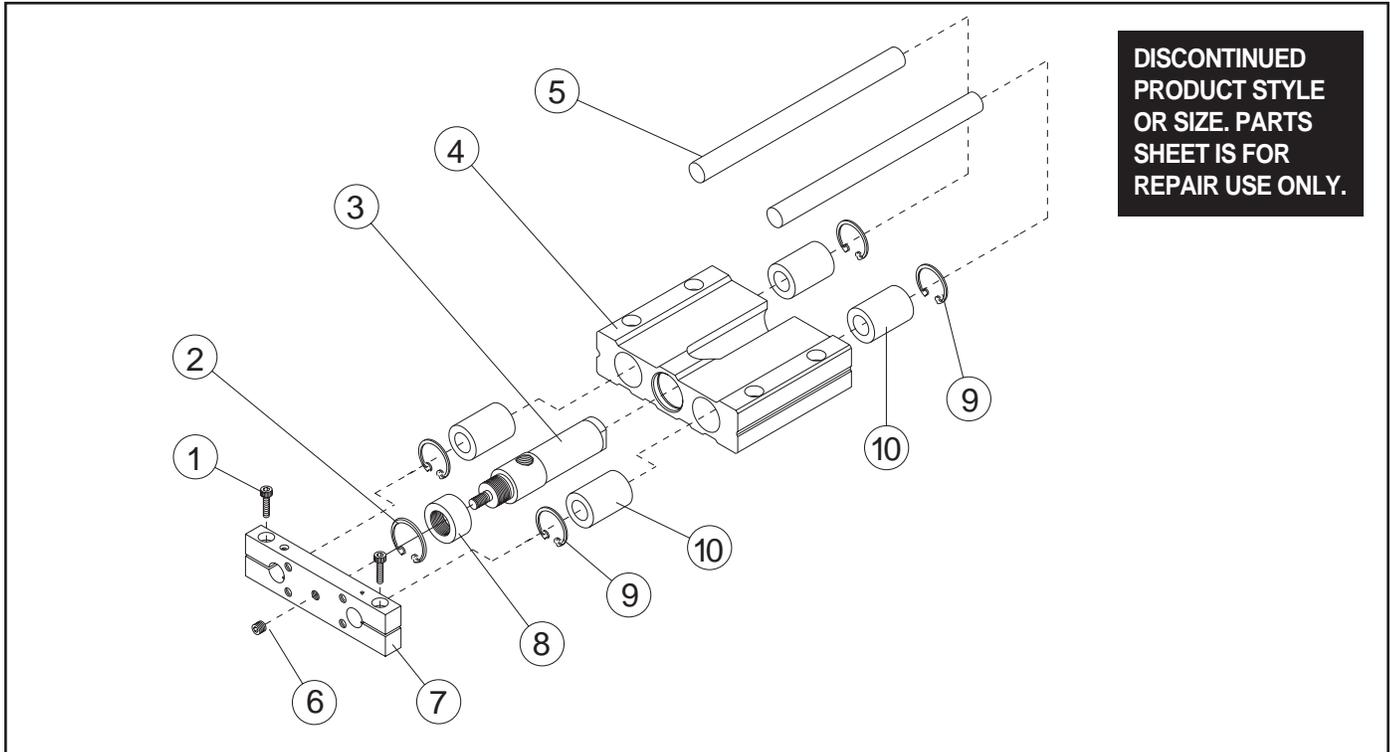




U-Block™ Rod Cylinder Slide

UB09 UB12 UB17 UB24

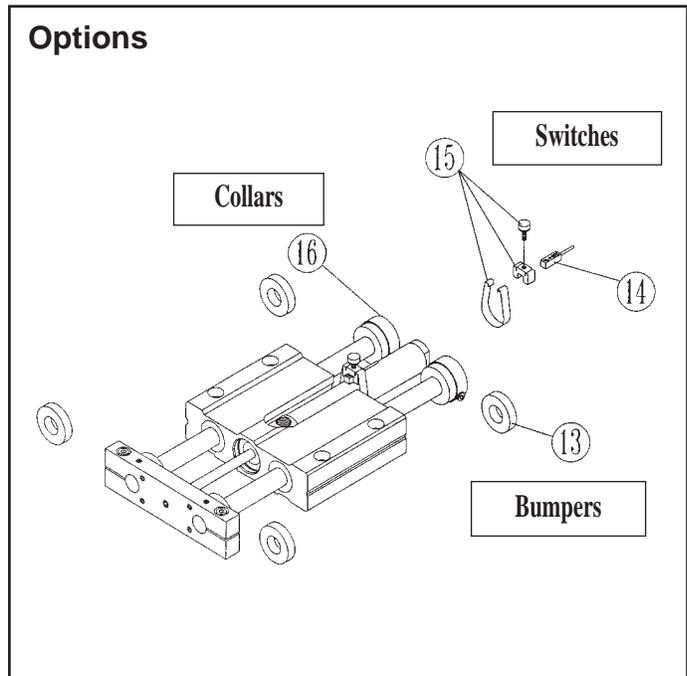
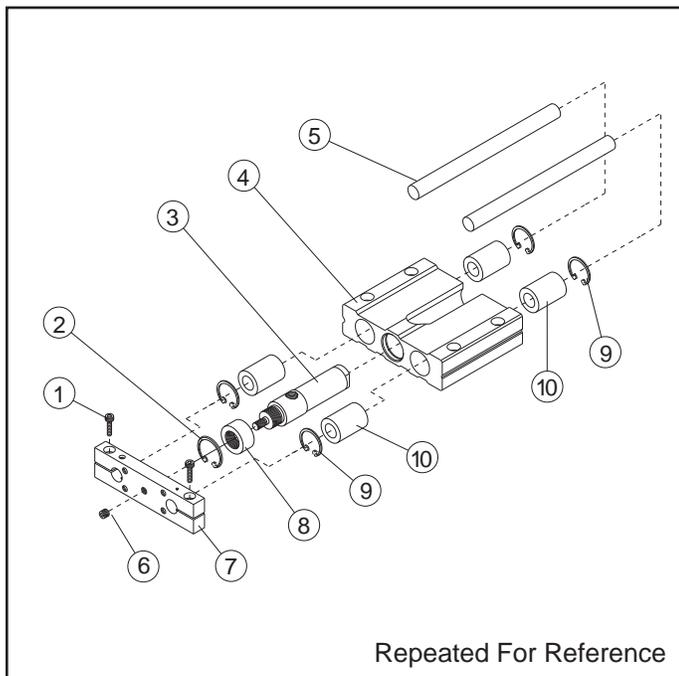
9/16" 3/4" 1 1/16" 1 1/2" Bore Includes SS option stainless steel hardware



Item	Model	Part No.	Description	Quantity
1	UB09	0707-1010	Cap Screw	2
	UB12	1024-7711	Cap Screw	2
	UB17	1009-1065	Cap Screw	2
	UB24	1310-3110	Cap Screw	2
2	UBSS09	2309-1057	Cap Screw	2
	UBSS12	2312-1057	Cap Screw	2
	UBSS17	1014-1209	Cap Screw	2
	UBSS24	2324-1057	Cap Screw	2
3	UB09	1004-1278	Retaining Ring	1
	UB12	2312-1074	Retaining Ring	1
	UB17	2317-1074	Retaining Ring	1
	UB24	2324-1074	Retaining Ring	1
4	UBSS09	1004-1413	Retaining Ring	1
	UBSS12	2312-1083	Retaining Ring	1
	UBSS17	2317-1083	Retaining Ring	1
	UBSS24	2324-1083	Retaining Ring	1
5	UB(SS)09	2309-14□□*	Cylinder, With Magnet	1
	UB(SS)12	2312-14□□*	Cylinder, With Magnet	1
	UB(SS)17	2317-14□□*	Cylinder, With Magnet	1
	UB(SS)24	2324-14□□*	Cylinder, With Magnet	1
6	UB(SS)09	2309-11□□*	Cylinder, Without Magnet	1
	UB(SS)12	2312-11□□*	Cylinder, Without Magnet	1
	UB(SS)17	2317-11□□*	Cylinder, Without Magnet	1
	UB(SS)24	2324-11□□*	Cylinder, Without Magnet	1

Item	Model	Part No.	Description	Quantity
7	UB09	2307-1071	Housing	1
	UB12	2312-1071	Housing	1
	UB17	2317-1071	Housing	1
	UB24	2324-1071	Housing	1
8	UBSS09	2309-1076	Shaft, Stainless Steel	2
	UBSS12	2312-1076	Shaft, Stainless Steel	2
	UBSS17	2317-1076	Shaft, Stainless Steel	2
	UBSS24	2324-1076	Shaft, Stainless Steel	2
9	UB09	2309-1030	Set Screw	1
	UB12	2309-1031	Set Screw	1
	UB17	2309-1032	Set Screw	1
	UB24	2309-1033	Set Screw	1
10	UBSS09	2309-1040	Set Screw	1
	UBSS12	2309-1055	Set Screw	1
	UBSS17	2309-1042	Set Screw	1
	UBSS24	2309-1043	Set Screw	1

*Last two digits of part number are stroke length (i.e. 9/16 bore cylinder with magnet and 7 inch stroke is part number 2309-1407).



Item	Model	Part No.	Description	Quantity
7	UB(SS)09	2309-1073	Tooling Plate	1
	UB(SS)12	2312-1073	Tooling Plate	1
	UB(SS)17	2317-1073	Tooling Plate	1
	UB(SS)24	2324-1073	Tooling Plate	1
8	UB(SS)09	2309-1072	Adapter	1
	UB(SS)12	2312-1072	Adapter	1
	UB(SS)17	2317-1072	Adapter	1
	UB(SS)24	2324-1072	Adapter	1
9	UB09	2309-1034	Retaining Ring	4
	UB12	1004-1278	Retaining Ring	4
	UB17	2309-1035	Retaining Ring	4
	UB24	3010-1004	Retaining Ring	4
	UBSS09	2309-1044	Retaining Ring	4
	UBSS12	1004-1413	Retaining Ring	4
	UBSS17	2309-1045	Retaining Ring	4
	UBSS24	2309-1046	Retaining Ring	4
10	UB09	1001-1192	Bearing, Linear	4
	UB12	2312-1011	Bearing, Linear	4
	UB17	1004-1332	Bearing, Linear	4
	UB24	2324-1011	Bearing, Linear	4
	UB(SS)09	2307-1041	Bronze Bushing	4
	UB(SS)12	2312-1039	Bronze Bushing	4
	UB(SS)17	2317-1040	Bronze Bushing	4
	UB(SS)24	2324-1039	Bronze Bushing	4
	UB(SS)09	2209-1009	Bearing, Composite	4
	UB(SS)12	2212-1009	Bearing, Composite	4
	UB(SS)17	2216-1009	Bearing, Composite	4
	UB(SS)24	2224-1009	Bearing, Composite	4

Item	Model	Part No.	Description	Quantity
†13	UB(SS)09	2307-1006	Bumpers	4
†	UB(SS)12	2312-1006	Bumpers	4
†	UB(SS)17	2317-1006	Bumpers	4
†	UB(SS)24	2324-1006	Bumpers	4
14	All	3600-9082	Switch, Reed, Form A, 5M Wire	
	All	3600-9083	Switch, Reed, Form A, Male Conn.	
	All	3600-9084	Switch, Reed, Form C, 5M Wire	
	All	3600-9085	Switch, Reed, Form C, Male Conn.	
	All	3600-9086	Switch, TRIAC, 5M Wire	
	All	3600-9087	Switch, TRIAC, Male Connect	
	All	3600-9088	Switch, Source, Hall, 5M Wire	
	All	3600-9089	Switch, Source, Hall, Male Conn.	
	All	3600-9090	Switch, Sinking, Hall, 5M Wire	
	All	3600-9091	Switch, Sinking, Hall, Male	
15	UB(SS)09	2309-9999	Switch Hardware Kit	1
	UB(SS)12	2312-9999	Switch Hardware Kit	1
	UB(SS)17	2317-9999	Switch Hardware Kit	1
	UB(SS)24	2324-9999	Switch Hardware Kit	1
16	UB09	2307-1005	Stop Collar, Carbon Steel	2
	UB12	2312-1005	Stop Collar, Carbon Steel	2
	UB17	2317-1005	Stop Collar, Carbon Steel	2
	UB24	2324-1005	Stop Collar, Carbon Steel	2
	UBSS09	2309-1056	Stop Collar, Stainless Steel	2
	UBSS12	2312-1056	Stop Collar, Stainless Steel	2
	UBSS17	2317-1056	Stop Collar, Stainless Steel	2
	UBSS24	2324-1056	Stop Collar, Stainless Steel	2

†4 pieces included in Bumper Kit

UB(SS)09 2309-9004
 UB(SS)12 2312-9004
 UB(SS)17 2317-9004
 UB(SS)24 2324-9004

U-BLOCK MAINTENANCE

1. Wipe the rod shafts with a cloth wetted with LPS2, an oily coating must cover the entire surface area of the rods.
2. Always use air that is adequately lubricated. Tol-O-Matic recommends that a 5 to 10 weight non-detergent, petroleum oil be used. For FDA requirements, we recommend that Multitherm® PG-1 or equivalent be used. For dry air applications, please consult Tol-O-Matic, Inc., toll free at 1-800-328-2174.

U-BLOCK DISASSEMBLY

1. To remove the Tooling Plate (#07) and Shafts (#05), first remove the set screw (#06) which locks the Cylinder Rod (#03) to the Tooling Plate (#07). Pull on the Tooling Plate. The Plate and Shafts (#05) will slide out of the assembly.
2. Loosen the two clamping Screws (#1) on the Tooling Plate(#07) and remove the Shafts (#05) from the Tooling Plate.
3. To remove the Cylinder (#03), using an internal snap ring spreader, remove the Retaining Ring (#2) from the U-block housing (#04) and remove the Cylinder (#4) from U-Block housing (#04). Unthread the adapter ring (#08) from the snout threads of the Cylinder (#03).
4. To remove the bearings (#10): Use an internal snap ring spreader to remove the four Retaining Rings (#09) from the U-Block housing (#04). The Bearings (#10) may now be pushed out with a screwdriver.

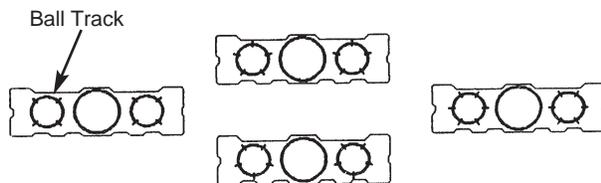
U-BLOCK ASSEMBLY PROCEDURE

Clean work bench and area, check that all parts are there and without any visual damage or defects.

1. Mounting block assembly

By hand install the four Bearings (#10) into the Mounting block (#04) until they bottom out.

NOTE: When installing linear bearings, proper ball track locations is important. Ball tracks in bearing are indicated by an indent in the bearing. Place ball tracks as indicated by the reference drawing below.



Install four retaining rings (#09) to hold the bearings into the bores.

2. Install Rod Cylinder

Remove nut from Cylinder (#03) and set aside. Place Loctite #242 on the snout threads of the Rod Cylinder. Thread Adapter Ring (#08), pilot counterbore on the adapter ring must face the cylinder body, over the snout threads and tighten. Install the cylinder into the housing until the adapter ring rests on the bottom of the counterbore. Secure with a retaining ring (#02).

CAUTION: On the UB12, UB17, and UB24 sizes the bevel on the retaining ring must face out towards the tooling plate side of the housing.

NOTE: Rotate the cylinder so the port on the rod end lines up with the clearance slot in housing. Adapter Ring (#08) will allow cylinder to rotate after it has been tightened.

3. Attach Cylinder Rod to Tooling Plate

Apply Loctite #242 to set screw (#06) then thread set screw into the center hole of the tooling plate until the end is flush with the outside surface. Apply Loctite #242 to the cylinder rod threads then screw the rod into the other side of the tooling plate until it makes contact with the set screw. Tighten set screw (#06). The end of the set screw must be flush or below the tooling plate.

4. Shaft Assembly

Slide the Shafts (#05) through the Bearings (#10) until protruding about an inch out of the opposite end.

5. *Bumper Kit Option*

Install Bumpers (#13) on shafts at this time.

6. Assemble Tooling Plate

Press the Tooling Plate (#05) over the ends of the shafts nearest the cylinder rod. The counterbores for the clamp screws face the same way as the port clearance slot on the mounting block. Stand the assembly on end with the tooling plate down. Press down on all components until the shafts are flush with the front face of the tooling plate. A soft face hammer may be needed to force the bearing rods through the tooling plate. Using Loctite #242 on screws (#01) install and tighten the screws to the torque listed in the chart below.

U-Block	Torque Specification
UB09	60 in. lbs.
UB12	60 in. lbs.
UB17	305 in. lbs.
UB24	545 in. lbs.

7. Collar Assembly

Slide a Collar (optional), flat side in, groove side out, over each shaft. Position the collar to achieve desired stroke. Tighten screws to clamp collars into position (#screw heads are to face to the top of the mounting block (#Port side)).

NOTE: Collar must have full contact with the shaft.

8. Inspection

Manually slide Tooling Plate (#07) and Rods (#05) back and forth. The rods should slide freely. If not, loosen tooling plate Set Screw (#06) and push tooling plate tight to housing. Rotate Cylinder (#03) one turn and tighten Set Screw (#06).

9. Switch Option

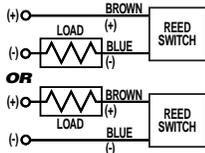
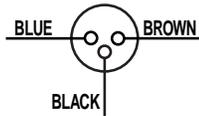
Secure switch to cylinder with clamp, strap, and screw.

SWITCH TYPE CODE

- 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)

An Important Note Regarding Field Retrofit of Quick-Disconnect Couplers:

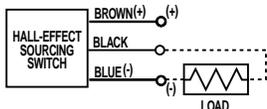
If replacing a Quick-Disconnect switch manufactured before 7-1-97 it will also be necessary to replace or rewire the female-end coupler with the in-line splice.



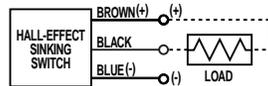
REED SWITCH FORM A
LABEL COLOR: RED
 10VA MAX. 200 Vdc
 500mA Max. Current



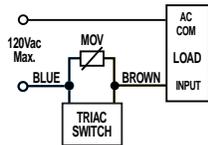
REED SWITCH FORM C
LABEL COLOR: YELLOW
 120 Vdc/120 Vac MAX.
 250mA Max. Current



HALL-EFFECT SWITCH (SOURCING)
LABEL COLOR: WHITE
 Input Voltage: 5-25 VDC only
 Output Current: 200 mA Max.



HALL-EFFECT SWITCH (SINKING)
LABEL COLOR: GREEN
 Input Voltage: 5-25 VDC only
 Output Current: 200 mA Max.



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

9. Switch Option (continued)

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: 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 Fluid Power Products Catalog 9900-4000.

TO ORDER RETROFIT KITS:

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

EXAMPLE: SWUB17BT

Where **SW** is the switch kit, **UB** is the model, **17** is the 1-1/16" size, and **BT** is a Form A Reed Switch with 5-meter lead.

All Switch Kits come with 1 switch and mounting hardware.

HARDWARE ONLY KIT:

- UB09** 2309-9999
- UB12** 2312-9999
- UB17** 2317-9999
- UB24** 2324-9999

QUICK-DISCONNECTS:

- 2503-1025 Female Connector 5M

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