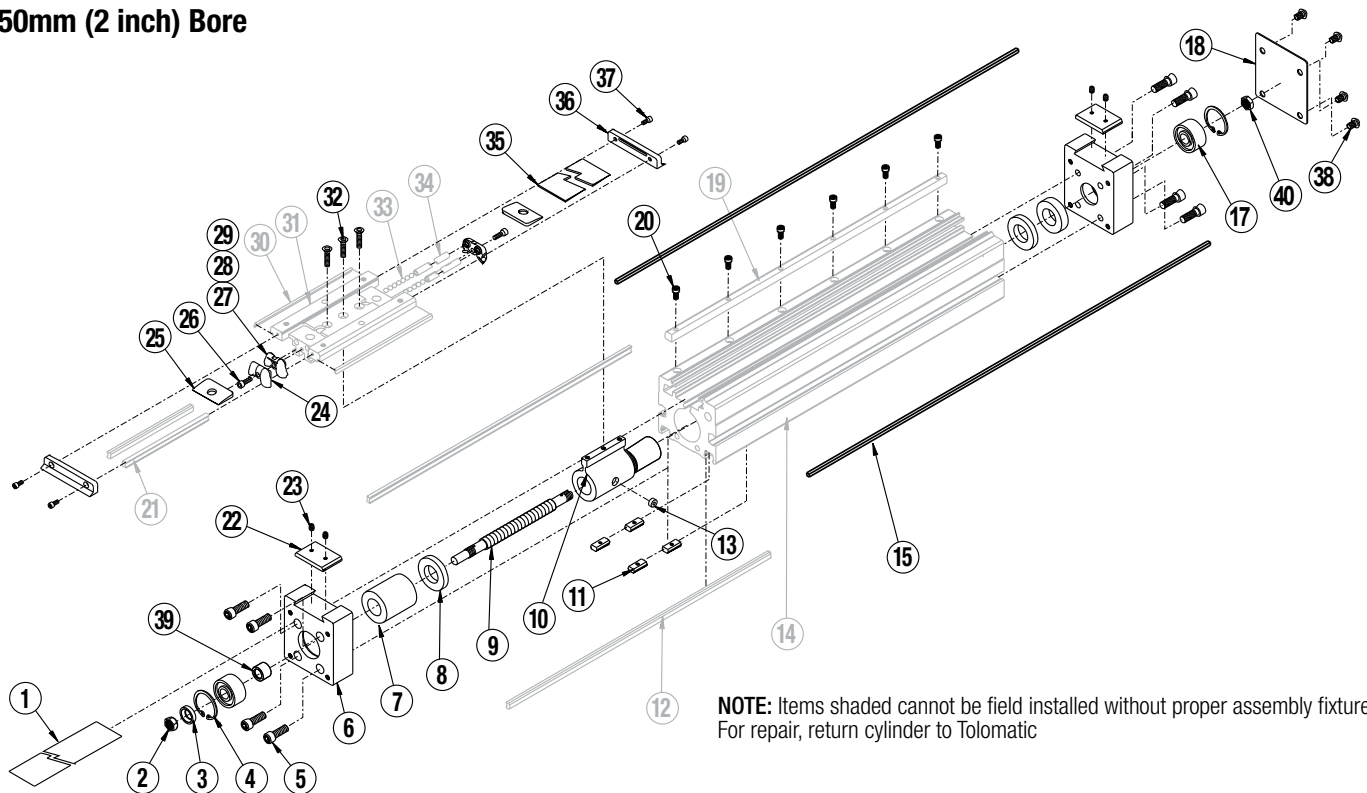


### B3S20 Screw-Drive Actuators Wedge Style

50mm (2 inch) Bore



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

| ITEM | PART NO. OR CONFIG. CODE | DESCRIPTION      | US CONV (SK)      |                   |                    |      |      | METRIC (SM) |                   |                   |      |       |
|------|--------------------------|------------------|-------------------|-------------------|--------------------|------|------|-------------|-------------------|-------------------|------|-------|
|      |                          |                  | SN01 <sup>1</sup> | SN02 <sup>1</sup> | SNA02 <sup>1</sup> | BN02 | BN05 | BNL05       | SN25 <sup>1</sup> | SN12 <sup>1</sup> | BN05 | BNL05 |
| 2,3  | NDBB3S20_SK              | DUST BAND        | A/R               | A/R               | A/R                | A/R  | A/R  | A/R         | A/R               | A/R               | A/R  | A/R   |
|      | NDBB3S20_SM              | DUST BAND        | A/R               | A/R               | A/R                | A/R  | A/R  | A/R         | A/R               | A/R               | A/R  | A/R   |
| 2.   | 0603-1658                | SPHERICAL NUT    | 1                 | 1                 | 1                  | 1    | 1    | 1           | 1                 | 1                 | 1    | 1     |
| 3.   | 1132-1014                | SPHERICAL WASHER | 1                 | 1                 | 1                  | 1    | 1    | 1           | 1                 | 1                 | 1    | 1     |
| 4.   | 2100-1010                | RETAINING RING   | 2                 | 2                 | 2                  | 2    | 2    | 2           | 2                 | 2                 | 2    | 2     |
| 5.   | 1309-2020                | SHCS             | 8                 | 8                 | 8                  | 8    | 8    | 8           | -                 | -                 | -    | -     |
|      | 4925-1033                | SHCS             | -                 | -                 | -                  | -    | -    | -           | 8                 | 8                 | 8    | 8     |
| 6.   | 3420-1200                | ACTUATOR HEAD    | 2                 | 2                 | 2                  | 2    | 2    | 2           | -                 | -                 | -    | -     |
|      | 4420-1200                | ACTUATOR HEAD    | -                 | -                 | -                  | -    | -    | -           | 2                 | 2                 | 2    | 2     |
|      | 3420-1208                | SPACER           | -                 | -                 | -                  | -    | 1    | 1           | -                 | -                 | -    | -     |
| 7.   | 3420-1209                | SPACER           | 1                 | 1                 | -                  | -    | -    | -           | 1                 | 1                 | -    | -     |
|      | 3420-1210                | SPACER           | 1                 | 1                 | 1                  | 1    | 1    | 1           | 1                 | 1                 | 1    | 1     |
|      | 4420-1210                | SPACER           | -                 | -                 | -                  | -    | -    | -           | -                 | -                 | 1    | 1     |
| 8.   | 2332-1006                | BUMPER           | 2                 | 2                 | 2                  | 2    | 2    | 2           | 2                 | 2                 | 2    | 2     |

| ITEM | PART NO. OR CONFIG. CODE | DESCRIPTION                | US CONV (SK)      |                   |                    |      |      | METRIC (SM) |                   |                   |      |       |
|------|--------------------------|----------------------------|-------------------|-------------------|--------------------|------|------|-------------|-------------------|-------------------|------|-------|
|      |                          |                            | SN01 <sup>1</sup> | SN02 <sup>1</sup> | SNA02 <sup>1</sup> | BN02 | BN05 | BNL05       | SN25 <sup>1</sup> | SN12 <sup>1</sup> | BN05 | BNL05 |
| 4,9  | RLSB3S20_SK              | LEAD SCREW (US CONV)       | A/R               | A/R               | A/R                | A/R  | A/R  | A/R         | A/R               | A/R               | A/R  | A/R   |
|      | RLSB3S20_SM              | LEAD SCREW (METRIC)        | A/R               | A/R               | A/R                | A/R  | A/R  | A/R         | A/R               | A/R               | A/R  | A/R   |
|      | 3420-9062                | NUT BRACKET ASSY, 1 TPI    | 1                 | -                 | -                  | -    | -    | -           | -                 | -                 | -    | -     |
|      | 3420-9063                | NUT BRACKET ASSY, 2TPI     | -                 | 1                 | -                  | -    | -    | -           | -                 | -                 | -    | -     |
|      | 3420-9064                | NUT BRACKET ASSY, BN, 2TPI | -                 | -                 | -                  | 1    | -    | -           | -                 | -                 | -    | -     |
|      | 3420-9065                | NUT BRACKET ASSY, BN, 5TPI | -                 | -                 | -                  | -    | 1    | 1           | -                 | -                 | -    | -     |
| 10.  | 3420-9066                | NUT BRACKET ASSY, AB, 2TPI | -                 | -                 | 1                  | -    | -    | -           | -                 | -                 | -    | -     |
|      | 4420-9027                | NUT BRACKET (METRIC), 12MM | -                 | -                 | -                  | -    | -    | -           | -                 | 1                 | -    | -     |
|      | 4420-9028                | NUT BRACKET (METRIC), 25MM | -                 | -                 | -                  | -    | -    | -           | -                 | 1                 | -    | -     |
|      | 4420-9029                | NUT BRACKET (METRIC), 5MM  | -                 | -                 | -                  | -    | -    | -           | -                 | -                 | 1    | 1     |

<sup>1</sup> Discontinued assembly. Contact [help@tolomatic.com](mailto:help@tolomatic.com) for available replacement parts

<sup>2</sup> Available in Repair Kit No. 3420-9049

A/R = As Required

<sup>3</sup> Replacement Dust Band ordering method: **NDB B3S20** **D** **SK** **SM** or **DC**

**EXAMPLE:** **NDB B3S20 D SK 21-25 DC 7**

<sup>4</sup> Replacement Lead Screw ordering method: **RLS B3S20** **BN** **SK** **SM** or **LM** **I** **YM** **DC**

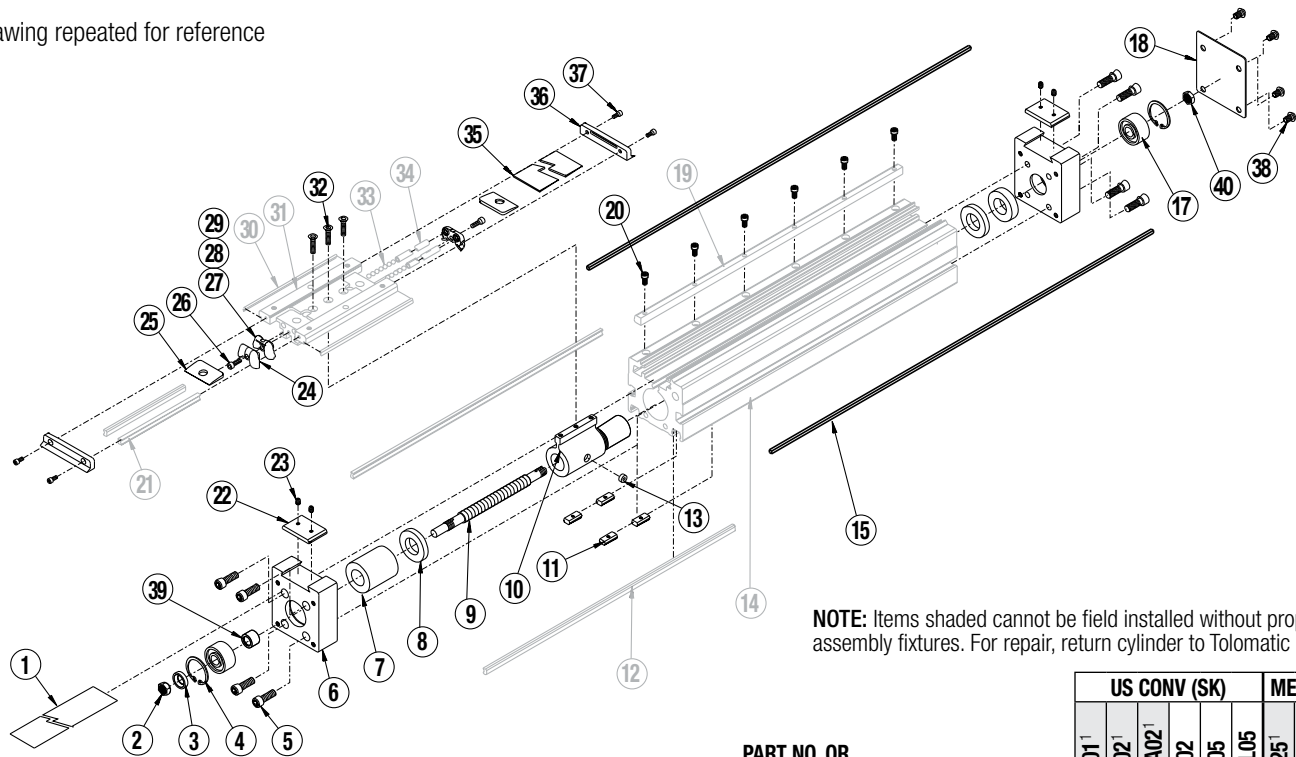
**EXAMPLE:** **RLS B3S20 BN02 SK 21-25 LM I YM 0TB D0 DC**

Lead Screw      Nut Style & Size      Stroke Length      Motor Orientation      Aux. Carrier

**Auxiliary Carrier Option Note:** If replacing a Lead Screw (9.), Band Magnet (15.) or Dust Band (11.) 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



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

| ITEM             | PART NO. OR CONFIG. CODE | DESCRIPTION            | US CONV (SK)      |                   |                    |      |      | METRIC (SM) |                   |                   |      |       |
|------------------|--------------------------|------------------------|-------------------|-------------------|--------------------|------|------|-------------|-------------------|-------------------|------|-------|
|                  |                          |                        | SN01 <sup>1</sup> | SN02 <sup>1</sup> | SNA02 <sup>1</sup> | BN02 | BN05 | BNL05       | SN25 <sup>1</sup> | SN12 <sup>1</sup> | BN05 | BNL05 |
| 11.              | 3420-1013                | T-NUT (US CONV)        | 4                 | 4                 | 4                  | 4    | 4    | 4           | —                 | —                 | —    | —     |
|                  | 4420-1013                | T-NUT (METRIC)         | —                 | —                 | —                  | —    | —    | —           | 4                 | 4                 | 4    | 4     |
| 12.              | 3420-1241                | RAIL WAY               | 2                 | 2                 | 2                  | 2    | 2    | 2           | 2                 | 2                 | 2    | 2     |
| <sup>3</sup> 13. | 3420-1062                | MAGNET                 | 2                 | 2                 | 2                  | 2    | 2    | 2           | 2                 | 2                 | 2    | 2     |
| 14.              | 3420-1508                | MACHINED TUBE          | 1                 | 1                 | 1                  | 1    | 1    | 1           | —                 | —                 | —    | —     |
|                  | 4420-1501                | MACHINED TUBE          | —                 | —                 | —                  | —    | —    | —           | 1                 | 1                 | 1    | 1     |
| <sup>5</sup> 15. | NMBB3S20_SK_             | MAGNET BAND (US CONV)  | 2                 | 2                 | 2                  | 2    | 2    | 2           | 2                 | 2                 | 2    | 2     |
|                  | NMBB3S20_SM_             | MAGNET BAND (METRIC)   | 2                 | 2                 | 2                  | 2    | 2    | 2           | 2                 | 2                 | 2    | 2     |
| 17.              | 3420-1222                | CONTACT BEARING        | 2                 | 2                 | 2                  | 2    | 2    | 2           | 2                 | 2                 | 2    | 2     |
| 18.              | 3420-9054                | HEAD END KIT (US CONV) | 1                 | 1                 | 1                  | 1    | 1    | 1           | —                 | —                 | —    | —     |
|                  | 4420-9054                | HEAD END KIT (METRIC)  | —                 | —                 | —                  | —    | —    | —           | 1                 | 1                 | 1    | 1     |
| 19.              | 3420-1496                | MACHINED WEDGE         | 1                 | 1                 | 1                  | 1    | 1    | 1           | 1                 | 1                 | 1    | 1     |
| 20.              | 0605-1045                | SOCKET HEAD CAP SCREW  | A/R               | A/R               | A/R                | A/R  | A/R  | A/R         | A/R               | A/R               | A/R  | A/R   |
| 21.              | 3420-1024                | CARRIER WAY            | 2                 | 2                 | 2                  | 2    | 2    | 2           | 2                 | 2                 | 2    | 2     |
| 22.              | 3420-1219                | UPPER CLAMP            | 2                 | 2                 | 2                  | 2    | 2    | 2           | —                 | —                 | —    | —     |
|                  | 4420-1219                | UPPER CLAMP            | —                 | —                 | —                  | —    | —    | —           | 2                 | 2                 | 2    | 2     |
| 23.              | 3415-1455                | SET SCREW (US CONV)    | 4                 | 4                 | 4                  | 4    | 4    | 4           | —                 | —                 | —    | —     |
|                  | 4410-1017                | SET SCREW (METRIC)     | —                 | —                 | —                  | —    | —    | —           | 4                 | 4                 | 4    | 4     |
| 24.              | 3420-1069                | PLT BALL RETURN        | 2                 | 2                 | 2                  | 2    | 2    | 2           | 2                 | 2                 | 2    | 2     |

| ITEM             | PART NO. OR CONFIG. CODE | DESCRIPTION                      | US CONV (SK)      |                   |                    |      |      | METRIC (SM) |                   |                   |      |       |
|------------------|--------------------------|----------------------------------|-------------------|-------------------|--------------------|------|------|-------------|-------------------|-------------------|------|-------|
|                  |                          |                                  | SN01 <sup>1</sup> | SN02 <sup>1</sup> | SNA02 <sup>1</sup> | BN02 | BN05 | BNL05       | SN25 <sup>1</sup> | SN12 <sup>1</sup> | BN05 | BNL05 |
| 25.              | 3415-1047                | UPPER BAND RAMP                  | 2                 | 2                 | 2                  | 2    | 2    | 2           | 2                 | 2                 | 2    | 2     |
| 26.              | 1085-1075                | SOCKET HEAD CAP SCREW (US CONV)  | 2                 | 2                 | 2                  | 2    | 2    | 2           | —                 | —                 | —    | —     |
|                  | 0610-1033                | SOCKET HEAD CAP SCREW (METRIC)   | —                 | —                 | —                  | —    | —    | —           | 2                 | 2                 | 2    | 2     |
| 27.              | 3420-1014                | BALL RETURN                      | 2                 | 2                 | 2                  | 2    | 2    | 2           | 2                 | 2                 | 2    | 2     |
| 28.              | 3420-1015                | RIGHT BALL RACE                  | 2                 | 2                 | 2                  | 2    | 2    | 2           | 2                 | 2                 | 2    | 2     |
| 29.              | 3420-1032                | LEFT BALL RACE                   | 2                 | 2                 | 2                  | 2    | 2    | 2           | 2                 | 2                 | 2    | 2     |
| <sup>2</sup> 30. | 3420-1025                | WIPER                            | 2                 | 2                 | 2                  | 2    | 2    | 2           | 2                 | 2                 | 2    | 2     |
| 31.              | 3420-2021                | MACHINED CARRIER                 | 1                 | 1                 | 1                  | 1    | 1    | 1           | —                 | —                 | —    | —     |
|                  | 4420-1235                | MACHINED CARRIER                 | —                 | —                 | —                  | —    | —    | —           | 1                 | 1                 | 1    | 1     |
| 32.              | 3420-1223                | FLATHEAD CAP SCREW (US CONV)     | 3                 | 3                 | 3                  | 3    | 3    | 3           | —                 | —                 | —    | —     |
|                  | 4420-1011                | FLATHEAD HEAD CAP SCREW (METRIC) | —                 | —                 | —                  | —    | —    | —           | 3                 | 3                 | 3    | 3     |
| 33.              | 3420-1009                | BALL BEARING                     | 92                | 92                | 92                 | 92   | 92   | 92          | 92                | 92                | 92   | 92    |
| 34.              | 3420-1019                | BALL RETURN TUBE                 | 2                 | 2                 | 2                  | 2    | 2    | 2           | 2                 | 2                 | 2    | 2     |
| <sup>2</sup> 35. | 3420-2022                | CARRIER COVER                    | 1                 | 1                 | 1                  | 1    | 1    | 1           | 1                 | 1                 | 1    | 1     |
| <sup>2</sup> 36. | 3420-2024                | END CAP                          | 2                 | 2                 | 2                  | 2    | 2    | 2           | 2                 | 2                 | 2    | 2     |
| 37.              | 0605-1046                | SOCKET HEAD CAP SCREW (US CONV)  | 4                 | 4                 | 4                  | 4    | 4    | 4           | —                 | —                 | —    | —     |
|                  | 4415-1001                | SOCKET HEAD CAP SCREW (METRIC)   | —                 | —                 | —                  | —    | —    | —           | 4                 | 4                 | 4    | 4     |
| 38.              | 1820-1001                | SCS, BTN (US CONV)               | 4                 | 4                 | 4                  | 4    | 4    | 4           | —                 | —                 | —    | —     |
|                  | 4410-1719                | SCS, BTN (METRIC)                | —                 | —                 | —                  | —    | —    | —           | 4                 | 4                 | 4    | 4     |
| 39.              | 3420-2041                | SLEEVE                           | 1                 | 1                 | 1                  | 1    | 1    | 1           | 1                 | 1                 | 1    | 1     |
| 40.              | 2410-1157                | NUT                              | 1                 | 1                 | 1                  | 1    | 1    | 1           | 1                 | 1                 | 1    | 1     |

<sup>1</sup> Discontinued assembly.

Contact [help@tolomatic.com](mailto:help@tolomatic.com) for available replacement parts

<sup>2</sup> Available in Repair Kit No. 3420-9049

<sup>3</sup> Also included in nut bracket assembly (Item 10)

A/R = As Required

<sup>5</sup> Replacement Magnet Band Kit ordering method:

(includes 2 magnet bands) For long stroke lengths the magnet band is shipped in multiple pieces

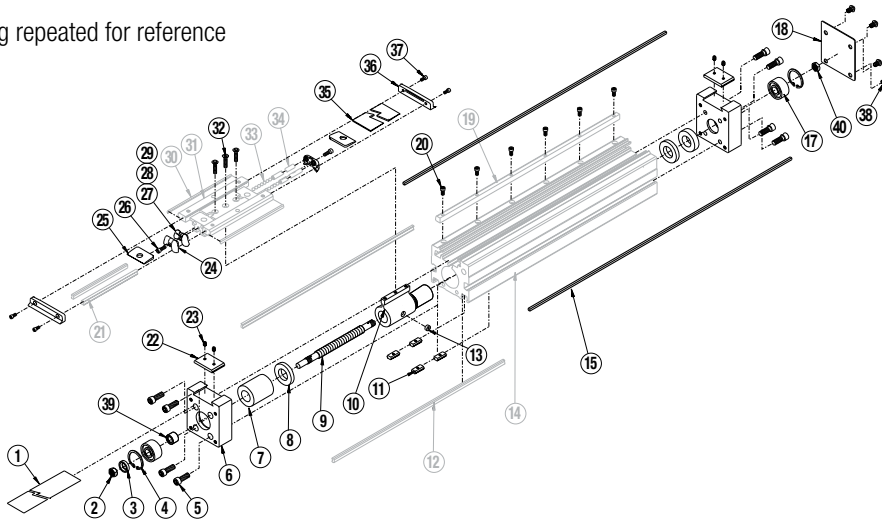
EXAMPLE: **NMB B3S20 D SK 21.25 DC 7**

Lead Screw      Model & Size      Stroke Length      Aux. Carrier

**Auxiliary Carrier Option Note:** If replacing a Lead Screw (9.), Band Magnet (15.) or Dust Band (11.) 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



### Main Unit Disassembly Instructions:

#### 1. Remove Motor Hardware and Dust Band.

Remove any motor, reverse parallel, or gearhead hardware from the drive end of actuator. Loosen band clamp fasteners(23) and remove band both band clamps(22). Remove the carrier end cap fasteners(37) and end caps(36) from the carrier(30). Slide out the carrier cover(35) and remove the dust band(1).

#### 2. Remove the Non-Drive end Head and Bearing.

Remove the non-drive end cap(18). Remove the non-drive end leadscrew nut(40), while holding the leadscrew from turning at the drive end. Do not allow the actuator carrier to bottom out on end of stroke. Remove head fasteners(5) from the non-drive end of actuator, remove that head(6). It is a slip fit between the bearing and leadscrew journal, but it may be necessary to 'pull' the head off w/ a puller tool as there may be some residual loctite holding the bearing on the leadscrew. Remove the bearing(17) from head by removing the snap ring(4).

#### 3. Remove Leads Screw Assembly.

Remove carrier fasteners(32). Remove drive-end head fasteners(5), and remove leadscrew/head sub-assembly from actuator. Ballnut Style: \*Caution is required if removal of the nut or leadscrew is required. Contact the factory for available parts and procedures. Plastic/Bronze Nut Style: The leadscrew may be threaded out of the nut assembly at this point. The nut and nut coupler are pinned and secured w/ Loctite at the factory. If nut is worn, and new nut assembly must be ordered.

#### 4. Remove Lead Screw and Bearing from Head.

Secure the body of the leadscrew in a machinist vice or equivalent smooth jaw vice, then remove the locknut(2). Support the taper bushing (39) if possible and press the leadscrew out of bearing and bushing. The bearing is a press fit on screw journal, and the bushing locked on by means of a mating tapered interface. The snap ring(4) and the bearing(17) can now be removed from the head.

### Main Unit Assembly Instructions:

#### 1. Sub Assemble Head and Bearing to Lead Screw Assembly.

Install the bearing(17) into the head(6) and install snap ring(4). Position over the leadscrew and nearest the drive end, the longer spacer(7) and the bumper(8). Position taper bushing(39), then bearing/head over leadscrew. It is necessary to press the bearing onto the leadscrew, ensure that the load is only applied to the inner race of the bearing. If not equipped to perform this it will be necessary to purchase this preassembled from the factory. Apply loctite 242 to the exposed threads of the leadscrew and install the spherical washer(3) and locknut(2) onto the threads of the leadscrew. Torque the locknut to 550 in-lbs, while leadscrew is secured in a machinist vice, or other smooth jaw vice

#### 2. Assemble Non-Drive end Head.

Slip bearing into the head, and install the snap ring, flat side of ring toward the bearing.

#### 3. Assemble Lead Screw Assembly into the Tube.

Grease Leadscrew on both sides of Nut Assembly with a thin film of appropriate grease: either CHRISTOLUBE MCG 303, for solid nut actuators; or MOBIL HP MULTIPURPOSE PREMIUM GREASE for Ball Nut actuators. Install Leadscrew/Nut assembly in the tube such that as viewed from the motor end, the wedge side of tube is to the left.

#### 4. Install Idle Head and Tighten Heads to Tube.

Attach and tighten the carrier(30) to the nut bracket(10). \*On Auxiliary Carrier units, attach the nut bracket to the carrier nearest the motor end of the actuator. Attach the drive end Head to the end of Tube with four SHCS fasteners. Leave loose.

Position bumper and short spacer(if applicable) over the leadscrew and into the tube at the non-motor end. Attach the idle end head to the tube with 4 SHCS sliding the bearing over the journal of the leadscrew. Leave loose.

Move Carrier Assembly to motor-end of tube and tighten head bolts to 185-190 in-lbs. Support the actuator on the tube such that the head is free to float while tightening the head fasteners.

Move Carrier Assembly to non-motor end of tube and torque to 185-190 in-lbs. Support the actuator on the tube, such that the head is free to float while tightening the head fasteners.

#### 5. Secure non-motor end of leadscrew.

Apply loctite 242 to the threads on the leadscrew and install the hexnut. Torque nut to 12-14 in-lbs.

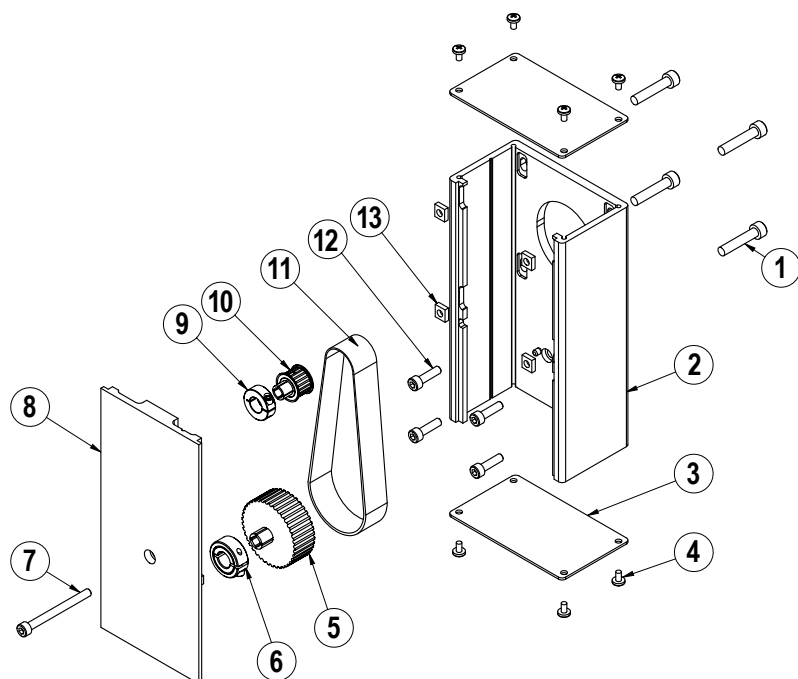
#### 6. Lubricate Ballways and install Dust Band.

Lubricate full length of the ballways(12) with Mobil HP grease. Install Dust Band(1) over Carrier(30) centering it along the length of the actuator. Slide the carrier cover(35) into slots of the carrier, and secure end caps(36) to the carrier. With tin snips cut ends as need such that dust band is 1/16" in from ends of heads. Install the band clamps(22) to the heads, and tighten down the set screws(23) locking the band in place.

For special lubrication option grease, email [help@tolomatic.com](mailto:help@tolomatic.com)

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## 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](mailto: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).
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. 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.
5. 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.
6. Verify that there is clearance between the inside of the RP case and each pulley. Verify the pulleys are aligned to each other.
7. Install both End Caps (3) with the Screws (4) to finalize the assembly.

| SMALLEST SHAFT DIAMETER<br>(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 |

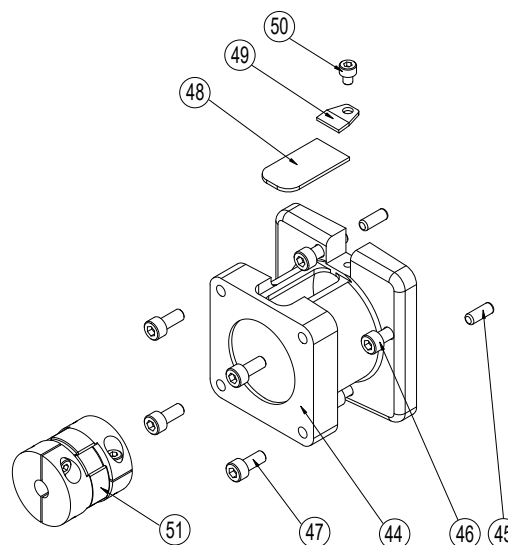
Additional tips are found in Tolomatic [Electric Actuator Motor Mounts Technical Note # 3600-4203](#).

## In-Line (LMI) Mounting Options

| 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](mailto:help@tolomatic.com) for replacement part number.

A replacement Motor Mount Kit contains all parts listed above.



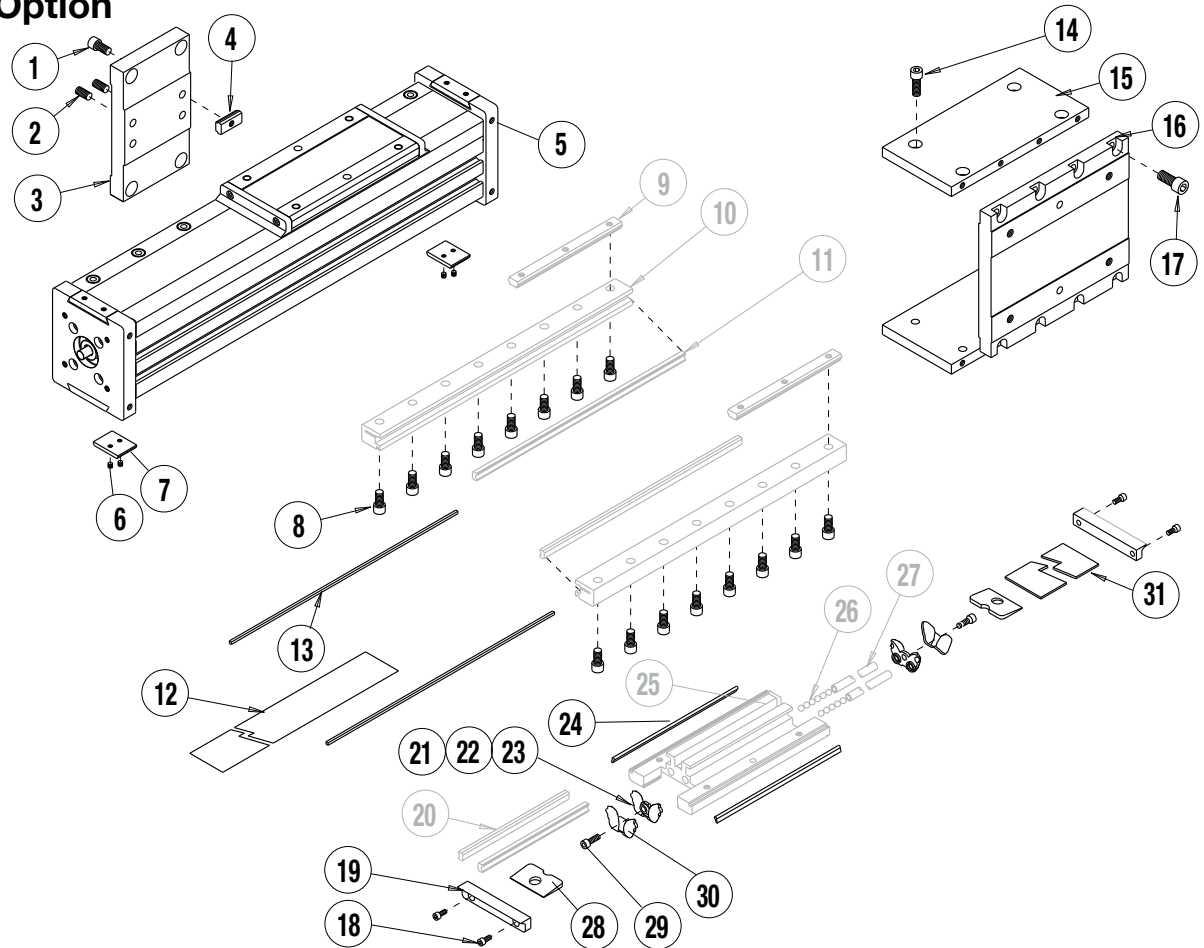
Replacement Motor Mount Kits ordering method: **MMKB3S20** **LMIYM**

**EXAMPLE: MMKB3S20BN025LMIYM00TBD0**

Motor Mount Kit    Model & Size    Lead Screw    Motor Orientation    Motor Code



## Dual 180° Option



| ITEM | US CONV (SK) | METRIC (SM)  | DESCRIPTION                | QTY |
|------|--------------|--------------|----------------------------|-----|
| 1.   | 2317-1015    | 4920-1025    | SOCKET HEAD CAP SCREW      | 4   |
| 2.   | 3415-1219    | 3415-1219    | SET SCREW                  | 2   |
| 3.   | 3420-1053    | 3420-1053    | TUBE SUPPORT               | 1   |
| 4.   | 3420-1013    | 4420-1013    | T-NUT                      | 4   |
| 5.   | 3420-1267    | 4420-1218    | HEAD, DUAL 180°            | 2   |
| 6.   | CONFIGURED   | CONFIGURED   | SET SCREW                  | 4   |
| 7.   | 3420-1219    | 4420-1219    | CLAMP, UPPER               | 2   |
| 8.   | 3420-1077    | 4415-1018    | SOCKET HEAD CAP SCREW      | AR  |
| 9.   | 3420-1008    | 4420-1008    | RAIL NUT                   | AR  |
| 10.  | 3420-1020    | 3420-1020    | MACHINED RAIL              | AR  |
| 11.  | 3420-1023    | 3420-1023    | RAIL WAY                   | AR  |
| 12.  | NDBB3S20_SK_ | NDBB3S20_SM_ | DUST BAND                  | 1   |
| 13.  | 3420-1022    | 3420-1022    | BAND MAGNET                | AR  |
| 14.  | 0920-1093    | 4415-1019    | SOCKET HEAD CAP SCREW      | 8   |
| 15.  | 3420-1049    | 4420-1049    | PLATE, CONN., DUAL CARRIER | 2   |
| 16.  | 3420-1054    | 4420-1054    | PLATE, DUAL CARRIER        | 1   |
| 17.  | 0920-1093    | 4415-1019    | SOCKET HEAD CAP SCREW      | 8   |
| 18.  | 0605-1046    | 4415-1001    | SOCKET HEAD CAP SCREW      | 4   |

| ITEM | US CONV (SK) | METRIC (SM) | DESCRIPTION           | QTY |
|------|--------------|-------------|-----------------------|-----|
| 19.  | 3420-2024    | 3420-2024   | END CAP               | 2   |
| 20.  | 3420-1024    | 3420-1024   | CARRIER WAY           | 2   |
| 21.  | 3420-1014    | 3420-1014   | BALL RETURN           | 2   |
| 22.  | 3420-1015    | 3420-1015   | RIGHT BALL RACE       | 2   |
| 23.  | 3420-1032    | 3420-1032   | LEFT BALL RACE        | 2   |
| 24.  | 3420-1025    | 3420-1025   | WIPER                 | 2   |
| 25.  | 3420-2021    | 4420-1235   | MACHINED CARRIER      | 1   |
| 26.  | 3420-1009    | 3420-1009   | BALL                  | 92  |
| 27.  | 3420-1019    | 3420-1019   | BALL RETURN TUBE      | 2   |
| 28.  | 3415-1047    | 3415-1047   | UPPER BAND RAMP       | 2   |
| 29.  | 1085-1075    | 0610-1033   | SOCKET HEAD CAP SCREW | 2   |
| 30.  | 3420-1069    | 3420-1069   | PLT BALL RETURN       | 2   |
| 31.  | 3420-2022    | 3420-2022   | CARRIER COVER         | 1   |

♦ Part number varies depending on YMH (Your Motor Here).  
Contact [help@tolomatic.com](mailto:help@tolomatic.com) for replacement part number.

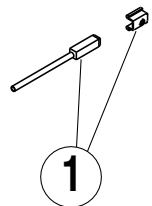
**Auxiliary Carrier Option Note:** If replacing a Dust Band (12.) on an actuator that has an Auxiliary Carrier, add "DC \_ \_ \_" between Stroke Length and Motor Code.

"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).

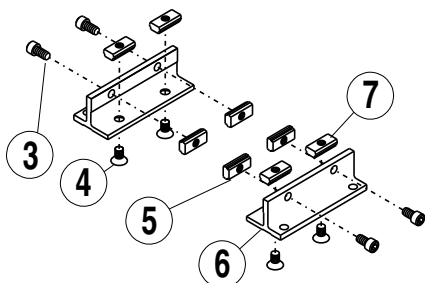
**Dual 180 Carrier Option Note:** If equipped with the optional dual 180 carrier, add the letter "D" between the Model & Size and Stroke Length.

Replacement Dust Band ordering method: **NDB B3S20 D SK [ ] [ ] [ ] [ ] DC [ ]**  
**EXAMPLE: NDB B3S20 D SK 21-25 DC 7**  
 Dust Band      Model & Size      Stroke Length      Aux. Carrier

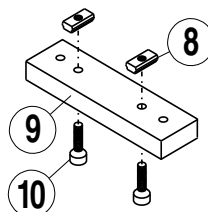
## SWITCH KIT



## TUBE SUPPORT KIT



## MOUNTING PLATE KIT



## Optional Accessories Parts Listing

| ITEM  | SWITCH KIT  |  |  |      |             |    |                              |    |   |    |                              |    |  |    |                       |    |                                     |    |                                      |    |  |    |                                       |    |   |
|---|---|--|--|------|-------------|----|------------------------------|----|---|----|------------------------------|----|--|----|-----------------------|----|-------------------------------------|----|--------------------------------------|----|--|----|---------------------------------------|----|---|
| 1.  | <table><tr><th colspan="2">CONFIG. CODE ORDERING</th></tr><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> | 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 |
|   | 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   |  |  |      |             |    |                              |    |   |    |                              |    |  |    |                       |    |                                     |    |                                      |    |  |    |                                       |    |   |
| <b>NOTE:</b> Switch bracket, set screw, & mating QD cable is included |   |  |  |      |             |    |                              |    |   |    |                              |    |  |    |                       |    |                                     |    |                                      |    |  |    |                                       |    |   |

| ITEM               | US CONV (SK) | METRIC (SM) | DESCRIPTION                         | QTY. |
|--------------------|--------------|-------------|-------------------------------------|------|
| TUBE SUPPORT KIT   |              |             |                                     |      |
|                    | 3420-9006    | 4420-9006   | KIT INCLUDES ALL PARTS LISTED BELOW |      |
| 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   | B3S20 NUT                           | 4    |
| 6                  | 3420-1044    | 3420-1044   | TUBE SUPPORT                        | 2    |
| 7                  | 3420-1013    | 4420-1013   | B3S20 NUT                           | 4    |
| MOUNTING PLATE KIT |              |             |                                     |      |
|                    | 3420-9056    | 4420-9030   | KIT INCLUDES ALL PARTS LISTED BELOW |      |
| 8                  | 3420-1013    | 4420-1013   | T-NUT                               | 2    |
| 9                  | 3420-1232    | 3420-1232   | MOUNTING PLATE 1/2"                 | 1    |
| 10                 | 2307-1018    | 4415-1011   | SOCKET HEAD CAP SCREW               | 2    |

## 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)

SW

B3S20

RT

REPLACEMENT  
SWITCH

MODEL

SWITCH CODE

(Hardware and Form A Reed switch with 5 meter lead for 1" size B3S 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, 7) 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

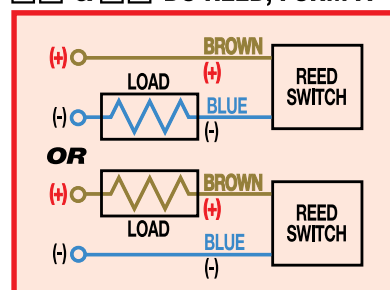
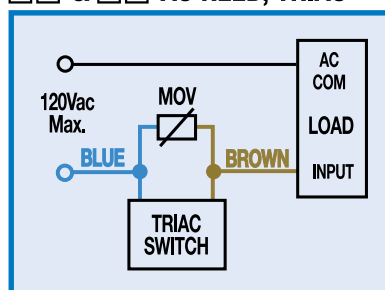
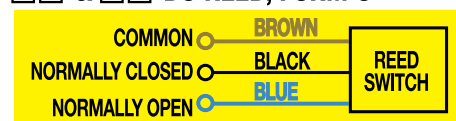
NOTE: Form A Reed Switches should not be used in TTL logic circuits. A voltage drop caused by the L.E.D. indicator will result. For applications where TTL circuits are used, please contact the factory.

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

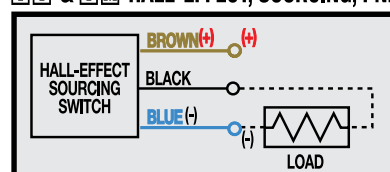
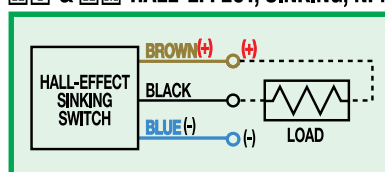
Reed and TRIAC switches are only recommended for signalling position, not directly powering solenoids. For shifting a solenoid, a relay or resistor is recommended between it and the Reed Switch. Switch ratings must not be exceeded at any time.

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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