



Tri-Clover[®] Butterfly Valves

Series B51A • B52A • B53A

Service & Installation Manual

CONTENTS

Thank you for purchasing a Tri-Clover Product!

This manual contains disassembly and assembly instructions, maintenance procedures, troubleshooting, and a complete parts list for all Tri-Clover Butterfly Valves.

READ THIS MANUAL carefully to learn how to service these valves. Failure to do so could result in personal injury or equipment damage.

Tri-Clover's Series B51A Manual Butterfly Valve is an economical, corrosion resistant stainless steel valve which can be quickly and easily installed in any Tri-Clamp® line. It is also available with butt weld ends for permanent installations. The Series B51A Valve can be automated with either an electric or pneumatic actuator.

Series B52A Electric Actuated Valves are available in 110 and 120 voltages and NEMA 4 or NEMA 6 ratings.

Part Number 38-294 Series B53A Pneumatic Actuated Valves are available in normally open, normally closed fail positions and Air to Air operation. The B53A actuators can be equipped with a control top module that is identical to the Tri-Clover's 761 Series Valves. Refer to Service Manual CTASM for control top module service and application information.

SAFETY

IMPORTANT SAFETY INFORMATION	4
------------------------------------	---

INSTALLATION

INSTALLATION GUIDELINES	5
-------------------------------	---

MAINTENANCE

REPAIRING OR REPLACING A PREVIOUSLY INSTALLED BUTTERFLY VALVE	6
VALVE DISASSEMBLY	7
VALVE COMPONENT INSPECTION	7
VALVE REASSEMBLY	8
OPERATOR INSTALLATION	8
SERIES B53A - PNEUMATIC	9
ELECTRIC ACTUATORS	10
PNEUMATIC ACTUATORS	11
SERIES B51A - MANUAL	14

PARTS LIST

SERIES B51A - MANUAL	15
SERIES B52A - ELECTRIC	16
SERIES BA53A - PNEUMATIC AIR TO AIR	18
SERIES B53A - PNEUMATIC AIR TO SPRING	20


SAFETY


IMPORTANT SAFETY INFORMATION


Safety is very important!

DO NOT attempt to modify any Tri-Clover product. To do so could create unsafe conditions and void all warranties. **DO NOT place any Tri-Clover product in an application where general product service ratings are exceeded.**

The following DANGER, WARNING, AND CAUTION signs and their meanings are used within these instructions.

	 DANGER
	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. The word Danger is used in the most extreme cases.

	 WARNING
	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. May also be used to alert against an unsafe operating or maintenance practice.

	 CAUTION
	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



Part Number 38-294

INSTALLATION

INSTALLATION GUIDELINES

MANUAL

Each Series B51A Valve is shipped partially assembled, including body assembly, stop plate, and manual handle/operator assembly. See the B51A Operator and Installation and after placement in line, test the operation of the valve. Valve should open and close easily. The handle and locking pin should firmly engage the notches on the stop plate. Handle is spring loaded. To position valve, pull handle knob out and turn. Release knob to lock pin in desired position. Approx. 1/2" clearance is required to accommodate movement of handle knob while positioning valve.

ELECTRIC

Each Series B52a Valve is shipped fully assembled, including electric actuator, coupler, and mounting bracket assembly.

1. Remove the valve and actuator from the package. Inspect for damage incurred in shipping or storage. Do not attempt to install a valve which has been damaged in any way.
2. Install the valve in the line, using two Tri-Clamp gaskets and clamps.
3. Wire the electric actuator as illustrated in the Electric Actuator Section of this manual.
4. Test the operation of the valve. Be sure that the butterfly disc shuts off completely when it is moved to the closed position. When it is completely shut, both edges of the disc are in the same position on the gasket, so that the same amount of gasket is showing on both sides of the disc. If it does not shut completely, adjust the travel of the actuator. Follow the adjustment procedure as outlined in the Electric Actuator section of this manual.

Note: The adjustment procedure may have to be repeated after the valve has been in operation for a period of time, as parts will "wear in" and allow some play. Valve must always shut tight in the closed position.

PNEUMATIC

Each Series B53A Valve is shipped fully assembled, including pneumatic actuator and mounting bracket assembly.

1. Remove the valve and actuator from the package. Inspect for damage incurred in shipping or storage. Do not attempt to install a valve which has been damaged in any way.
2. Install the valve in the line using two Tri-Clamp gaskets and clamps.
3. Connect air line to actuator or control top module. Required air pressure is 80-100 PSIG.
4. Test the valve operation by operating the actuator.

MAINTENANCE

REPAIRING OR REPLACING A PREVIOUSLY INSTALLED BUTTERFLY VALVE

REMOVAL AND DISASSEMBLY



WARNING

To prevent personal injury, relieve pipe line pressure and drain all fluids completely.



WARNING

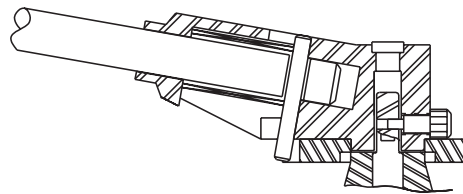
To prevent personal injury, disconnect all electrical and pneumatic power. The actuator operates with sufficient force to cause serious injury.

Remove the valve from the line. Remove the actuator by following the appropriate steps for either Series B51A, B52 or B53A.

OPERATOR REMOVAL

Series B51A - Manual

1. Refer to illustration at right. Remove the handle retaining screw from the valve stem and handle. Remove the handle and stop plate from the stem.



Series B52A and B53A - Electric and Pneumatic

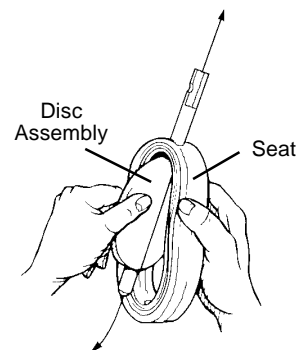
IMPORTANT: Note position of valve disc in body as it corresponds to normally open or closed actuator, so that after servicing, complete unit can be reassembled with disc in same position.

1. Separate the actuator/bracket assembly from the valve body by removing the two upper valve body screws securing the mounting bracket.
2. Lift actuator/bracket assembly straight up, away from valve.

MAINTENANCE

VALVE DISASSEMBLY

1. Using box or socket wrenches and Allen wrench of the correct size, release and remove the hex nuts and screws which clamp the body halves together.
2. Separate the two body halves. Remove the seat gasket and butterfly disc assembly.
3. Remove bushings from the upper and lower stem ends.
4. Rotate butterfly disc to the open position.
5. Squeeze the seat gasket into an ellipse, raise the butterfly disc, and release the lower stem end. The disc may then be removed.



VALVE COMPONENT INSPECTION

Inspect all components for wear or damage. Replace the seat gasket if cracked, worn or deformed. Replace stem bushing if cracked or worn. Replace butterfly disc if cracked or worn. Replace any screws or nuts that have stripped or damaged threads.

IMPORTANT: Tri-Clover recommends that seat gaskets are inspected periodically and replaced if worn. If extra gaskets are stored for longer than 2 weeks, following precautions must be taken:

1. Store in a cool place (75°F).
2. Store in a dry place.
3. Do not expose to sunlight.
4. Protect from foreign particle contamination, such as dust.

MAINTENANCE

VALVE REASSEMBLY

1. Refer to illustration on previous page. Squeeze the sides of the seat gasket until it forms an ellipse. Insert the stem of the butterfly disc with the square end into the upper hole in the gasket. Locate the lower end of the stem in the lower gasket hole. Reshape the gasket and test the action of the disc. The disc should turn freely.
2. Install bushings on upper and lower stems.
3. Lubricate the cavities of the body halves, upper and lower stem, and the faces and outer rim of the seat gasket with Tri-Clover Silicone Spray No. L-1011B.
4. Place the butterfly disc in the open position. Position seat gasket and butterfly disc assembly between the body halves and press together as far as possible.

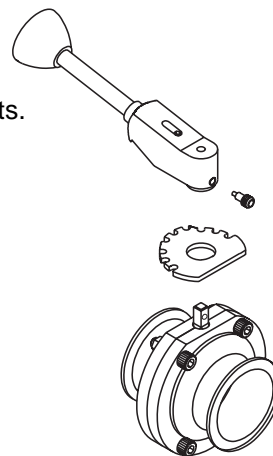
NOTE: Make sure the bushings are properly located in the body halves.

5. Secure the body halves with the screws and nuts. Tighten the nuts alternately and evenly until the body halves meet. Using box or socket wrenches and Allen wrench of the correct size, tighten the nuts securely, to ensure uniform positioning of the seat gasket in the valve body.

OPERATOR INSTALLATION

SERIES B51A - MANUAL

1. Install stop plate onto top (flat portion) of body halves, with flat portion of stop plate parallel to either one of the two body ports.
2. Pull the handle knob out and position the handle on the butterfly stem. Be sure hole in stem is aligned with retaining hole in handle assembly. (Extension on handle must pass through stop plate). Refer to illustration at right.
3. Secure the handle assembly in place by installing the retaining screw with Allen wrench of the correct size.
4. Test the operation of the valve. Valve should open and close easily, and the pin in the locking handle should firmly engage the notches on the stop plate.



SERIES B52A - ELECTRIC

1. To reattach actuator, coupler and bracket assembly to valve body, loosen and remove the two upper valve body nuts and screws that secure the mounting bracket.
2. Position valve disc in body for normally open or close operation. Place coupler between valve stem and bottom of actuator.
3. Connect actuator/bracket assembly and coupler to valve body. Insert body screws through bracket assembly, then through the two body halves. Thread nuts onto ends of screws and tighten as required.

MAINTENANCE

4. Test the operation of the valve. Be sure that the butterfly disc shuts off completely when it is moved to the closed position. When it is completely shut, both edges of the disc are in the same position on the gasket, so that the same amount of gasket is showing on both sides of the disc. If it does not shut completely, adjust the travel of the actuator. Follow the adjustment procedure outlined in the Electric Actuator section of this manual.

NOTE: The adjustment procedure may have to be repeated after the valve has been in operation for a period of time, as parts will "wear in" and allow some play. Valve must always shut tight in the closed position.

SERIES B53A - PNEUMATIC

1. To reattach actuator and bracket assembly to valve body, loosen and remove the two upper valve body nuts and screws that secure the mounting bracket.
2. Note actuator type stamped on top of actuator: N.O. = air to spring normally open, N.C. = air to spring normally closed, A.A. = air to air. N.O. actuators must be installed with the valve disc in the open position, with no air supply to the actuator. N.C. actuators must be installed with valve disc in the closed position with no air supply to the actuator. N.O. and N.C. actuators have different internal designs and **MUST** be installed only as stamped on top of the actuator. A.A. air to air actuators can be installed with the valve disc in either the open or closed position.
3. Connect actuator/bracket assembly and coupler valve body. Insert body screws through bracket assembly, then through the two body halves. Thread nuts onto ends of screws and tight as required.
4. Check to be sure that "pointer", of the visual valve position indicator, is in alignment with the valve disc.
5. Connect air line to valve, and test its operation.

MAINTENANCE

ELECTRIC ACTUATORS



⚠ WARNING

To prevent personal injury, disconnect all electrical and pneumatic power to the control top. Hazardous voltage can cause electrical shock. The actuator stem moves with extreme force and suddenness.

ELECTRIC ACTUATOR WIRING

NOTE: Disassembly of the Electric Actuator is not recommended. Contact Tri-Clover for service center location and repair instructions. Refer to drawing to the right.

ADJUSTMENT

Remove the cover. The limits of rotation are adjusted by the cams which actuate the micro switches. Refer to photograph below.

The upper cam controls the closing limit. The lower cam (closest to valve) controls the opening limit.

To adjust a cam, loosen the set screw in the cam to free it from the shaft, move the cam in the desired direction, and retighten the set screw. The set screws in all actuators require $\frac{1}{16}$ inch Allen wrench.

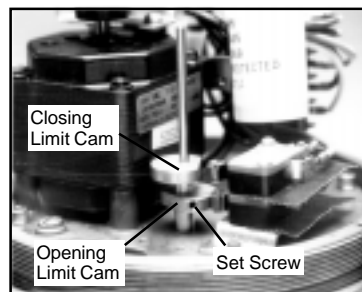
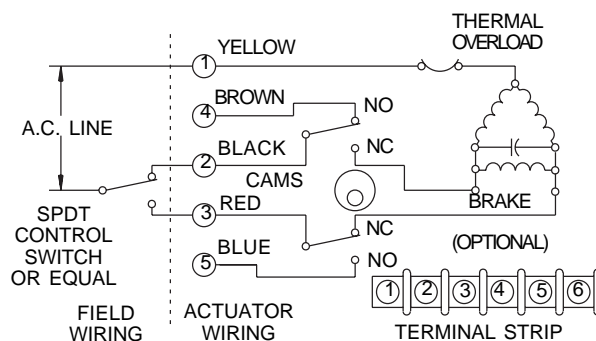
IMPORTANT: To avoid stripping threads, tighten set screws firmly but not excessively.

Connect wires to the appropriate terminals to open the valve. If the butterfly disc does not close completely or rotates too far, disconnect the wires and adjust the OPEN limit cam.

Connect wires to the appropriate terminals to close the valve. If the butterfly disc does not close completely or rotates too far, disconnect the wires and adjust the CLOSE limit cam.

After each adjustment, operate the actuator several times in each direction and recheck the adjustment. When the adjustments are satisfactory, install the cover.

Important: When installing the cover, be sure the wires are placed where they will not be pinched between the cover and the internal parts.



MAINTENANCE

PNEUMATIC ACTUATORS

INTRODUCTION

The Series B53A actuators are available in spring return and double acting models. All the spring return models can be equipped with a Tri-Clover control top module that is identical to the series 761 valves. Any spring return model can be retrofitted with a control top module, but double acting actuators can not be equipped with the control top.

INSTALLATION

Connect air supply to the $\frac{1}{8}$ - 27 FNPT ports on the control top or the actuator. Air supply specification: 80 to 100 psig.

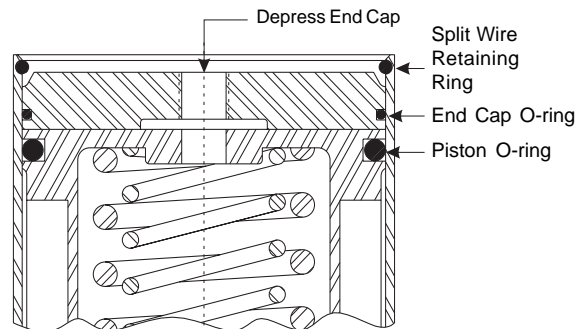
IMPORTANT: Make sure the water rejector is positioned so that its opening is directed towards the floor.

MAINTENANCE

The actuator should be inspected yearly under normal service and every three to six months for severe applications. The bearings should be lubricated and replaced if worn. O-rings should be replaced. Piston should be cleaned and inspected.

DISASSEMBLY - ACTUATORS WITHOUT CONTROL TOP MODULE

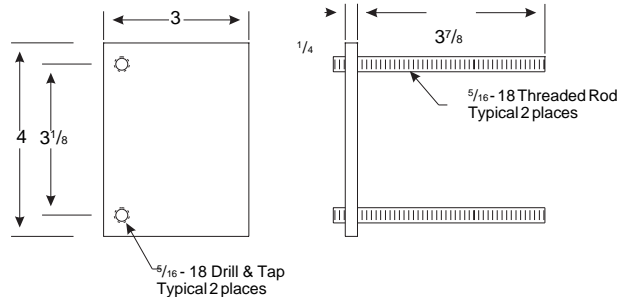
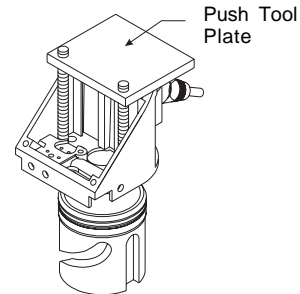
1. Remove the actuator from the valve mounting bracket.
2. Place the actuator in a manual press with the ram rod centered on the end cap. The coupler must be free to rotate. See illustration at right.
3. Push the end cap into the cylinder one inch and lock the press ram.
4. Remove the split wire retaining ring from its groove.
5. Release the ram slowly until the springs stop pushing. The piston and end cap will rise approximately one inch above the cylinder before the springs reach free length.
6. Remove the components from inside the actuator.



MAINTENANCE

DISASSEMBLY - ACTUATORS WITH CONTROL TOP MODULE

1. Remove the actuator from the mounting bracket.
2. On air to air models, slide the outer retaining ring up the endcap so it is no longer locking the endcap from going into the actuator. A press will not be required to remove the split wire.
3. Remove the Control Top front cover. Locate the Push Tool on the Control Top as shown at right. Place the actuator in a manual press with the ram rod centered on the Push Tool. The coupler must be free to rotate.
4. Push the Mounting adaptor into the cylinder until the split wire retaining ring is accessible.
5. Remove the split wire retaining ring from its groove.
6. Release press ram slowly until the springs stop pushing. On spring assist actuators, the piston, mounting adapter, and control top will rise approximately one inch above the cylinder before the springs reach free length.
7. Remove the components from inside the actuator.
8. Separate the control top from the mounting adapter, and remove the indicating nut from the rising stem.
9. Remove the Bushing and Packing by sliding the mounting adapter off the rising stem.



ASSEMBLY - ACTUATORS WITHOUT A CONTROL TOP.

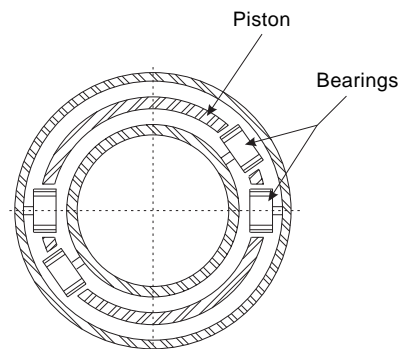
1. Lubricate and install all the o-rings on the piston, end cap and drive shaft.
2. Lubricate and install all the roller and thrust bearings.
3. Place the piston in the cylinder aligning all bearings with all piston grooves.

IMPORTANT All the bearings must be aligned with the grooves in the cylinder. Refer to illustration at right.

4. Place actuator in a manual press. Locate the end cap on top of the piston.
5. Center the press ram on the end cap and depress it into the cylinder.

IMPORTANT Press the assembly slowly and with minimal force. If the assembly does not descend into the cylinder, realign the bearings with the piston grooves.

6. Depress the assembly into the cylinder until the split wire retaining ring can be located in its groove. Lock the press in this position.



MAINTENANCE

7. Install the split wire retaining ring.
8. Release the press and let the assembly rise until the mounting adapter stops on the split wire retaining ring.

ASSEMBLY - ACTUATORS WITH A CONTROL TOP.

1. Lubricate and install all the o-rings on the piston, mounting adapter and drive shaft.
2. Lubricate and install all the roller and thrust bearings.
3. Remove the control top front cover.
4. Slide the mounting adapter over the rising stem.
5. Install the Vee Packing and bushing. Refer to illustration at right and follow the steps below.

- Cover the rising stem threads with tape.
- Slide the new packing over the stem with the “v” side facing the piston.
- Partially insert the packing into the smallest counter bore using a flat tool to assist the outer lip.
- Push the packing into its counter bore by pushing the bushing into place.

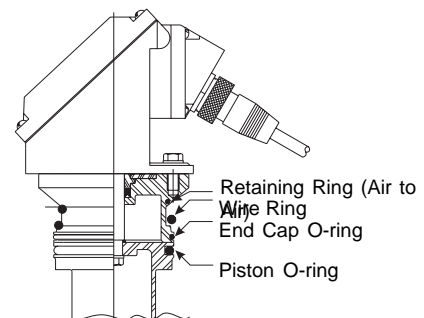
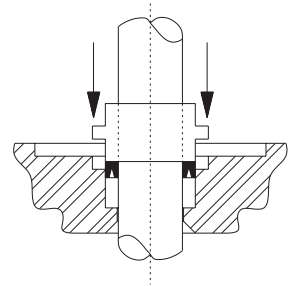
6. Install the indication nut onto the rising stem.
7. Fasten the control top module to the mounting adapter.
8. Place the piston/control top assembly in the cylinder aligning all bearings with all piston grooves.

IMPORTANT All the bearings must be aligned with the grooves in the cylinder.

9. Place actuator in a manual press. Locate the push tool as shown on the previous page. Air to air models do not require a press.
10. Center the press ram on the push tool and depress the piston/control top assembly into the cylinder.

IMPORTANT Press the assembly slowly and with minimal force. If the assembly does not descend into the cylinder, realign the bearings with the piston grooves.

11. Depress the assembly into the cylinder until the split wire retaining ring can be located in its groove. Lock the press in this position
12. Install the split wire retaining ring.
13. Release the press and let the assembly rise until the mounting adapter stops on the split wire retaining ring.
14. On air to air models, slide the retaining ring down into the retaining ring groove. This ring is required to prevent the endcap from falling into the actuator.

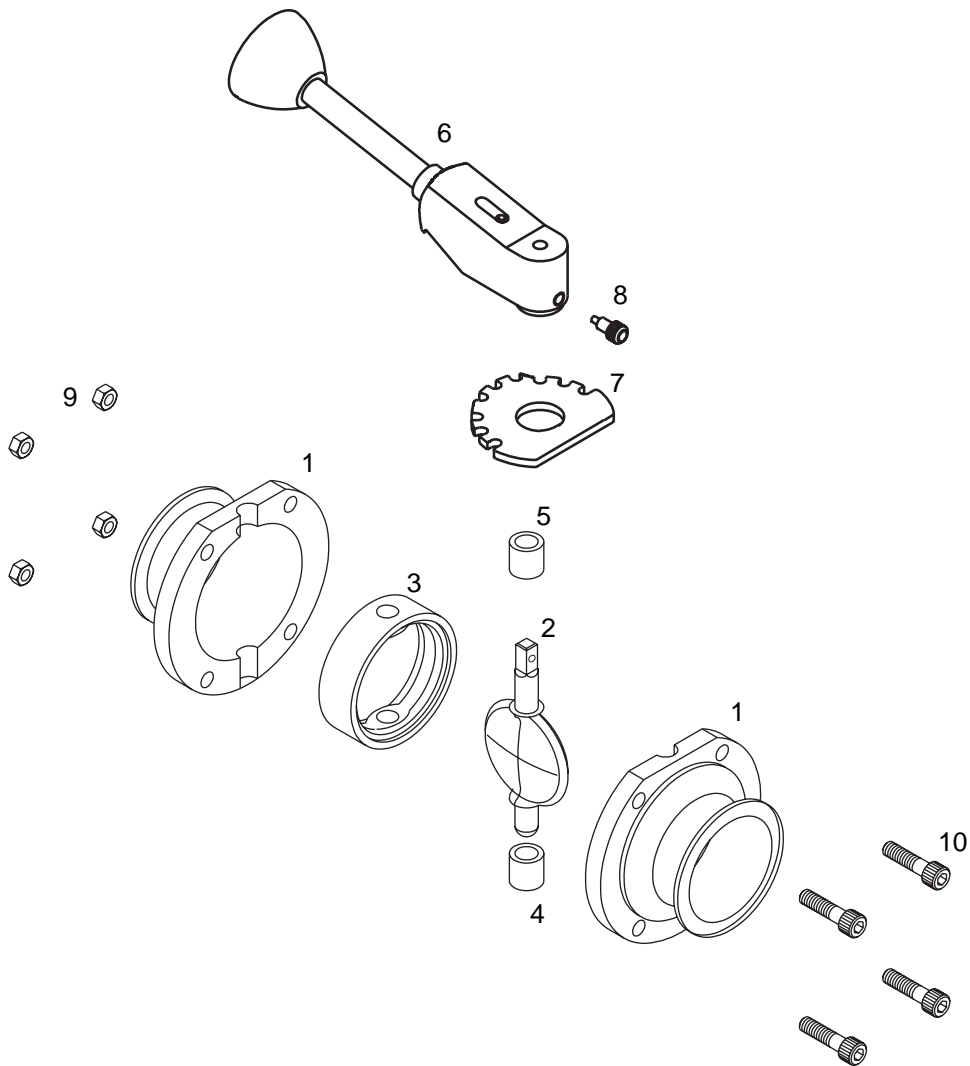


PARTS LIST

SERIES B51A - MANUAL

All orders for repair parts must contain the following data.

1. Complete model number of valve.
2. Complete description and part number of components.



PARTS LIST

SERIES B51A, B52A AND B53A BUTTERFLY VALVES

Key #	Description	No. Req'd.	1	1 1/2	2	2 1/2	3	4
1	Body Half* (304 or 316 SS)	2	B51a-1-01-Matl.	B51A-1 1/2-01-Matl.	B51A-2-01-Matl.	B51A-2 1/2-01-Matl.	B51A-3-01-Matl.	B51A-4-01-Matl.
2	Disc Assembly	1	B53-1-05-316	B53-1 1/2-05-316	B53-2-05-316	B53-2 1/2-05-316	B53-3-05-316	B53-4A-05-316
3	Seat**	1	B51-1-42-Matl.	B51-1 1/2-42-Matl.	B51-2-42-Matl.	B51-2 1/2-42-Matl.	B51-3-42-Matl.	B51-4-42-Matl.
4	Lower Bushing PVDF - KYNAR	1	B51-1-06	B51-1 1/2-06	B51-1-06	B51-2 1/2-06	B51-3-06	B51-4-06
5	Upper Bushing PVDF - KYNAR	1	B51-1-07	B51-1 1/2-06	B51-1-06	B51-2 1/2-06	B51-3-06	B51-4-07
9	Nut	4	B51-1-03-SS	B51-1-03-SS	NU1300H-SS	NU1300H-SS	NU1300H-SS	NU1500H-SS
10	Screw	4	B51-1-15-SS	B51-1-15-SS	SC1312E-SS	SC1312E-SS	SC1316E-SS	SC1516E-SS

** Specify material: E - (EPDM) X - (Silicone)SFY - (Fluoroelastomer)

SERIES B51 A-MANUAL

Key #	Description	No. Req'd.	1"	1 1/2"	2"	2 1/2"	3"	4"
6	Handle Assembly (complete, less stop plate)	1	B51-1-48-S	B51-1-48-S	B51-1-48-S	B51-1-48-S	B51-3-48-S	B51-4-48-S
7	Stop Plate	1	XPDB51-1-08-5	XPDB51-1-08-5	XPDB51-1-08-5	XPDB51-1-08-5	XPDB51-3-08-5	XPDB51-3-08-5
8	Handle Retaining Screw*	1	B51-1-11-SS	B51-1-11-SS	B51-1-11-SS	B51-1-11-SS	B51-3-11-SS	B51-3-11-SS

*Furnished also as part of Complete Handle Assembly (Key #6).

PARTS LIST

SERIES B52A - ELECTRIC

All orders for replacement parts must contain the following data:

1. Complete model number.
2. Complete description and part number.

ELECTRICACTUATOR

To order replacement parts for the Tri-Clover Butterfly with Electric Actuator, include all information asked for below. There are no model or serial numbers on the actuator, therefore obtain the correct actuator part number from the tables below.

B52A - EM20012 - 2 - E - S

1 2 3 4 5

1 Valve Series:

2 Actuator: (see tables below)

3 Valve Size: (tube OD) 1, 1½, 2, 2½, 3, 4" sizes

4 Seat Material:

E - EPDM

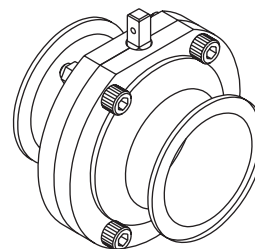
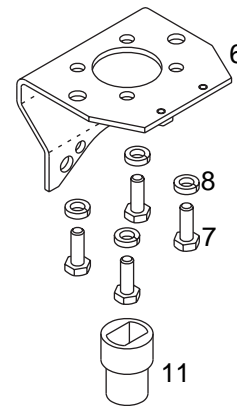
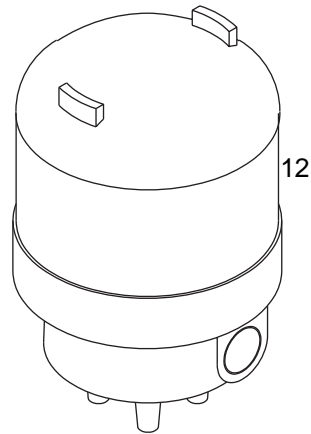
X - Silicone

FY - SFY (Fluoroelastomer)

5 Body Material:

S - 304 SS

316- 316 SS



ELECTRIC ACTUATOR

Valve Size	Actuator Voltage	NEMA 4 Water Tight	NEMA 7 Explosion Proof
1", 1½" or 2"	120	52-EM20012	52-EM21212
2½"	120	52-EM21212	52-EM21212
3" or 4"	120	52-EM42012	52-EM42017
1", 1½" or 2"	220	52-EM20022	52-EM21222
2½"	220	52-EM21222	52-EM21222
3" or 4"	220	52-EM42022	52-EM42027

PARTS LIST

SERIES B52A - ELECTRIC ACTUATOR

Key#	Description	No. Req'd.	1"	1 1/2"	2"	2 1/2"	3"	4"	
6	Mounting Bracket	1	B52-1-09-S	B52-1-09-S	B52-1-09-S	B52-1-09-S	B52-3-09A-S**	B52-3-09A-S**	
7	Bracket Screw	4	SC907H-SS	SC907H-SS	SC907H-SS	SC907H-SS	SC1306H-SS	SC1306H-SS	
8	Bracket Lockwasher	4	LWA900-SS	LWA900-SS	LWA900-SS	LWA900-SS	LWA1300-SS	LWA1300-SS	
11	Actuator Coupler*	1	B52-1-20-S	B52-1-20-S	B52-1-20-S	B52-1-20-S	B52-3-20-S	B52-4-20-S	
12	Actuator	1	Refer to Actuator Table Shown on Page 10						

* Coupler is not furnished as part of Electric Actuator and must be ordered separately.

** Two required.

PARTS LIST

SERIES BA53A - PNEUMATIC AIR TO AIR

All orders for replacement parts must contain the following data:

1. Complete model number.
2. Complete description and part number.

PNEUMATIC ACTUATOR

To order replacement parts for the Tri-Clover Butterfly Valve with Pneumatic Actuator, include all information asked for below. There are no model or serial numbers on the actuator, therefore obtain the correct actuator part number from the tables below.

BA53 - 6400 - 2 - E - 316

1 2 3 4 5

1 Valve Series:

2 Actuator: (see tables below)

3 Valve Size: (tube OD) 1, 1½, 2, 2½, 3, 4"

4 Seat Material:

E - EPDM

X - Silicone

FY - SFY (Fluoroelastomer)

5 Body Material:

S - 304 SS

316- 316 SS

PNEUMATIC ACTUATOR WITHOUT CONTROL TOP

Valve

Size Air to Air Actuators

1" to 2½" BA53-6400

3" BA53-6500

4" BA53-6900

PNEUMATIC ACTUATOR WITH CONTROL TOP

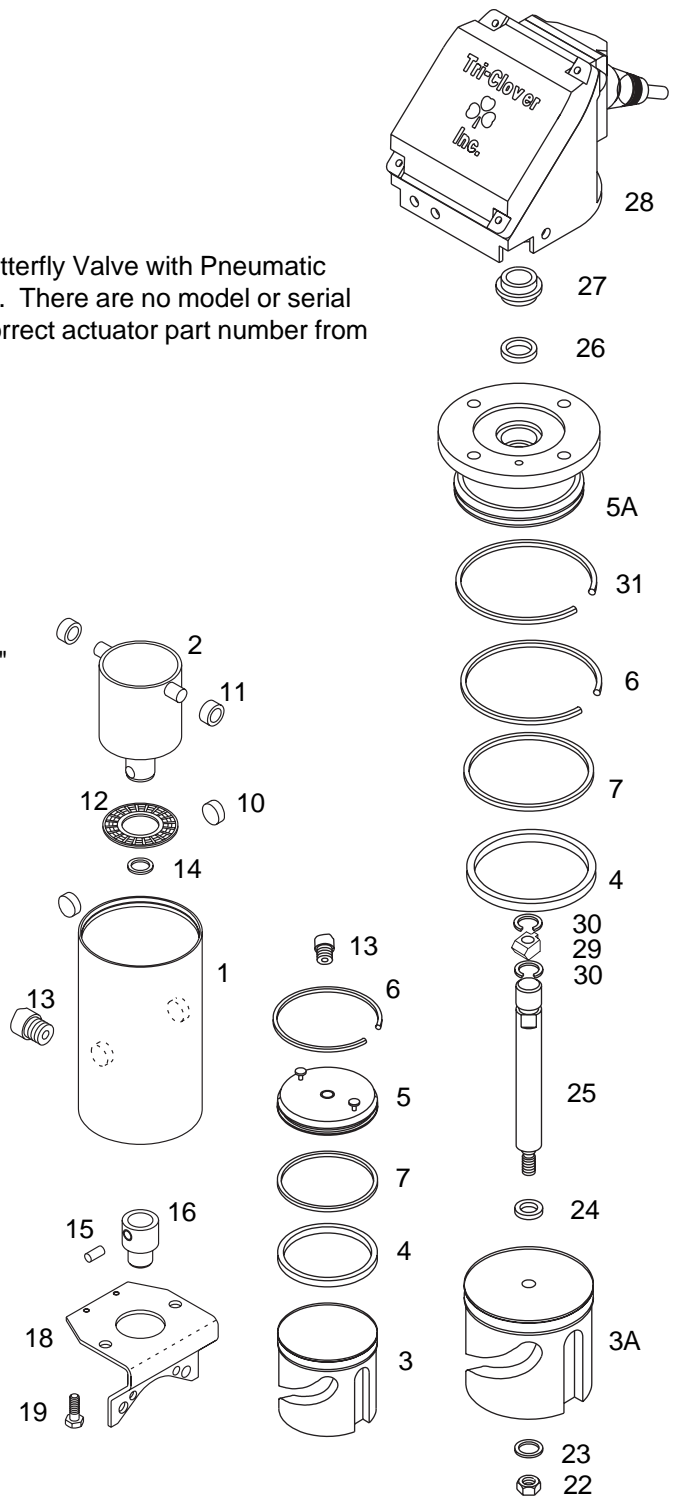
Valve

Size Air to Air Actuators

1" to 2½" BA53-6400T

3" BA53-6500T

4" BA53-6900T



Items which apply to both models

Items for models without control tops

Items for models with control tops

PARTS LIST

Air To Air

KEY #	DESCRIPTION	1" - 2-1/2"		3"		4"	
		6400	6500	6500	6900	6900	QTY
1	Cylinder	B53-6000-1	B53-6000-1	B53-6000-1	B53-6000-1	B53-6000-1	1
2	Drive Assembly	BA53-6000-2	BA53-6000-2	BA53-6000-2	BA53-6000-2	BA53-6000-2	1
3	Piston	BA53-6000-3	BA53-6000-3	BA53-6000-3	BA53-6000-3	BA53-6000-3	1
4	O-ring	B53-6000-4	B53-6000-4	B53-6000-4	B53-6000-4	B53-6000-4	1
5	End Cap	B53-6000-5	B53-6000-5	B53-6000-5	B53-6000-5	B53-6000-5	1
6	Retaining Ring	B53-6000-6	B53-6000-6	B53-6000-6	B53-6000-6	B53-6000-6	1
7	O-ring	B53-6000-7	B53-6000-7	B53-6000-7	B53-6000-7	B53-6000-7	1
8	Inner Spring	Not required	Not required	Not required	Not required	Not required	
9	Outer Spring	Not required	Not required	Not required	Not required	Not required	
10	Needle Bearing	B53-6000-10	B53-6000-10	B53-6000-10	B53-6000-10	B53-6000-10	2
11	Needle Bearing	B53-6000-11	B53-6000-11	B53-6000-11	B53-6000-11	B53-6000-11	2
12	Thrust Bearing	B53-6000-12	B53-6000-12	B53-6000-12	B53-6000-12	B53-6000-12	1
13	Air Fitting	42-15-78	42-15-78	42-15-78	42-15-78	42-15-78	2
14	O-ring	B53-6000-14	B53-6000-14	B53-6000-14	B53-6000-14	B53-6000-14	1
15	Split Pin	B53-6000-15	B53-6000-15	B53-6000-15	B53-6000-15	B53-6000-15	1
16	Coupler	B53-6000-16-1	B53-6000-16A-3	B53-6000-16A-3	B53-6000-16-4A	B53-6000-16-4A	1
17	Position Indicator*	B53-6000-18	B53-6000-18	B53-6000-18	B53-6000-18	B53-6000-18	1
18	Mounting Bracket	B53-1-09-S	B53-3-09-S	B53-3-09-S	B53-3-09-S	B53-3-09-S	1
19	Bracket Screw	B53-1-10-SS	B53-1-10-SS	B53-1-10-SS	B53-1-10-SS	B53-1-10-SS	2

With A Control Top (Additional or replacement parts required)

KEY #	DESCRIPTION	6400T		6500T		6900T	
		6400T	6500T	6500T	6900T	6900T	QTY
3A	Piston	BA53-6000-28	BA53-6000-28	BA53-6000-28	BA53-6000-28	BA53-6000-28	1
5A	Mounting Adapter	B53-6000-19-S	B53-6000-19-S	B53-6000-19-S	B53-6000-19-S	B53-6000-19-S	1
22	Nut	NU1300E02-SS	NU1300E02-SS	NU1300E02-SS	NU1300E02-SS	NU1300E02-SS	1
23	Lockwasher	LWA1300-SS	LWA1300-SS	LWA1300-SS	LWA1300-SS	LWA1300-SS	1
24	Gasket	17-352	17-352	17-352	17-352	17-352	1
25	Rising Stem	B53-6000-26-S	B53-6000-26-S	B53-6000-26-S	B53-6000-26-S	B53-6000-26-S	1
26	Vee Packing	17-98	17-98	17-98	17-98	17-98	1
27	Seal Retainer	25-428-05	25-428-05	25-428-05	25-428-05	25-428-05	1
28	Control Top	74-100-X-Y-Z	74-100-X-Y-Z	74-100-X-Y-Z	74-100-X-Y-Z	74-100-X-Y-Z	1
29	Stem Guide	36-89	36-89	36-89	36-89	36-89	1
30	Retaining Ring	16-167-S	16-167-S	16-167-S	16-167-S	16-167-S	2
31	Retaining Ring	B53-6000-24	B53-6000-24	B53-6000-24	B53-6000-24	B53-6000-24	1

* This item is not shown

SERIES B53A - PNEUMATIC AIR TO SPRING

All orders for replacement parts must contain the following data:

1. Complete model number.
2. Complete description and part number.

PNEUMATIC ACTUATOR

To order replacement parts for the Tri-Clover Butterfly Valve with Pneumatic Actuator, include all information asked for below. There are no model or serial numbers on the actuator, therefore obtain the correct actuator part number from the tables below.

B53 - 6200 - 2 - E - 316
1 2 3 4 5

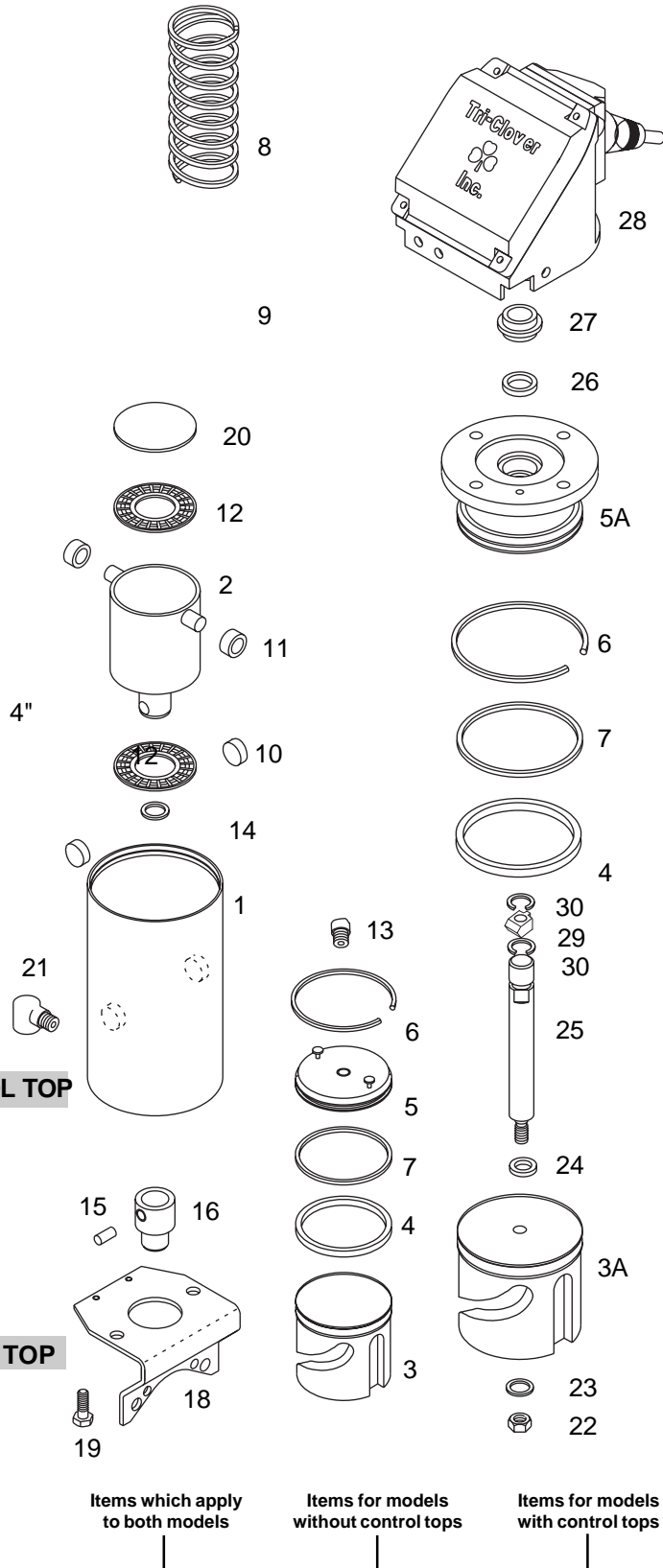
- 1 Valve Series:**
- 2 Actuator:** (see tables below)
- 3 Valve Size:** (tube OD) 1, 1½, 2, 2½, 3, 4"
- 4 Seat Material:**
 - E - EPDM
 - X - Silicone
 - FY - SFY
- 5 Body Material:**
 - S - 304 SS
 - 316- 316 SS

PNEUMATIC ACTUATOR WITHOUT CONTROL TOP

Valve Size	Air to Spring Actuators	
	N.O.	N.C.
1" to 2½"	B53-6200	B53-6000
3"	B53-6300	B53-6100
4"	B53-6800	B53-6700

PNEUMATIC ACTUATOR WITH CONTROL TOP

Valve Size	Air to Spring Actuators	
	N.O.	N.C.
1" to 2½"	B53-6200T	B53-6000T
3"	B53-6300T	B53-6100T
4"	B53-6800T	B53-6700T



Air To Spring		NORMALLY CLOSED				NORMALLY OPEN			
KEY #	DESCRIPTION	6000	6100	6700	6200	6300	6800	QTY	
1	Cylinder	B53-6000-1	B53-6000-1	B53-6000-1	B53-6000-1	B53-6000-1	B53-6000-1	1	
2	Drive Assembly	B53-6000-2	B53-6000-2	B53-6000-2	B53-6000-2	B53-6000-2	B53-6000-2	1	
3	Piston	B53-6000-3A	B53-6000-3A	B53-6000-3A	B53-6000-3	B53-6000-3	B53-6000-3	1	
4	O-ring	B53-6000-4	B53-6000-4	B53-6000-4	B53-6000-4	B53-6000-4	B53-6000-4	1	
5	End Cap	B53-6000-5	B53-6000-5	B53-6000-5	B53-6000-5	B53-6000-5	B53-6000-5	1	
6	Retaining Ring	B53-6000-6	B53-6000-6	B53-6000-6	B53-6000-6	B53-6000-6	B53-6000-6	1	
7	O-ring	B53-6000-7	B53-6000-7	B53-6000-7	B53-6000-7	B53-6000-7	B53-6000-7	1	
8	Inner Spring	B53-6000-8	B53-6000-8	B53-6000-8	B53-6000-8	B53-6000-8	B53-6000-8	1	
9	Outer Spring	B53-6000-9	B53-6000-9	B53-6000-9	B53-6000-9	B53-6000-9	B53-6000-9	1	
10	Needle Bearing	B53-6000-10	B53-6000-10	B53-6000-10	B53-6000-10	B53-6000-10	B53-6000-10	2	
11	Needle Bearing	B53-6000-11	B53-6000-11	B53-6000-11	B53-6000-11	B53-6000-11	B53-6000-11	2	
12	Thrust Bearing	B53-6000-12	B53-6000-12	B53-6000-12	B53-6000-12	B53-6000-12	B53-6000-12	2	
13	Air Fitting	42-15-78	42-15-78	42-15-78	42-15-78	42-15-78	42-15-78	1	
14	O-ring	B53-6000-14	B53-6000-14	B53-6000-14	B53-6000-14	B53-6000-14	B53-6000-14	1	
15	Split Pin	B53-6000-15	B53-6000-15	B53-6000-15	B53-6000-15	B53-6000-15	B53-6000-15	1	
16	Coupler	B53-6000-17-1	B53-6000-17-3	B53-6000-17-4A	B53-6000-17-1	B53-6000-17-3	B53-6000-17-4A	1	
17	Position Indicator*	B53-6000-18	B53-6000-18	B53-6000-18	B53-6000-18	B53-6000-18	B53-6000-18	1	
18	Mounting Bracket	B53-1-09-S	B53-3-09-S	B53-3-09-S	B53-1-09-S	B53-3-09-S	B53-3-09-S	1	
19	Bracket Screw	B53-1-10-SS	B53-1-10-SS	B53-1-10-SS	B53-1-10-SS	B53-1-10-SS	B53-1-10-SS	2	
20	Thrust Drive	B53-6000-27	B53-6000-27	B53-6000-27	B53-6000-27	B53-6000-27	B53-6000-27	1	
21	Water Rejector	B53-6000-23	B53-6000-23	B53-6000-23	B53-6000-23	B53-6000-23	B53-6000-23	1	

With A Control Top (Additional or replacement parts required)

KEY #	DESCRIPTION	6000T	6100T	6700T	6200T	6300T	6800T	QTY
3A	Piston	B53-6000-21	B53-6000-21	B53-6000-21	B53-6000-22	B53-6000-22	B53-6000-22	1
5A	Mounting Adapter	B53-6000-19-S	B53-6000-19-S	B53-6000-19-S	B53-6000-19-S	B53-6000-19-S	B53-6000-19-S	1
22	Nut	NU1300E02-SS	NU1300E02-SS	NU1300E02-SS	NU1300E02-SS	NU1300E02-SS	NU1300E02-SS	1
23	Lockwasher	LWA1300-SS	LWA1300-SS	LWA1300-SS	LWA1300-SS	LWA1300-SS	LWA1300-SS	1
24	Gasket	17-352	17-352	17-352	17-352	17-352	17-352	1
25	Rising Stem	B53-6000-26-S	B53-6000-26-S	B53-6000-26-S	B53-6000-26-S	B53-6000-26-S	B53-6000-26-S	1
26	Vee Packing	17-98	17-98	17-98	17-98	17-98	17-98	1
27	Seal Retainer	25-428-05	25-428-05	25-428-05	25-428-05	25-428-05	25-428-05	1
28	Control Top	74-100-X-Y-Z	74-100-X-Y-Z	74-100-X-Y-Z	74-100-X-Y-Z	74-100-X-Y-Z	74-100-X-Y-Z	1
29	Stem Guide	36-89	36-89	36-89	36-89	36-89	36-89	1
30	Retaining Ring	16-167-S	16-167-S	16-167-S	16-167-S	16-167-S	16-167-S	1

* This item is not shown

Tri-Clover

manufactures

a complete line of

TRI-WELD® fittings

TRI-CLAMP® fittings

BEVEL SEAT fittings

POSITIVE PUMPS

CENTRIFUGAL PUMPS

AUTOMATIC Air Actuated VALVES

STAINLESS STEEL TUBING

AUTOMATED FLOW CONTROL SYSTEMS

Terms, Warranty Provisions, Notice of Claims and Limitation of Liability

Prices and all terms and conditions of sale are established in current price sheets and are subject to change without notice. All orders are subject to acceptance by Tri-Clover Inc. at its Kenosha, Wisconsin or Distribution Center* offices only. No assignment of the purchaser's rights may be made without consent of Tri-Clover Inc.

Each Tri-Clover item is warranted to be free from manufacturing defects for a period of one (1) year from the date of shipment, providing it has been used as recommended and in accordance with recognized piping practice, and providing it has not been worn out due to severe service, such as encountered under extremely corrosive or abrasive conditions.

This warranty is expressly in lieu of any other warranties, express or implied, including but not limited to, any implied warranty of merchantability or fitness for a particular purpose.

All claims must be in writing and must be mailed or delivered by purchaser within thirty (30) days after purchaser learns of the facts upon which such claim is based. Any claim not made

in writing and within the time period specified above shall be deemed waived.

Purchaser's sole and exclusive remedy and Tri-Clover Inc.'s maximum liability for claims arising hereunder or for negligence for any and all losses and damages resulting from any cause shall be either the repair or replacement of defective items or, at Tri-Clover Inc.'s option, the refund of the purchase price for such items. In no event, including in the case of a claim for negligence, shall Tri-Clover be liable for incidental or consequential damages including loss of profits.

No person, including any representative, employee or agent of Tri-Clover, is authorized to assume on behalf of Tri-Clover Inc., any liability or responsibility in addition to or different from that described in this provision. Any and all representations, promises, warranties or statements that are in addition to or different from the terms of this provision are of no force or effect.

**Distribution Center in Union City, California*



Tri-Clover, Inc.
P.O. Box 1413
Kenosha, Wisconsin 53141-1413
PHONE: 262-694-5511
FAX: 262-694-7104

E-Mail address: TCWEBMASTER@tri-clover.com
Visit our web site at www.tri-clover.com