remove Band Clamp Slugs (#39) from the recess of the Band Clamp Assemblies (#38). Remove Upper Band (#37) from the Tube. Loosen Button Head Screws (#7), then remove both Idler Cover Plates (#6).

- Loosen Jam Nuts (#4). Relieve Belt Tension by SLOWLY loosening the two Adjustment Screws (#1).
- 4. REMOVE TENSIONER HEAD: Loosen the Yoke Adjuster Screws until tension is off belt, then push Idler Pulley Shaft (#8) through the Yoke/Pulley assembly. Push yoke backward, then remove the Pulley (#11) and Spacers (#9) from the Yoke (#5). Remove Pulley Assembly from Belt loop. Pull the Yoke to the front of the Head (#3). Loosen four Socket Head Cap Screws (#2), then remove Head assembly from Tube. Unthread Jam Nuts (#4) from Cap Screws (#1), then remove Head/Yoke assembly. Remove Yoke from Head. Remove Cap Screws from Head.

- 5. DRIVE HEAD: Remove four Button Head Screws (#32) holding Bearing Plate (#31) to head on the motor end of the cylinder take two of these (#32) Screws and thread into the two tapped holes in the Bearing Plate until they stop. Turn one of these screws approximately one turn then turn the other screw one turn. Repeat this procedure, alternating from one Screw to the other until the Bearing Plate comes loose. Remove Bearing Plate (#32).
 - A. *Direct Drive Option:* (Repeat procedure as described above for removing Bearing Plate (#32).) Remove four motor mounting Socket Head Cap Screws (#23) from Head (#3), then unmount Motor/Pulley sub-assembly (#49).
 - B. **Belt Reduction Option:** Loosen six Button Head Cap Screws (#7), then remove Drive Case Cover (#25) from Reduction Case (#21). Remove four Socket Head Cap Screws (#23), that hold the Motor Pulley assembly to the reduction housing. Remove Motor/Pulley subassembly (#29) from Reduction Housing. Remove Reduction Belt (#27) from the reduction housing. Loosen and remove Collar (#26) from split hub of the pulley.

Remove the large Reduction Pulley (#28) from the shaft protruding into the Drive Case. Remove Axial Spacer (#22). Remove four Socket Head Cap Screws (#23) & (#24), then remove Reduction Housing from Head. (Pulley, Shaft & Bearing Assembly will come off with housing.) Remove two Screws (#16) and four Bearing Clips from back side of housing. Pulley, Shaft & Bearing can now be removed from the housing.

For *ALL ASSEMBLIES:* Remove four Socket Head Cap Screws (#2), then remove Head (#3) from end of the Tube.

- BELT BRACKET: Slide the Belt Bracket/Belt assembly off the groove of the Tube. Remove four Flat Head Screws (#12), from corners of the Belt Clamp (#15). Remove 1/4-20 Set Screw (#14) from Belt. Carefully remove folded section of the Belt from the channels formed on the Belt Bracket assembly. Remove Flat Head Screw (#13), then remove Belt Clamp (#15) from Belt Bracket Assembly (#34).
- TUBE: Remove Belt through slot along top of Tube. Pull Belt through the bottom of the Tube.

ASSEMBLY INSTRUCTIONS

- 1. TUBE ASSEMBLY: Pull plastic Separator Strip (#16) down center of Tube (#17). Straighten Separator Strip so it is parallel to the bottom surface of the Tube. With cogs of Belt (#18) facing up, push Belt through the bottom of the Tube until a few inches extend beyond the far end. Lay the remaining portion of the Belt along the top of the Tube then drop it into Tube through the slot. The cut ends of the Belt should now be sticking out from the same end.
- 2. BELT BRACKET ASSEMBLY: Loosely attach Belt Clamp (#15) to the Belt Bracket Assembly (#34) with a Flat Head Screw (#13) (insert the Screw only one or two turns). Fold one end of the Belt in half at the machined section of the Belt (the two cogs on the very end of the Belt should straddle the first cog on the opposite side of the machined area). Slide the folded section of the Belt into one of the channels formed on the Belt Bracket assembly when the two halves were bolted together. NOTE: The running length of the Belt will exit the Bracket at the top (Carrier mounting side) and the short folded section should line up with the edge of the Belt Clamp.) Thread a 1/4-20 Set Screw (#14) into the fold of the Belt until it is centered. Repeat above steps for the opposite end of the Belt.

Apply Loctite #222 to the four Flat Head Screws (#12) then install into the corners of the Belt Clamp. **NOTE:** Screws should be firmly snug but not overly tight. Slide the completed Belt Bracket/Belt assembly into the groove of the Tube allowing only the looped ends of the Belt to extend from each end of the cylinder.

 DRIVE HEAD ASSEMBLY: Install and tighten one Head (#3) onto the end of the Tube using four Socket Head Cap Screws (#4). IMPORTANT NOTE: The two mounting holes on the Head must face the bottom of the Tube and the two threaded holes on the face of the Head must face the top of the Tube.

- A. *Direct Drive Option:* Place a Spacer Plate (#50) over the shaft side of the Motor/Pulley sub-assembly (#49). Mount this assembly, with the Belt positioned on the Pulley during assembly and the Motor Leads facing down, to the left side of the Head (see reference drawing) with four Socket Head Cap Screws (#23) and Loctite #222, tighten into position. *NOTE:* Left side mounting is standard; mount to the right side if called for by application.
- 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).

To complete *ALL ASSEMBLIES:* Press a Bearing (#30) into the Bearing Plate (#31). Attach the Bearing Plate (#31) to the open face of the Head on the motor end of the cylinder with four Button Head Screws (#32) and Loctite #222.

- TUBE SUPPORT OPTION: Slide the Tube supports onto the cylinder body at this time.
- 5. TENSIONER HEAD INSTALLATION: Place two Cap Screws (#1) through the back of the Head, install the Yoke (#5) inside the Head (#3) over the Cap Screws, then thread the Jam Nuts (#4), with the cut angles facing the back of the Yoke, onto the Cap Screws. Attach the Head assembly to the Tube with four Socket Head Cap Screws (#2) and tighten. Push the Yoke to the back of the Head. Press a Bearing (#10) into Pulley (#11). Place a Spacer (#9) onto each side of the Pulley and place the Pulley and Spacers into the Belt loop. Push the Pulley, Spacers, and Belt back into the Yoke at the same time you pull the Yoke forward. Line the holes in the Yoke with the holes in the Spacers and Pulley. Insert the Idler Pulley Shaft (#08) through the Yoke/Pulley assembly. Carefully tighten the Yoke Adjuster Screws only enough to take the slack out of the Belt. Slide the Belt Bracket along the top of the Tube to verify that the Belt is tracking correctly and to insure the Belt cogs are seated in the Pulleys properly.

- 6.BELT TENSION ADJUSTMENT: The two Adjustment Screws must be tightened to a torque of 30 to 35 in-oz. (the Screws should be brought up to the final torque specifications slowly). Alternately turning each Screw a partial turn, achieve the proper torque within a turn of each other. This technique will also ensure the bottom of the Yoke will have an equal gap across the bottom of the Head when proper torque is achieved. If the gap is NOT equal, back off the adjusting Screws and work back to achieve the proper torque and equal gap.
 - 7. FINAL ASSEMBLY: Install both Idler Cover Plates (#6) and tighten into position with Button Head Screws (#7). Grease and install Upper Band (#35) onto the Tube. Trim the Upper Band between 1/32" and 1/16" shorter than the length of the Tube. Insert the Band Clamp Slugs (#39) into the recess of the Band Clamp Assemblies (#38) (thin portion of slug should face the bottom of the assembly). Install Band Clamp Assemblies to the front of the Heads with two Button Head Cap Screws (#36) and Loctite #222. Tighten the Set Screw (#37) against the slug to clamp the band into place on one end of the Tube only. Position Carrier (#47) on Belt Bracket. Apply Loctite #242 to Flat Head Screw (#48) then thread through the Carrier into Belt Bracket and tighten.

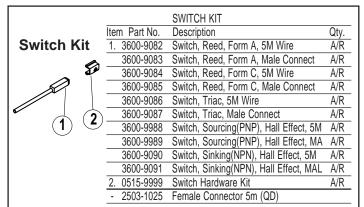
Install Carrier Shoulder Screws (#33) through the Carrier, then install Washers (#45) and Nuts (#46) onto Shoulder Screws. Tighten shoulder

Screws snug to Carrier. Proper tightness allows the bolt to be rotated with an Allen wrench, but it will not rotate when turned by fingers. Apply Loctite #242 on Fasteners (#7 & #40), install Bearing Rods (#44) and End Caps (#41). Tighten Fasteners. Work the slack out of the Band by moving the Carrier by hand from the Head with the Band retained to the other Head. Tighten the Set Screw against the Band Clamp Slug to retain this end of the Band.

- 8. **REED SWITCH OPTION:** Secure Reed Switch to cylinder Tube with a Dovetail Nut and Clamp. Cycle the Carrier over the reed switch by hand to ensure that the Carrier does not hit the switch. Test the reed switch to ensure proper operation.
- 9. HALL EFFECT SWITCH OPTION: Secure Hall Effect switch to the cylinder with a Dovetail Nut and Clamp. Cycle the cylinder by hand over the switch to ensure that the Carrier does not hit the switch. Test the Hall Effect switch to ensure proper operation.
- 10. **TESTING:** The Carrier should move by hand with only motor drag noticeable.

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Switches



REED SWITCHES

CODE

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.

SWITCH TYPE

CODL	SWITCHTILE
BT	(Form C Reed Switch with 5-meter lead)
BM	(Form C Reed Switch with 5-meter lead and QD)
RT	(Form A Reed Switch with 5-meter lead)
RM	(Form A Reed Switch with 5-meter lead and QD)
CT	(TRIAC Switch with 5-meter lead)
CM	(TRIAC Switch with 5-meter lead and QD)
KT	(Hall-effect Switch (Sinking) 5-meter lead)
KM	(Hall-effect Switch (Sinking) 5-meter lead and QD)
TT	(Hall-effect Switch (Sourcing) 5-meter lead)
TM	(Hall-effect Switch (Sourcing) 5-meter lead and QD)
All switch	he's come with 1 switch and mounting hardware.
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Reed and TRIAC switches are only recommended for signalling position, not directly powering soleniods. 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.

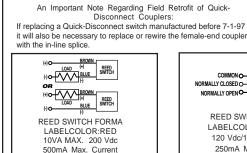
NOTE: The side of the switch with the groove indicates the sensing surface. This must face toward the magnet.

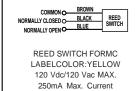
For complete Switch Performance Data, refer to the Tol-O-Matic Axidyne Products Catalog # 3600-4609.

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

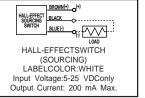
EXAMPLE: SWBCB15BT

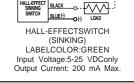
Where **SW** is the switch kit, **BCB** is the model, **15** is the 1-1/2" size, and BT is a Form C Reed Switch with 5-meter lead.





BROWN 00





TRIAC SWITCH LABEL COLOR:BLUE Max. 1Amp. Cont. Current @ 86°F Max. .5Amp. Cont. Current @ 140°F
Peak surge current 10Amp.





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