Tolomatic
EXCELLENCE IN MOTION®

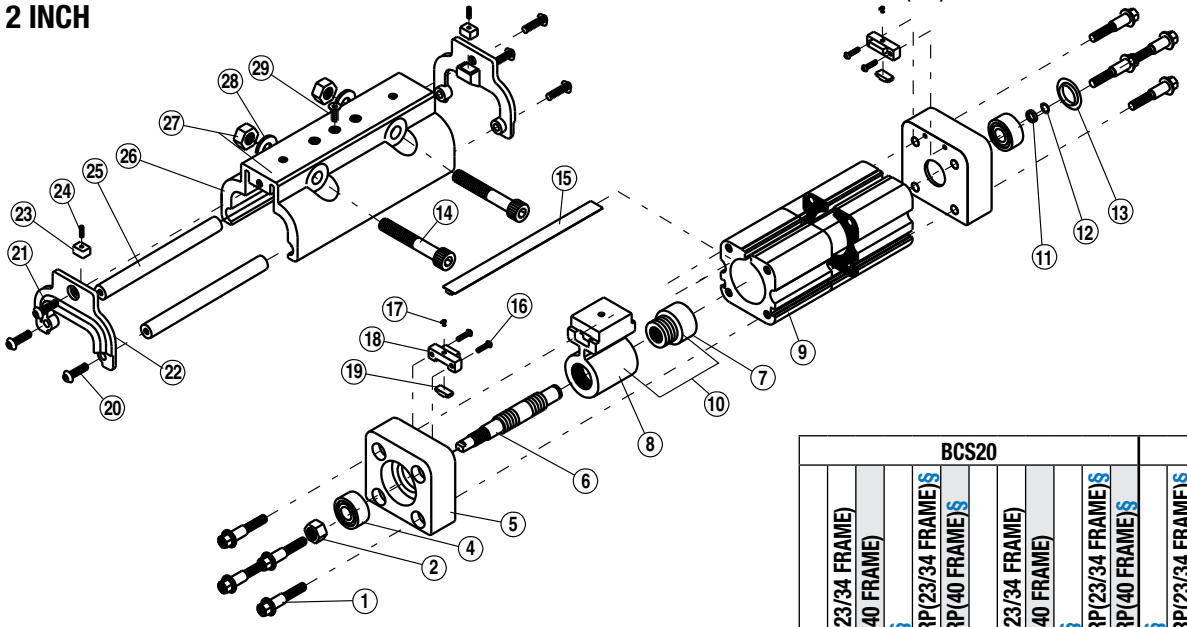
Parts Sheet

3600-4015_19

BCS20 Cylinder-Style Screw-Drive Actuators

MODELS: SN02, SN02(RP), SNA02, SNA02(RP), BNL05, BNL05(RP), BN05, BN05(RP), SN01, SN01(RP), BN02, BNL02, BNL02(RP)

2 INCH



ITEM	PART NO.	DESCIPTION	BCS20												MCS20								
			SN02	SN02RP(23/34 FRAME)	SN02R(40 FRAME)	BN(L)05§	BN(L)05RP(23/34 FRAME)§	BN(L)05RP(40 FRAME)§	SN01	SN01RP(23/34 FRAME)	SN01RP(40 FRAME)	BN(L)02§	BN(L)02RP(23/34 FRAME)§	BN(L)02RP(40 FRAME)§	BN(L)05§	BN(L)05RP(23/34 FRAME)§	BN(L)05RP(40 FRAME)§	SN12	SN12RP(23/34 FRAME)	SN12RP(40 FRAME)	SN25	SN25RP(23/34 FRAME)	SN25RP(40 FRAME)
1.	0920-1087	SCREW,SELF-TAPPING	8	8	8	8	8	8	8	8	8	8	8	8									
	4920-1047	SCREW,SELF-TAPPING													8	8	8	8	8	8	8	8	8
2.	0920-1147	NUT 1/2-20	1	1	1	1	1	1	1	1	1	1	1	1									
	4510-1057	NUT M14 X 1.5													1	1	1	1	1	1	1	1	1
4.	0920-1107	BALL BEARING,RADIAL	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
5.	0920-1094	HEAD,MACHINED	2	2	2	2	2	2	2	2	2	2	2	2									
	4520-1036	HEAD,MACHINED													2	2	2	2	2	2	2	2	2
** 6.	0920-1096	LEAD SCREW SN02 LMI	A/R																				
**	0520-1360	LEAD SCREW SN02 RP(23/34 FRAME)		A/R																			
**	0520-1365	LEAD SCREW SN02 RP(40 FRAME)			A/R																		
§**	0920-1111	LEAD SCREW BN(L)05 LMI				A/R																	
§**	0520-1361	LEAD SCREW BN(L)05 RP(23/34 FRAME)					A/R																
§**	0520-1366	LEAD SCREW BN(L)05 RP(40 FRAME)						A/R															
**	0920-1125	LEAD SCREW SN01 LMI							A/R														
**	0520-1362	LEAD SCREW SN01 RP(23/34 FRAME)								A/R													
**	0520-1367	LEAD SCREW SN01 RP(40 FRAME)									A/R												
§**	0520-1043	LEAD SCREW BN(L)02 LMI										A/R											
§**	0520-1363	LEAD SCREW BN(L)02 RP(23/34 FRAME)											A/R										
§**	0520-1368	LEAD SCREW BN(L)02 RP (40 FRAME)												A/R									
§**	4520-1031	LEAD SCREW BN(L)05 LMI													A/R								
§**	4520-1360	LEAD SCREW BN(L)05 RP (23/34 FRAME)														A/R							
§**	4520-1363	LEAD SCREW BN(L)05 RP(40 FRAME)															A/R						
**	4520-1029	LEAD SCREW SN12 LMI																A/R					
**	4520-1362	LEAD SCREW SN12 RP(23/34 FRAME)																	A/R				
**	4520-1365	LEAD SCREW SN12 RP(40 FRAME)																		A/R			
**	4520-1027	LEAD SCREW SN25 LMI																			A/R		
**	4520-1361	LEAD SCREW SN25 RP(23/34 FRAME)																				A/R	
**	4520-1364	LEAD SCREW SN25 RP(40 FRAME)																					A/R
7.	0920-1122	BALL NUT				1	1	1															
	0520-1042	BALL NUT										1	1	1									
	4520-1020	BALL NUT													1	1	1						

§Contact factory when ordering a replacement low backlash (BNL) Ball Screw and Nut

** Specify stroke when ordering

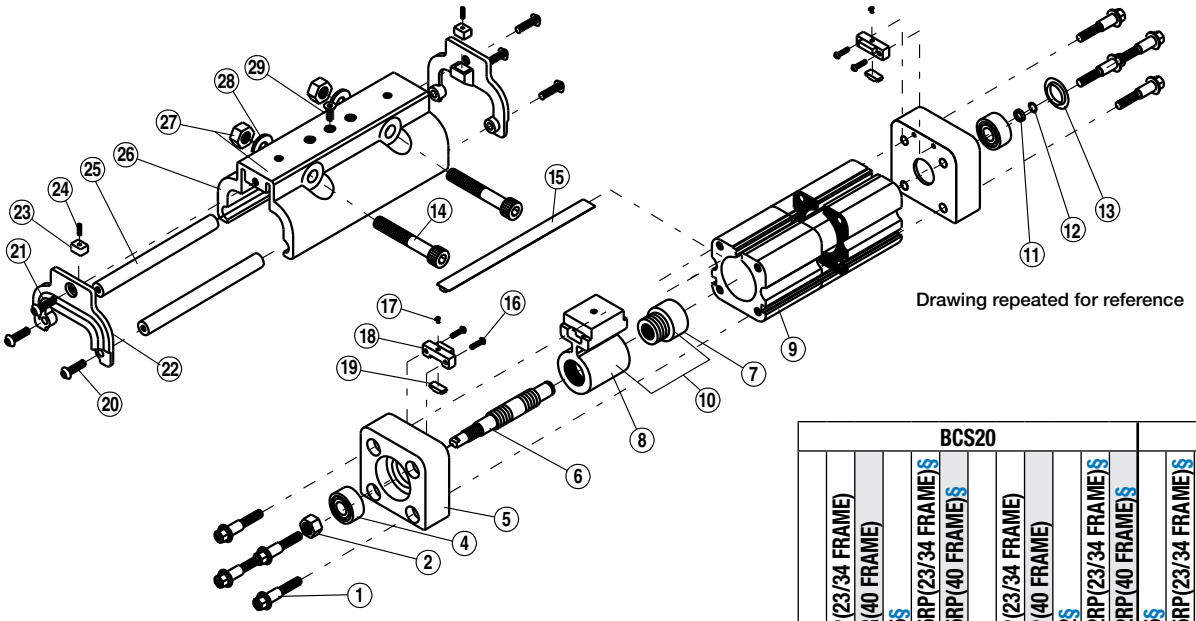
Available with Repair Kit #0520-9130

A/R = As Required

**Configurated code is the preferred ordering method: RLS_CS20_____SK_____MR___

EXAMPLE: RLS BCS20 SN01 SK21·25 MRS23

Replacement Lead Screw Model & Size — *Nut Style & Size* — *Stroke Length* — *Motor Code*



ITEM	PART NO.	DESCIPTION	BCS20												MCS20								
			SN02	SN02RP(23/34 FRAME)	SN02PR(40 FRAME)	BN(L)05§	BN(L)05RP(23/34 FRAME)§	BN(L)05RP(40 FRAME)§	SN01	SN01RP(23/34 FRAME)	SN01RP(40 FRAME)	BN(L)02§	BN(L)02RP(23/34 FRAME)§	BN(L)02RP(40 FRAME)§	BN(L)05§	BN(L)05RP(23/34 FRAME)§	BN(L)05RP(40 FRAME)§	SN12	SN12RP(23/34 FRAME)	SN12RP(40 FRAME)	SN25	SN25RP(23/34 FRAME)	SN25RP(40 FRAME)
8.	0920-9105	NUT BRACKET				1	1	1															
	0520-9014	NUT BRACKET										1	1	1									
	4520-9047	NUT BRACKET													1	1	1						
** 9.	0520-1071	TUBE MACHINED	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R									
**	4520-1009	TUBE MACHINED													A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R
10.	0520-9019	NUT BRACKET ASSEMBLY							1	1	1												
	0520-9017	NUT BRACKET ASSEMBLY	1	1	1																		
	4520-9044	NUT BRACKET ASSEMBLY																1	1	1			
	4520-9045	NUT BRACKET ASSEMBLY																			1	1	1
11.	0920-1145	CUP,RETAINING RING	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
12.	0920-1144	RING,RETAINING	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
13.	0520-1012	PLUG	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
14.	0920-1129	SHCS 3/8-24 X 2.75 LONG	2	2	2	2	2	2	2	2	2	2	2	2									
	4920-1019	SHCS M8 X 1.25 X 70 LONG													2	2	2	2	2	2	2	2	2
**#15.	0920-9002	DUST BAND	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R
16.	0910-1172	SHCS 6-32 X .50 LONG	4	4	4	4	4	4	4	4	4	4	4	4									
	4520-1046	SBHCS M4 X 0.7 X 16 LONG													4	4	4	4	4	4	4	4	4
17.	0515-1049	SET SCREW, 8-32 X .38 LONG	2	2	2	2	2	2	2	2	2	2	2	2									
	0610-1046	SET SCREW, M4 X 0.7 X 6 LONG													2	2	2	2	2	2	2	2	2
18.	0520-9015	BAND CLAMP ASSEMBLY	2	2	2	2	2	2	2	2	2	2	2	2									
	4515-9023	BAND CLAMP ASSEMBLY													2	2	2	2	2	2	2	2	2
19.	0520-1028	BAND CLAMP SLUG	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
20.	0920-1025	SBHCS 5/16-18 X .63 LONG	4	4	4	4	4	4	4	4	4	4	4	4									
	4920-1025	SLHCS M8 X 1.25 X 16 LONG													4	4	4	4	4	4	4	4	4
21.	0920-1084	SLHCS 1/4-20 X .50 LONG	2	2	2	2	2	2	2	2	2	2	2	2									
	4910-1199	SLHCS M6 X 1.0 X 10 LONG													2	2	2	2	2	2	2	2	2
# 22.	4520-1002	END CAP,CARRIER	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
# 23.	4520-1011	BAND INSERT	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
# 24.	0515-1000	SPRING	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
# 25.	0920-1022	BEARING,ROD	2	2	2	2	2	2	2	2	2	2	2	2									
	4920-1022	BEARING,ROD													2	2	2	2	2	2	2	2	2
26.	0520-1025	CARRIER,MACHINED	1	1	1	1	1	1	1	1	1	1	1	1									
	4520-1033	CARRIER,MACHINED													1	1	1	1	1	1	1	1	1
27.	1004-1190	NUT 3/8-24	2	2	2	2	2	2	2	2	2	2	2	2									
	2750-1048	NUT M8 X 1.25													2	2	2	2	2	2	2	2	2
28.	0720-1007	WASHER	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
29.	0920-1024	SFHCS 1/4-20 X .63 LONG	2	2	2	2	2	2	2	2	2	2	2	2									
	4920-1024	SFHCS M6 X 1.0 X 16 LONG													2	2	2	2	2	2	2	2	2

§Contact factory when ordering a replacement low backlash (BNL) Ball Screw and Nut

** Specify stroke when ordering

Available with Repair Kit #0520-9130

A/R = As Required

§Configurated code is the preferred ordering method: RLS_CS20_____SK_____MR___

EXAMPLE: RLS BCS20 SN01 SK21·25 MRS23

Replacement Lead Screw — *Nut Style & Size* — *Stroke Length* — *Motor Code*

INTRODUCTION

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 (exact wrench sizes will vary depending upon cylinder size):

Tin Snips
Allen Wrench Set
Open-end or Box Wrenches and/or Sockets

DISASSEMBLY INSTRUCTIONS

1. REMOVE CARRIER: Remove Bolts (#14), Washers (#28) and Nuts (#27). Remove Carrier (#26) from Bracket (#8) by removing Screw (#29). Remove Spring (#24), Band Insert (#23), and End Cap (#22) by removing Screws (#20 and 21) at each end of Carrier. Remove Bearing Rods (#25). Remove carrier (#26).

2. REMOVE DUST BAND: Loosen Clamp Slug (#19) holding Band by loosening Set Screw (#17). Remove two Screws (#16) securing Band Clamp Assembly (#18). Remove Band Clamp Assembly (#18) from top of Slug, then remove Clamp Slug from top of Band (#next to Head). IMPORTANT NOTE: Edges of Dust Band are SHARP — Use caution when handling to avoid injury! Carefully pull the Dust Band (#15) from the Tube (#9) and through the Nut Bracket Assembly (#8)

3. DISASSEMBLE UNIT.

A. ***Ball Nut Style:*** Loosen the four Screws (#1) on each Head (#5), then remove Head and Nut (#2). Remove End Plug (#13) from the "dead" side Head. Push Ring Cup (#11) from Snap Ring (#12), then remove Snap Ring from groove on Lead Screw (#6), and Ring Cup. Remove Head (#5) on "dead" end of Lead Screw (#non-threaded end). Remove Lead Screw from machined tube. DO NOT Remove Nut Bracket from the Screw (balls will fall out).

B. ***Plastic Nut Style:*** Remove End Plug (#13) from the "dead" side Head (#5). Loosen the four Screws (#1) on each Head. Remove Head and Nut (#2). Push Ring Cup (#11) from Snap Ring (#12), then remove Snap Ring from groove on Lead Screw (#6) and Ring Cup (#11). Remove Head from "dead" end of Lead Screw (#non-threaded end). Remove Lead Screw from machined tube. Remove Nut Bracket (#8) from Lead Screw (#6).

4. HEAD SUB-ASSEMBLY: If necessary, carefully remove Bearings (#4) from both Heads (#5).

5. SUB-ASSEMBLIES:

Ball Nut Style: Caution is required if removal of nut is necessary. Contact the factory for available parts and procedures.

Plastic Nut Style: Plastic nuts are factory pinned into the Nut Bracket and cannot be removed. If nuts are worn, a new Nut Bracket Assy must be ordered.

ASSEMBLY INSTRUCTIONS

1.AREA PREPARATION: Ensure all parts are present and have no visual damage or defects.

2.PREPARE HEAD SUB-ASSEMBLY: Carefully install Bearings (#4) in both Heads (#5).

3. ASSEMBLE UNIT:

A. ***Ball Nut Style:*** Grease Lead Screw (#6) with Mobil HP. Install Lead Screw in machined tube. Place Head (#5) on "dead" end of Lead Screw (non-threaded end). Secure with Ring Cup (#11) and Snap Ring (#12). NOTE: Make sure the Snap Ring is properly seated in groove on the Lead Screw, then pull Ring Cup over Snap Ring. Install second Head, and Nut (#2). Snug up, but do not tighten the four Screws (#1) on each Head. Place an End Plug (#13) in the "dead" side Head.

B. ***Plastic Nut Style:*** Grease Screw (#6) with Christolube® 405, assemble Nut Bracket to Screw with the Nut end facing the "live" end (#threaded end) of the Screw. Install Screw in machined tube. Place Head on "dead" end of Screw (#non-threaded end). Secure with Ring Cup (#11) and Snap Ring (#12). NOTE: Make sure the Snap Ring is properly seated in groove on the lead Screw, then pull Ring Cup over Snap Ring. Install second Head and Nut (#2). Snug up, but do not tighten the four Screws (#1) on each Head. Place an End Plug (#13) in the "dead" side Head.

4. INSTALL CARRIER: Thread one end of Band (#15) through slot in Bracket (#8) and press down on Band (#15) to seat in tube. Place Carrier (#26) on Tube and align with Nut Bracket. Install Bearing Rods (#25). Secure Spring (#24), Band Insert (#23), and End Cap (#22) in place by tightening Screws (#20 and 21) with Loctite #242 to each end of Carrier. Secure Carrier (#26) to Nut Bracket (#8) by tightening Screws (#29) with Loctite #242. Install Bolts (#14), Washers (#28) and Nuts (#27). Snug up the bolts only. ***NOTE:*** "Snug" means no noticeable end play by hand. If a wrench is applied to either end, both ends will turn.

5. ALIGN HEADS: Place Carrier next to each Head then tighten the four Head Tapped Screws (#1) to assure proper alignment of Head and Carrier.

HEAD TORQUE REQUIREMENTS

Cylinder Size	In-Lbs of Torque
1" thru 1-1/2"	100-110
2"	180-195

6. TRIM AND SECURE DUST BAND: Locate on one Head a Slug (#19) and Band Clamp Assembly (#18). (NOTE: Width of Slug should match dust Band width.) Tighten with Screw (#16) and Loctite #242. Insert one end of Dust Band (#15) under Band Clamp assembly and Slug until it is tight to the Head. Install Set Screw (#17) into Band Clamp assembly and tighten against Slug. With tin snips, cut the end of the Band so it nearly butts to the other Head. Place Clamp Slug (#19) on top of Band (next to Head), then place Band Clamp Assembly (#18) over Slug. Tighten to Head with two Screws (#16) and Loctite #242. Install Set Screws (#17).

7. TEST PROCEDURE: The torque required to rotate the Lead Screw(#6) should not exceed the following limits.

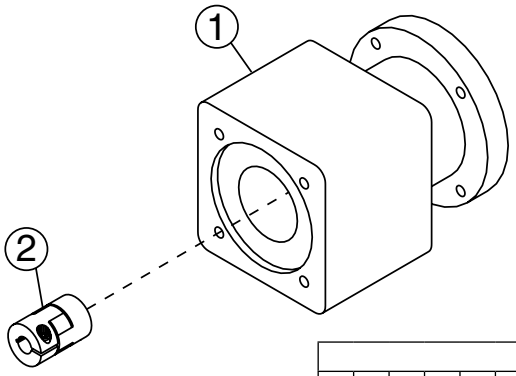
MAXIMUM BREAKAWAY REQUIREMENTS:

Cylinder Size	Torque
1"	25 ounce-inches
1-1/2"	30 ounce-inches
2"	45 ounce-inches

Check and/or readjust unit to conform to specification requirements. Retest.

8. CLEAN UNIT THOROUGHLY BEFORE INSTALLING.

Inline Motor Mount



										WITH GEARHEAD					
ITEM	PART NO.	DESCRIPTION	MRS34X	MRV23X	MRV234	MRB23X, MRS 23X	MRB34X	MRV34X	MRB40X	MRS34X WITH GH K30	MRV23X WITH GH J20, 21	MRV234 WITH GHJ20,21	MRS23X / MRB23X WITH GHK20	MRB34X WITH GH J30, 31	MRV34X WITH GH J30,31
1.	0520-9200	MOTOR ADAPTER KIT	1				1	1	1	1				1	1
	0520-9201	MOTOR ADAPTER KIT		1	1						1	1			
	0520-9202	MOTOR ADAPTER KIT				1							1		
	4520-9200	MOTOR ADAPTER KIT	1				1	1		1				1	1
	4520-9201	MOTOR ADAPTER KIT		1	1						1	1			
	4520-9202	MOTOR ADAPTER KIT				1							1		
	4520-9204	MOTOR ADAPTER KIT							1						
2.	3600-9209	COUPLER	1	-	-	-	-	-	-	-	-	-	-	-	-
	3600-6166	COUPLER	-	1	-	-	-	-	-	-	1	-	-	-	-
	3600-6167	COUPLER	-	-	1	-	-	1	-	-	-	1	-	-	1
	3600-9208	COUPLER	-	-	-	1	-	-	-	-	-	-	-	-	-
	3600-9215	COUPLER	-	-	-	1	-	-	-	-	-	-	1	-	-
	3600-9217	COUPLER	-	-	-	-	-	-	1	-	-	-	-	-	-
	3600-9164	COUPLER	-	-	-	-	-	-	-	1				1	-

REVERSE PARALLEL DISASSEMBLY INSTRUCTIONS
(See drawing on page 5)

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 (7) and driven pulley (8) from their respective shafts. The belt (4) will come off with the pulleys.
4. Remove motor fasteners (17) from the motor plate (10), to remove the motor from the RP case.
5. Remove the RP case (12) from the head by removing fasteners (11).

REVERSE PARALLEL ASSEMBLY INSTRUCTIONS
(See drawing on page 5)

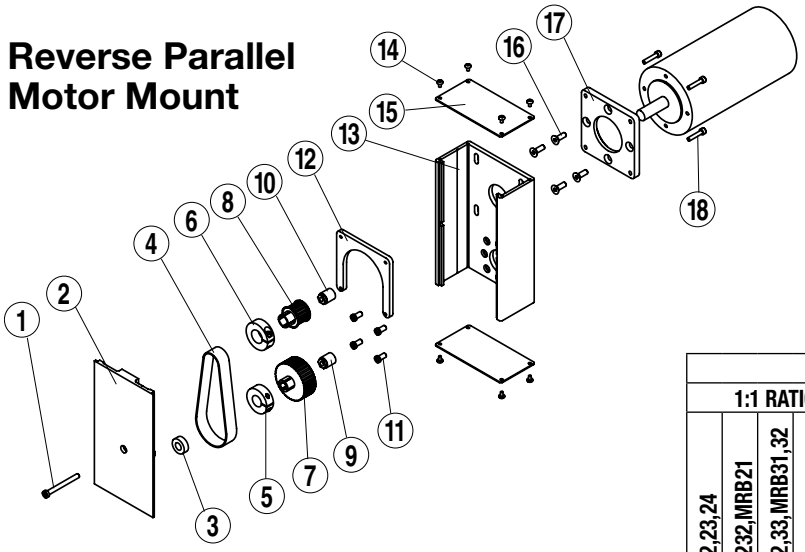
*Apply Loctite #242 to all fasteners upon installation

1. Install RP case (12) to the head with cap screws (11). Do not fully tighten the fasteners at this time and verify that the RP case can move with respect to the head.
2. Temporarily install the cover (2) with bearing (3) onto the RP case positioning the bearing over the leadscrew shaft. Hold the cover in place while tightening all of the fasteners (11) that hold the RP case to the head.
3. Remove the cover (2) and finish tightening all fasteners attaching the RP case to the head.
4. Install the motor to the RP case with fasteners (17). Do not tighten the fasteners at this time.
5. Locate the belt (4) over the pulleys and slide the drive (7) and driven (8) 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. 5/8" hex on trantorque apply 100 in-lbs.
6. Verify that there is clearance between the inside of the RP case and each pulley. Verify that the pulleys are aligned to each other.
7. Position the cover (2) in mating slot of the RP case and install the SHCS (1) to hold in place. Take care not to overtighten. If the cover is deflected it can interfere with the leadscrew.
8. 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.

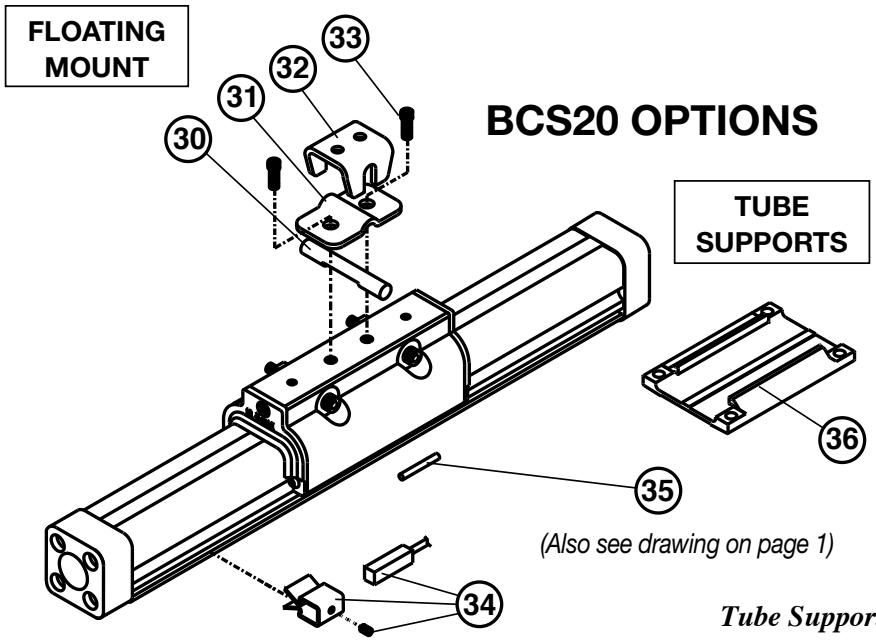
Motor Frame	Tension Force
MRB23, MRS17/23	10 lbs
MRV23, MRS34	20 lbs
MRV34, MRB34	30 lbs

9. Install both end caps (14) with the screws (13) to finalize assembly.

Reverse Parallel Motor Mount



ITEM	PART NO.	DESCRIPTION	BCS20 1:1 RATIO					BCS20 2:1 RATIO					MCS20 1:1 RATIO					MCS20 2:1 RATIO				
			MRV21,22,23,24	MRS231,232,MRB21	MRV31,32,33,MRB31,32	MRS341,342,343	MRB41,42	MRV21,22,23,24	MRS231,232,MRB21	MRV31,32,33,MRB31,32	MRS341,342,343	MRB41,42	MRV21,22,23,24	MRS231,232,MRB21	MRV31,32,33,MRB31,32	MRS341,342,343	MRB41,42	MRV21,22,23,24	MRS231,232,MRB21	MRV31,32,33,MRB31,32	MRS341,342,343	MRB41,42
1.	3420-1641	SHCS, M6 X 1.0, 60 MM LONG, LOW HEAD, SST					1					1					1					1
	3420-1639	SHCS, M5 X 0.8, 55 MM LONG, LOW HEAD, SST	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
2.	0602-1613	COVER, B3B-23 FRAME	1	1				1	1				1	1				1	1			
	0602-1620	COVER, B3B-34 FRAME			1	1				1	1				1	1				1	1	
	3420-1620	COVER, B3B-51 FRAME					1					1					1					1
3.	0520-1068	BEARING, BALL, RADIAL, Ø.438	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4.	0515-1064	TIMING BELT, 14.00-1/5-3/8	1	1	1	1							1	1	1	1						
	0520-1070	TIMING BELT, 16.00-1/5-3/8						1	1	1	1							1	1	1	1	
	3420-1247	TIMING BELT, 350-5M-19					1										1					
	2133-1026	TIMING BELT, 400-5M-19										1										1
5.	0520-1067	CLAMP COLLAR, Ø.688	1		1			1		1			1		1			1		1		
	3420-1627	CLAMP COLLAR, Ø.813					1					1					1					1
6.	0520-1067	CLAMP COLLAR, Ø.688	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7.	3420-1255	PULLEY, 18 TEETH, .38 WIDTH	1		1			1		1			1		1			1		1		
	0515-1191	PULLEY, 18 TEETH, .38 WIDTH		1					1					1					1			
	0515-1192	PULLEY, 18 TEETH, .38 WIDTH				1					1					1					1	
	3420-9190	PULLEY, 18 TEETH, 19MM WIDTH					1					1					1					1
8.	0520-1060	PULLEY, 18 TEETH, .38 WIDTH	1	1	1	1							1	1	1	1						
	0520-1065	PULLEY, 36 TEETH, .38 WIDTH						1	1	1	1							1	1	1	1	
	3420-1630	PULLEY, 18 TEETH, 19 MM WIDTH					1										1					
	3420-1631	PULLEY, 36 TEETH, 19 MM WIDTH										1										1
9.	0510-1111	TRANTORQ, Ø.250		1					1					1					1			
	0515-1181	TRANTORQ, Ø.375				1					1					1					1	
10.	0601-1053	PLATE, MOTOR, 23 FRAME	1	1				1	1				1	1				1	1			
	0602-1057	PLATE, MOTOR, 34 FRAME			1	1				1	1				1	1				1	1	
	3420-1611	PLATE, MOTOR, 40 FRAME					1					1					1					1
11.	3420-1643	SHCS, 5/16-18, 1.00 LONG, LOW HEAD	4	4	4	4	4	4	4	4	4	4										
	3420-1642	SHCS, M8 X 1.25, 25 MM LONG, LOW HEAD											4	4	4	4	4	4	4	4	4	4
12.	0602-1603	HOUSING, BCS20/B3S20-23 FRAME (TOP/BOTTOM)	1	1				1	1				1	1				1	1			
	0602-1610	HOUSING, BCS20/B3S20-34 FRAME (TOP/BOTTOM)			1	1				1	1				1	1				1	1	
	3420-1610	HOUSING, BCS20/B3S20-40 FRAME (TOP/BOTTOM)					1					1					1					1
	0602-1653	HOUSING, BCS20/B3S20-23 FRAME (LEFT/RIGHT)	1	1				1	1				1	1				1	1			
	0602-1660	HOUSING, BCS20/B3S20-34 FRAME (LEFT/RIGHT)			1	1				1	1				1	1				1	1	
	3420-1660	HOUSING, BCS20/B3S20-40 FRAME (LEFT/RIGHT)					1					1					1					1
13.	0601-1625	SCREW, #6 X .25, SELF-TAPPING, SST	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
14.	0602-1602	END CAP	2	2	2	2		2	2	2	2		2	2	2	2		2	2	2	2	
	3420-1602	END CAP					2					2					2					2
15.	3420-1223	SFHCS, 1/4-20, 1.00 LONG					4					4					4					4
16.	3420-1612	PLATE, ADAPTER, 40 FRAME					1					1					1					1
17.	2212-1098	SHCS, M5 X 0.8, 20 MM LONG, SST		4					4					4					4			
	2212-1099	SHCS, M5 X 0.8, 25 MM LONG, SST	4		4	4	4	4		4	4	4	4		4	4	4	4		4	4	4



(Also see drawing on page 1)

ITEM	PART NO.	DESCRIPTION	ALL BCS10 MODLES
FLOATING MOUNT			
30.	0520-1009	Pin	1
31.	0920-1036	Clamp	1
32.	0920-1037	Bracket	1
33.	0920-1034	Screw	2
	4920-1034	Screw, Metric	2
SWITCHES			
34.	***SEE PAGE 7***		
35.	0920-1238	Switch Magnet	1
TUBE SUPPORTS			
36.	4520-1010	Bracket	1

Tube Supports, Floating Mounts and Switches Disassembly and Assembly Instructions

TUBE SUPPORTS
Follow cylinder assembly instructions through steps 5. Before installing second cylinder Head (#5) in step 6, slide Tube Support (#36) onto cylinder Tube (#9).

FLOATING MOUNT
Completely assemble cylinder. Place Pin (#30) flat side towards Carrier (#26) and between the two center holes. Place Floating Mount Clamp (#31) over Pin (#30) and secure to the Carrier (#26) with Screws (#33) and Loctite® #242. Place Floating Mount Bracket (#32) over Pin (#30) and hold in place with a rubber band.

SWITCHES
On assembled cylinder, Secure Switch to open port side of cylinder with a Hardware Kit (#34) clamp and screw. Cycle the carrier over the Switch by hand to ensure that the carrier does not hit the switch. See page 7 for additional switch information.

34. SWITCH KIT

CONFIG. CODE ORDERING Mounting Hardware & FE conn. included	
CODE	**DESCRIPTION**
BT	Switch Only, Reed, Form C, 5m
BM	Switch Only, Reed, Form C, Male Conn.
RT	Switch Only, Reed, Form A, 5m
RM	Switch Only, Reed, Form A, Male Conn.
CT	Switch Only, Triac, 5m
CM	Switch Only, Triac, Male Conn.
KT	Switch Only, Hall-effect, Sinking, 5m
KM	Switch Only, Hall-effect, Sinking, Male Conn.
TT	Switch Only, Hall-effect, Sourcing, 5m
TM	Switch Only, Hall-effect, Sourcing, Male Conn.

NOTE: When ordered by Config. Code Female connector & all mounting hardware is included

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: SWBCS20RT
(Hardware and Form A Reed switch with 5 meter lead for 2" size BCS actuator)

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

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.

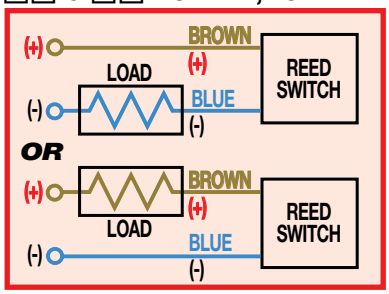
WARNING: An ohmmeter is recommended for testing Reed Switches. NEVER use an incandescent light bulb as a high current rush may damage the switch.

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.

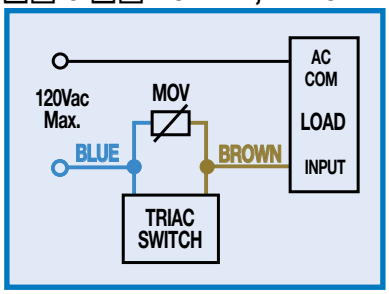
NOTE: For Hall Effect Switch Magnet, be sure the S pole of the magnet (indicated with black dot) is facing toward the switch (down).

WIRING DIAGRAMS

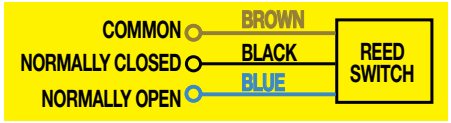
RT & RM DC REED, FORM A



CT & CM AC REED, TRIAC

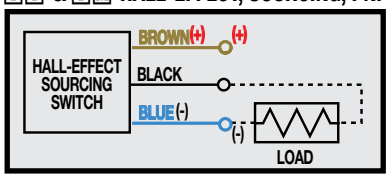


BT & BM DC REED, FORM C

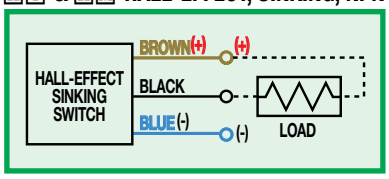


Some actuators may require switch mounting on a specific side of the assembly. Call Tolomatic for details.

TT & TM HALL-EFFECT, SOURCING, PNP



KT & KM HALL-EFFECT, SINKING, NPN

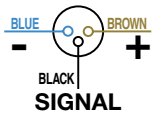


INSTALLATION INFORMATION

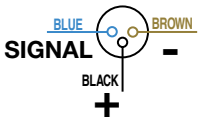
THE NOTCHED FACE OF THE SWITCH INDICATES THE SENSING SURFACE AND MUST FACE TOWARD THE MAGNET.

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



OLD Quick disconnect Wiring



Female Connector 5M

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