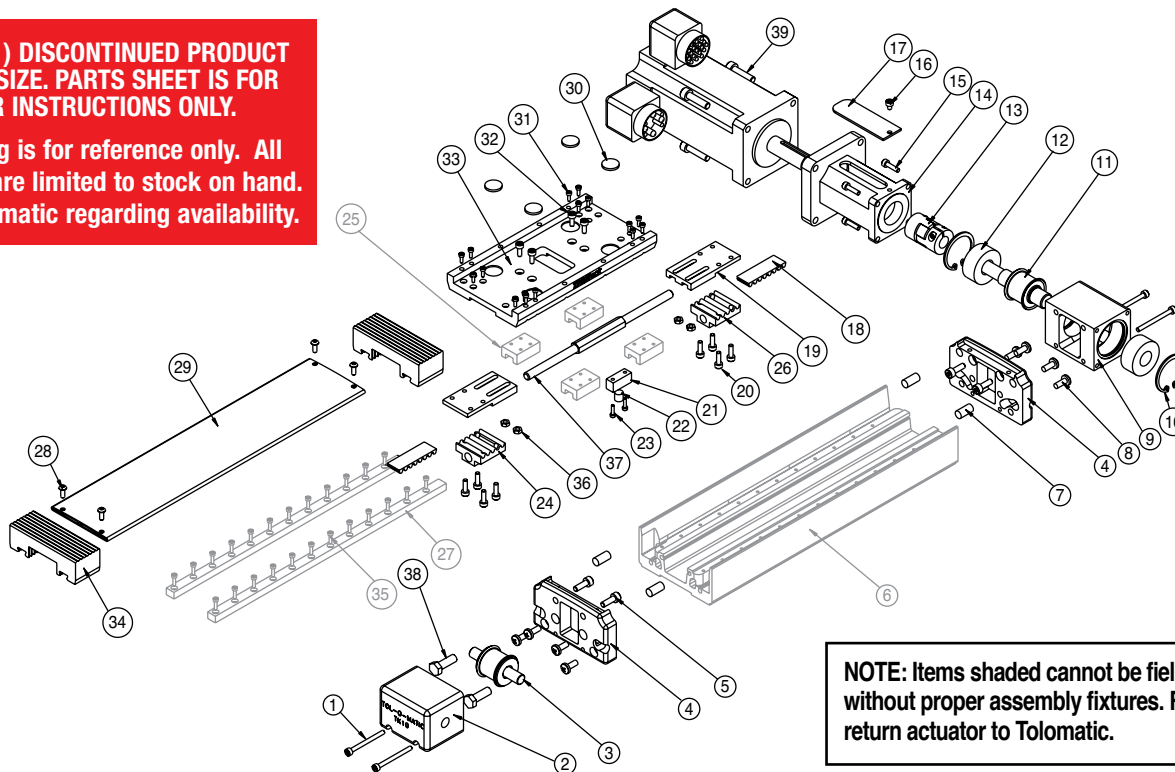


TruTrack Belt-Drive Actuator TKB10

(09/01/2021) DISCONTINUED PRODUCT STYLE OR SIZE. PARTS SHEET IS FOR REPAIR INSTRUCTIONS ONLY.

Parts listing is for reference only. All parts listed are limited to stock on hand. Contact Tolomatic regarding availability.



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

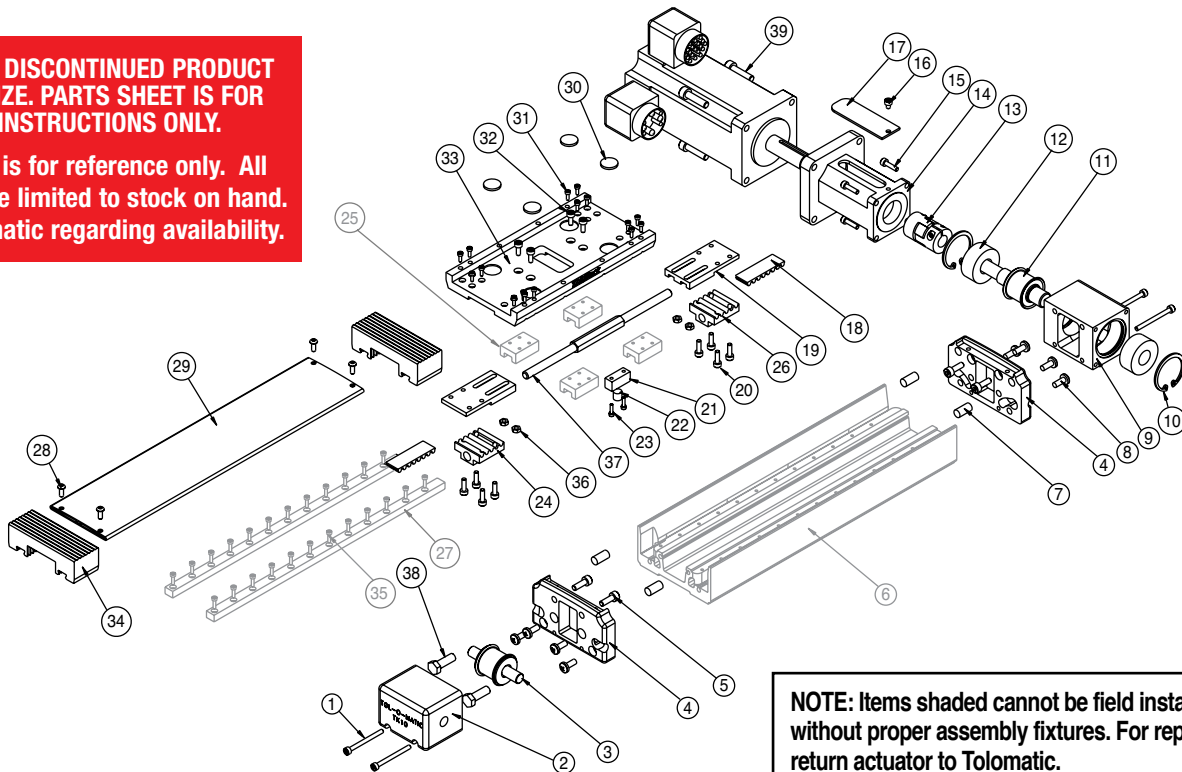
List of Parts

| ITEM | Part No. or CONFIG. code | DESCRIPTION | | | | |
|------|--------------------------|---------------------------------|-------------------|-------------|------------|------------------|
| | | | MRV21, 22, 23, 24 | MRS231, 232 | GEARHEAD23 | REVERSE PARALLEL |
| 1 | 0601-2040 | SHCS, M3 x 35mm, SST | 4 | 4 | 4 | 4 |
| 2 | 0601-2021 | ADAPTER, IDLE HEAD | 1 | 1 | 1 | 1 |
| 3 | 0601-9300 | ASSY, IDLE PULLEY, SHAFT, BRNG. | 1 | 1 | 1 | 1 |
| 4 | 0601-2007 | HEAD, DRIVE IDLE | 2 | 2 | 2 | 2 |
| 5 | 2212-1093 | SHCS, M4 x 12mm | 4 | 4 | 4 | 4 |
| 6 | 0601-2001 | BASE MACHINED | 1 | 1 | 1 | 1 |
| 7 | 0601-1049 | BUMPER | 4 | 4 | 4 | 4 |
| 8 | 0601-1096 | SHCS, M4 x 20mm | 8 | 8 | 8 | 8 |
| 9 | 0601-2020 | ADAPTER, DRIVE HEAD | 1 | 1 | 1 | 1 |
| 10 | 0601-1082 | RET. RING, 5002-112 | 2 | 2 | 2 | 2 |
| 11 | 0601-9820 | STUB SHAFT | 1 | | | |
| | 0601-9821 | STUB SHAFT, MRS23 | | 1 | | |
| | 0601-9822 | STUB SHAFT, GH23 | | | 1 | |
| | 0601-9823 | STUB SHAFT, RP | | | | 1 |
| 12 | 0601-2031 | BEARING, O.D 1.10 | 2 | 2 | 2 | 2 |
| 13 | 3600-9253 | COUPLER ASSY. | 1 | | 1 | |
| | 3600-9206 | COUPLER ASSY. MRS23 | | 1 | | |
| 14 | 0601-2061 | SPACER, MRV, MRS23 | 1 | 1 | 1 | |
| 15 | 2212-1112 | SHCS, M3 x 12mm | 4 | 4 | 4 | |
| 16 | 0601-2041 | SHCS, M3 x 4mm | 1 | 1 | 1 | |
| 17 | 0601-1085 | SPACER COVER | 1 | 1 | 1 | |
| 18 | 0601-2049 | BELT, TIMING, MACHINED | 1 | 1 | 1 | 1 |
| 19 | 0601-2085 | BELT CLAMP, UPPER | 2 | 2 | 2 | 2 |

| ITEM | Part No. or CONFIG. code | DESCRIPTION | | | | |
|------|--------------------------|--------------------------|-------------------|-------------|------------|------------------|
| | | | MRV21, 22, 23, 24 | MRS231, 232 | GEARHEAD23 | REVERSE PARALLEL |
| 20 | 0602-3012 | SHCS, M3 x 5mm | 8 | 8 | 8 | 8 |
| 21 | 0601-1020 | MAGNET BLOCK | 2 | 2 | 2 | 2 |
| 22 | 2224-1016 | MAGNET, ROD | 2 | 2 | 2 | 2 |
| 23 | 0601-1032 | SHCS, M4 x 8mm | 4 | 4 | 4 | 4 |
| 24 | 0601-2086 | BELT CLAMP, LOWER, RIGHT | 1 | 1 | 1 | 1 |
| 25 | 0601-1006 | BLOCK, THK LINEAR | 4 | 4 | 4 | 4 |
| 26 | 0601-2087 | BELT CLAMP, LOWER, LEFT | 1 | 1 | 1 | 1 |
| 27 | 0601-1022 | RAIL, MACHINED | 2 | 2 | 2 | 2 |
| 28 | 0601-1095 | SCREW, BUTTON, M3 x 8mm | 4 | 4 | 4 | 4 |
| 29 | 0601-1003 | COVER, MACHINED | 1 | 1 | 1 | 1 |
| 30 | 0601-2090 | PAD | 4 | 4 | 4 | 4 |
| 31 | 0601-1031 | SHCS, M2 x 6mm | 16 | 16 | 16 | 16 |
| 32 | 2212-1090 | SHCS, M3 x 8mm | 4 | 4 | 4 | 4 |
| 33 | 0601-2084 | CARRIER | 1 | 1 | 1 | 1 |
| 34 | 0601-9830 | BELLOWS KIT | AR | AR | AR | AR |
| 35 | 0601-1032 | SHCS, M4 x 8mm | AR | AR | AR | AR |
| 36 | 0601-2089 | NUT, HEX, M3 | 4 | 4 | 4 | 4 |
| 37 | 0601-2088 | TENSIONING SCREW | 1 | 1 | 1 | 1 |
| 38 | 2312-1028 | SCREW, SET, 10-24 x .25 | 2 | 2 | 2 | 2 |
| 39 | 2212-1098 | SHCS | 4 | | | |
| | 2212-1097 | SHCS, M5 x 16, SST | | | 4 | |
| | 2212-1096 | SHCS, M5 x 12, SST | | 4 | | |

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

Drawing repeated for reference

General Cylinder Disassembly Instructions

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

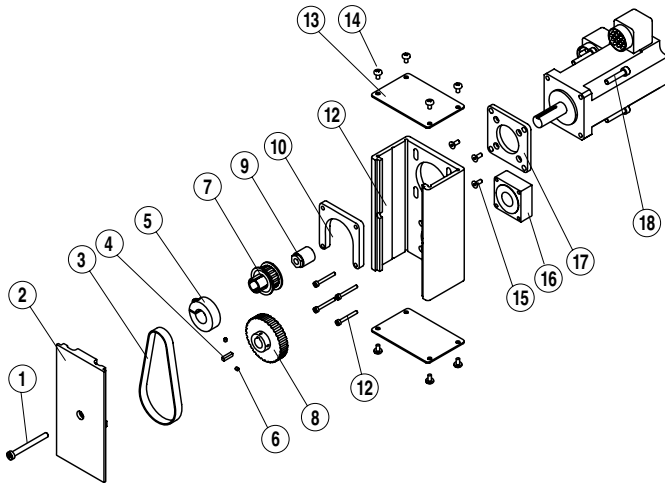
- * Metric Allen Wrench Set
- * SAE Allen Wrench Set
- * Torx Bit Set
- * Metric Socket Set
- * Metric Combination Wrench Set

1. Remove Carrier and Head Adapters. Remove Cover Screws (28) and remove the Cover (29). Remove all Cap Screws (31) that attach Carrier (33) to THK Blocks (25). Remove Cap Screws (32) that attach Carrier to Belt Clamps (19). Remove the Tensioning Screw (37). Lift Carrier from THK Blocks. Remove Cap Screws (1,5) to remove Head Adapters (2,9).
2. Remove Belt and Heads. Remove Cap Screws (20) to release the Belt Clamps (24,26). The Belt (18) can now be removed from the assembly. Remove Cap Screws (8) to allow the Heads (4) to be removed. **CAUTION: Do not allow the THK blocks to come off the rails. Contact the factory for replacement.**
3. Head Adapter Disassembly. The drive shaft assembly is a slip fit into the Drive Head Adapter. Removal of the Snap Rings (10) will allow the Bearings (12) and Shaft (11) to slide out. The bearings are a press fit onto the shaft, contact factory about bearing replacement. There are two set screws that hold the Idle Shaft (3) in the Idle Head Adapter (2). Remove these screws and the shaft can be removed. The Idle Pulley Assy (3) has Bearings pressed into the Pulley. Contact factory about replacement assembly.

General Cylinder Assembly Instructions

1. Head Adapter Assembly. On the Drive Head Adapter, install the Snap Ring (10) on the side of the Head that will have the stub shaft exposed. Slide the bearing/shaft assembly into the head adapter. Install the second snap ring. Insert the idle pulley shaft part way into the Idle Head Adapter. Locate a spacer over the shaft and then position the pulley/bearing assembly over the shaft. Slide the shaft through the bearing and locate another spacer between the pulley and inside of the adapter housing. With the shaft ends flush with the outside of the Head Adapter, tighten the set screws into the housing to lock the shaft in position. Notice the pilots in the shaft for the set screws.
2. Install Heads, Carrier and Belt. Position the Carrier on the THK blocks and attach with Cap Screws. Torque to 4 in-lbs. Attach the Heads to the Base (6). Torque Pan Head Screws to 20 in-lbs. Feed belt through each of the Heads and through the pulleys in each Head Adapter. Attach each Head Adapter to the Head. Attach the Belt Clamps to the Belt with the cap screws and start the tension bolts into the Belt Clamps.
3. Tension Belt. To measure the belt tension, position the edge of the carrier that is nearest the Head 6" from the inside edge of the Head (from either end of actuator). Locate a force gage on the belt 2" from the inside edge of the Head. Deflect the belt 3/8" in either direction. The force gage should read between 8 and 12 lbs.
4. When proper belt tension is attained, tighten the belt clamps to the carrier with Cap Screws (20).
5. Install Cover, if applicable. Attach the Cover to the unit with Cover Screws (28).

Reduction Drive



Reverse Parallel Disassembly Instructions:

1. Remove End Cap's (13). Release tension on belt by breaking loose the motor/motor plate fasteners (18/15).
2. Remove RP Cover (2).
3. Remove both drive pulley (7) and driven pulley (8) from their respective shafts. The belt (3) will come off with the pulley's.
4. Remove motor plate fasteners (15) to remove motor assembly from RP case. Remove motor fasteners (18) from the motor plate (17), if need be.
5. Remove the RP case (12) from the head by removing fastener's (11).

Reverse Parallel Assembly Instructions:

*Apply Loctite #242 to all fasteners upon installation

1. Install RP case (12) to the head with cap screws (11).
2. Install the motor to the motor plate with fasteners (18). Attach motor assembly to the RP case with fasteners (15). Do not tighten the fasteners at this time.
3. Locate the belt (3) 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.
4. Verify that there is clearance between the inside of the RP case and each pulley. Verify that the pulleys are aligned to each other.
5. Position the cover (2) in mating slot of the RP case and install the SHCS (1) to hold in place.
6. Tension the belt by pulling the motor away from the drive shaft with the appropriate force from literature # 3600-4212. Tighten the motor fasteners while this force is applied to the motor.

List of Parts

| ITEM | Part No. or CONFIG. code | DESCRIPTION | REDUCTION RATIO | | | | | |
|------|--------------------------|------------------------------------|-----------------|----------------|-------------|-------|----------------|-------------|
| | | | 1:1 | | | 2:1 | | |
| | | | MRV11 | MRV21_22_23_24 | MRS 231_232 | MRV11 | MRV21_22_23_24 | MRS 231_232 |
| 1 | 3420-1640 | SHCS, M5 X 0.8, 50 MM LONG, SST | 1 | 1 | 1 | 1 | 1 | 1 |
| 2 | 0601-1613 | COVER, TK10 | 1 | 1 | 1 | 1 | 1 | 1 |
| 3 | 0601-1061 | TIMING BELT | 1 | 1 | 1 | | | |
| | 0601-1060 | TIMING BELT, 265-5M-9 | | | | 1 | 1 | 1 |
| 4 | 1817-1044 | KEY, .125 X .125 X .05 LONG | 1 | 1 | 1 | 1 | 1 | 1 |
| 5 | 2317-1005 | CLAMP COLLAR, Ø.625 | | | 1 | 1 | | |
| 6 | 4415-1015 | SET SCREW, M3 X 0.5 X 3 MM LONG | 2 | 2 | 2 | 2 | 2 | 2 |
| 7 | 0601-1054 | PULLEY | 1 | | | 1 | | |
| | 0601-1057 | PULLEY, 16 TEETH, 9 MM WIDTH | | 1 | | | 1 | |
| | 0601-1062 | PULLEY, 16 TEETH, 9 MM WIDTH | | | 1 | | | 1 |
| 8 | 0601-1056 | PULLEY | 1 | 1 | 1 | | | |
| | 0601-2056 | PULLEY, 32 TEETH, 9 MM WIDTH | | | | 1 | 1 | 1 |
| 9 | 4515-1060 | TRANTORQ | 1 | | | 1 | | |
| | 0510-1111 | TRANTORQ, Ø.250 | | | 1 | | | 1 |
| 10 | 0601-1053 | PLATE, MOTOR | 1 | 1 | 1 | 1 | 1 | 1 |
| 11 | 2212-1091 | SHCS, M3 X 0.5 X 25 MM LONG | 4 | 4 | 4 | 4 | 4 | 4 |
| 12 | 0601-1603 | HOUSING, TK10 | 1 | 1 | 1 | 1 | 1 | 1 |
| 13 | 0601-1602 | END CAP | 2 | 2 | 2 | 2 | 2 | 2 |
| 14 | 0601-1625 | SCREW, #6 X .25, SELF-TAPPING, SST | 8 | 8 | 8 | 8 | 8 | 8 |
| 15 | 0510-1062 | SFHCS, 6-32 X .38 LONG | 4 | 4 | | | | |
| 16 | 0601-2054 | SPACER, TKB10 | 1 | 1 | 1 | 1 | 1 | 1 |
| 17 | 0601-1612 | PLATE, ADAPTER, 17 FRAME | 1 | 1 | | | | |
| 18 | 2212-1098 | SHCS | 1 | 1 | | | | |
| | 2212-1099 | SHCS, M5 X 0.8 X 25 MM LONG, SST | | | 1 | 1 | 1 | 1 |

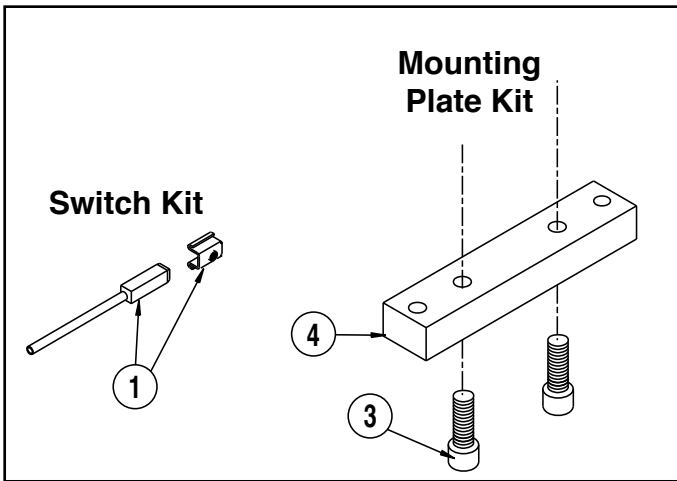
| Motor Frame | Tension Force |
|--------------|---------------|
| MRB23, MRS23 | 10 lbs |
| MRV23, MRS34 | 20 lbs |
| MRV34, MRB34 | 30 lbs |

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

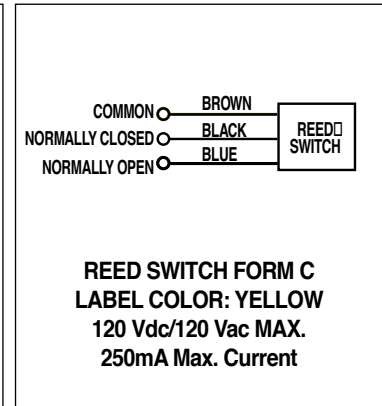
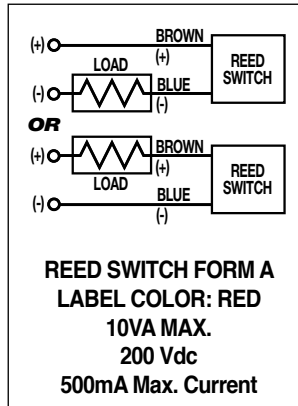
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Universal Switch Wiring Diagrams and Label Color Coding



List of Parts

| Item | Part No. or CONFIG. code | Description | QTY. |
|---|--------------------------|--------------------------------|------|
| SWITCH KIT | | | |
| 1 | SWTKB10RT | Switch, Reed, Form A, 5M Wire | AR |
| | SWTKB10BT | Switch, Reed, Form C, 5M Wire | AR |
| | SWTKB10TT | Switch, Source, Hall, 5M Wire | AR |
| | SWTKB10KT | Switch, Sinking, Hall, 5M Wire | AR |
| NOTE: Switch bracket with set screw is included | | | |
| MOUNTING PLATES | | | |
| 3 | 0602-1027 | SHCS M4 x 16 | 2 |
| 4 | 0601-1105 | MOUNTING PLATE | 1 |

*AR = as required

OPTIONAL ACCESSORY ASSEMBLY INSTRUCTIONS

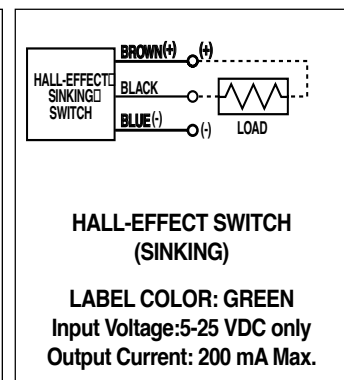
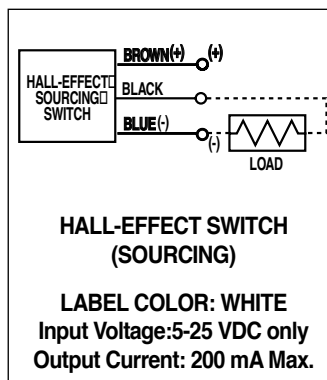
1. **MOUNTING PLATES.** Mounting Plates should be secured at the required distances determined for the application to prevent tube deflection. Apply Locktite #242 to Screws and secure Mounting Plates to tube, aligning holes in tube with holes in Mounting Plates.

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

TO ORDER RETROFIT KITS:

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

EXAMPLE: SWTK10BT Where SW is the switch kit, TK is the model, 10 is the 1/2" size, and BT is a Form C Reed Switch with 5-meter lead.

| SWITCH TYPE CODE | |
|-------------------------|--|
| BT | (Form C Reed Switch with 5-meter lead) |
| RT | (Form A Reed Switch with 5-meter lead) |
| KT | (Hall-effect Switch (Sinking) 5-meter lead) |
| TT | (Hall-effect Switch (Sourcing) 5-meter lead) |

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COMPANY WITH QUALITY SYSTEM CERTIFIED BY DNV GL = ISO 9001 =

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