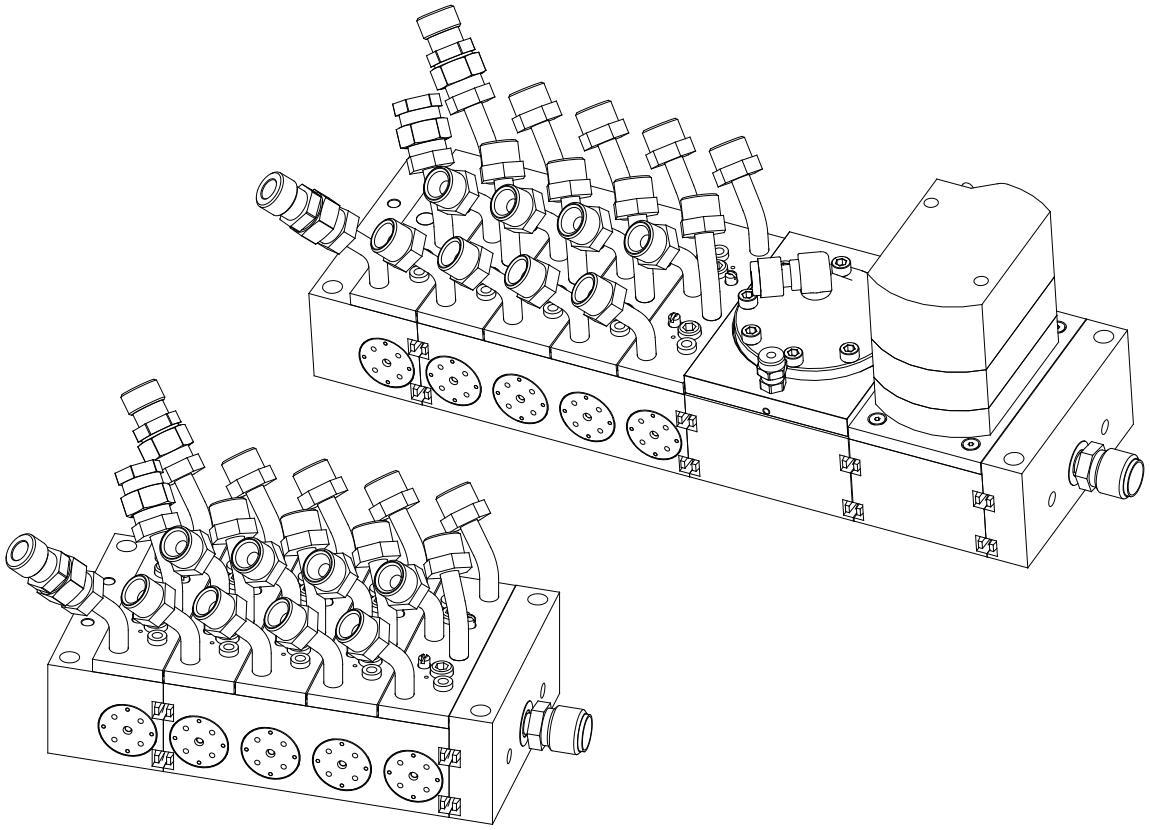
Ransburg

SERVICE MANUAL
CS-01-01.8
(Replaces CS-01-01.7)
March - 2013

MCV SERIES
MODULAR COLOR CHANGER



MODEL(S): 78011-XX

CE

IMPORTANT: Before using this equipment, carefully read SAFETY PRECAUTIONS, starting on page 1, and all instructions in this manual. Keep this Service Manual for future reference.

Service Manual Price: $30.00 (U.S.)

NOTE: This manual has been changed from CS-01-01.7 to revision CS-01-01.8. Reasons for this change are noted under “Manual Change Summary” page 33 of this manual.

CONTENTS

SAFETY

SAFETY PRECAUTIONS

Before operating, maintaining or servicing any Ransburg electrostatic coating system, read and understand all of the technical and safety literature for your Ransburg products. This manual contains information that is important for you to know and understand. This information relates to USER SAFETY and PREVENTING EQUIPMENT PROBLEMS. To help you recognize this information, we use the following symbols. Please pay particular attention to these sections.

A WARNING! states information to alert you to a situation that might cause serious injury if instructions are not followed.

A CAUTION! states information that tells how to prevent damage to equipment or how to avoid a situation that might cause minor injury.

A NOTE is information relevant to the procedure in progress.

While this manual lists standard specifications and service procedures, some minor deviations may be found between this literature and your equipment. Differences in local codes and plant requirements, material delivery requirements, etc., make such variations inevitable. Compare this manual with your system installation drawings and appropriate Ransburg equipment manuals to reconcile such differences.

Careful study and continued use of this manual will provide a better understanding of the equipment and process, resulting in more efficient operation, longer trouble-free service and faster, easier troubleshooting. If you do not have the manuals and safety literature for your Ransburg system, contact your local Ransburg representative or Ransburg.

⚠ WARNING

➤ The user **MUST** read and be familiar with the Safety Section in this manual and the Ransburg safety literature therein identified.

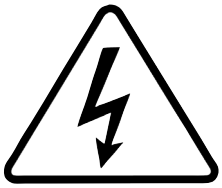
➤ This manual **MUST** be read and thoroughly understood by **ALL** personnel who operate, clean or maintain this equipment! Special care should be taken to ensure that the **WARNINGS** and safety requirements for operating and servicing the equipment are followed. The user should be aware of and adhere to **ALL** local building and fire codes and ordinances as well as **NFPA-33 SAFETY STANDARD, LATEST EDITION**, prior to installing, operating, and/or servicing this equipment.

⚠ WARNING

➤ The hazards shown on the following pages may occur during the normal use of this equipment. Please read the hazard chart beginning on page 2.

AREA Tells where hazards may occur.	**HAZARD** Tells what the hazard is.	**SAFEGUARDS** Tells how to avoid the hazard.
Spray Area 	**Fire Hazard** Improper or inadequate operation and maintenance procedures will cause a fire hazard. Protection against inadvertent arcing that is capable of causing fire or explosion is lost if any safety interlocks are disabled during operation. Frequent Power Supply or Controller shutdown indicates a problem in the system requiring correction.	Fire extinguishing equipment must be present in the spray area and tested periodically. Spray areas must be kept clean to prevent the accumulation of combustible residues. Smoking must never be allowed in the spray area. The high voltage supplied to the atomizer must be turned off prior to cleaning, flushing or maintenance. When using solvents for cleaning: • Those used for equipment flushing should have flash points equal to or higher than those of the coating material. • Those used for general cleaning must have flash points above 100°F (37.8°C). Spray booth ventilation must be kept at the rates required by NFPA-33, OSHA, country, and local codes. In addition, ventilation must be maintained during cleaning operations using flammable or combustible solvents. Electrostatic arcing must be prevented. Safe sparking distance must be maintained between the parts being coated and the applicator. A distance of 1 inch for every 10KV of output voltage is required at all times. Test only in areas free of combustible material. Testing may require high voltage to be on, but only as instructed. Non-factory replacement parts or unauthorized equipment modifications may cause fire or injury. If used, the key switch bypass is intended for use only during setup operations. Production should never be done with safety interlocks disabled. Never use equipment intended for use in waterborne installations to spray solvent based materials. The paint process and equipment should be set up and operated in accordance with NFPA-33, NEC, OSHA, local, country, and European Health and Safety Norms.

AREA Tells where hazards may occur.	**HAZARD** Tells what the hazard is.	**SAFEGUARDS** Tells how to avoid the hazard.
Spray Area 	**Explosion Hazard** Improper or inadequate operation and maintenance procedures will cause a fire hazard. Protection against inadvertent arcing that is capable of causing fire or explosion is lost if any safety interlocks are disabled during operation. Frequent Power Supply or Controller shutdown indicates a problem in the system requiring correction.	Electrostatic arcing must be prevented. Safe sparking distance must be maintained between the parts being coated and the applicator. A distance of 1 inch for every 10KV of output voltage is required at all times. Unless specifically approved for use in hazardous locations, all electrical equipment must be located **outside** Class I or II, Division 1 or 2 hazardous areas, in accordance with NFPA-33. Test only in areas free of flammable or combustible materials. The current overload sensitivity (if equipped) MUST be set as described in the corresponding section of the equipment manual. Protection against inadvertent arcing that is capable of causing fire or explosion is lost if the current overload sensitivity is not properly set. Frequent power supply shutdown indicates a problem in the system which requires correction. Always turn the control panel power off prior to flushing, cleaning, or working on spray system equipment. Before turning high voltage on, make sure no objects are within the safe sparking distance. Ensure that the control panel is interlocked with the ventilation system and conveyor in accordance with NFPA-33, EN 50176. Have fire extinguishing equipment readily available and tested periodically.
General Use and Maintenance 	Improper operation or maintenance may create a hazard. Personnel must be properly trained in the use of this equipment.	Personnel must be given training in accordance with the requirements of NFPA-33, EN 60079-0. Instructions and safety precautions must be read and understood prior to using this equipment. Comply with appropriate local, state, and national codes governing ventilation, fire protection, operation maintenance, and housekeeping. Reference OSHA, NFPA-33, EN Norms and your insurance company requirements.

AREA Tells where hazards may occur.	HAZARD Tells what the hazard is.	SAFEGUARDS Tells how to avoid the hazard.
Spray Area / High Voltage Equipment 	**Electrical Discharge** There is a high voltage device that can induce an electrical charge on ungrounded objects which is capable of igniting coating materials. Inadequate grounding will cause a spark hazard. A spark can ignite many coating materials and cause a fire or explosion.	Parts being sprayed and operators in the spray area must be properly grounded. Parts being sprayed must be supported on conveyors or hangers that are properly grounded. The resistance between the part and earth ground must not exceed 1 meg ohm. (Refer to NFPA-33.) Operators must be grounded. Rubber soled insulating shoes should not be worn. Grounding straps on wrists or legs may be used to assure adequate ground contact. Operators must not be wearing or carrying any ungrounded metal objects. When using an electrostatic handgun, operators must assure contact with the handle of the applicator via conductive gloves or gloves with the palm section cut out. NOTE: REFER TO NFPA-33 OR SPECIFIC COUNTRY SAFETY CODES REGARDING PROPER OPERATOR GROUNDING. All electrically conductive objects in the spray area, with the exception of those objects required by the process to be at high voltage, must be grounded. Grounded conductive flooring must be provided in the spray area. Always turn off the power supply prior to flushing, cleaning, or working on spray system equipment. Unless specifically approved for use in hazardous locations, all electrical equipment must be located **outside** Class I or II, Division 1 or 2 hazardous areas, in accordance with NFPA-33.

AREA Tells where hazards may occur.	**HAZARD** Tells what the hazard is.	**SAFEGUARDS** Tells how to avoid the hazard.
Electrical Equipment 	**Electrical Discharge** High voltage equipment is utilized in the process. Arcing in the vicinity of flammable or combustible materials may occur. Personnel are exposed to high voltage during operation and maintenance. Protection against inadvertent arcing that may cause a fire or explosion is lost if safety circuits are disabled during operation. Frequent power supply shutdown indicates a problem in the system which requires correction. An electrical arc can ignite coating materials and cause a fire or explosion.	Unless specifically approved for use in hazardous locations, the power supply, control cabinet, and all other electrical equipment must be located outside Class I or II, Division 1 and 2 hazardous areas in accordance with NFPA-33 and EN 50176. Turn the power supply OFF before working on the equipment. Test only in areas free of flammable or combustible material. Testing may require high voltage to be on, but only as instructed. Production should never be done with the safety circuits disabled. Before turning the high voltage on, make sure no objects are within the sparking distance.
Toxic Substances 	Certain material may be harmful if inhaled, or if there is contact with the skin.	Follow the requirements of the Material Safety Data Sheet supplied by coating material manufacturer. Adequate exhaust must be provided to keep the air free of accumulations of toxic materials. Use a mask or respirator whenever there is a chance of inhaling sprayed materials. The mask must be compatible with the material being sprayed and its concentration. Equipment must be as prescribed by an industrial hygienist or safety expert, and be NIOSH approved.
Spray Area 	**Explosion Hazard – Incompatible Materials** Halogenated hydrocarbon solvents for example: methylene chloride and 1,1,1,-Trichloroethane are not chemically compatible with the aluminum that might be used in many system components. The chemical reaction caused by these solvents reacting with aluminum can become violent and lead to an equipment explosion.	Aluminum is widely used in other spray application equipment - such as material pumps, regulators, triggering valves, etc. Halogenated hydrocarbon solvents must never be used with aluminum equipment during spraying, flushing, or cleaning. Read the label or data sheet for the material you intend to spray. If in doubt as to whether or not a coating or cleaning material is compatible, contact your coating supplier. Any other type of solvent may be used with aluminum equipment.

INTRODUCTION

DESCRIPTIONS

The **MCV Color Changer** is a material valve stack used to control material flow to an applicator or other material supply equipment. The stack assembly is made up of several sub-assembled stacks which are then connected together.

A description of stacks are as follows:

- Attached Bell Wash Module - These may be attached to the main stack. Both available assemblies contain external check valves on the inlet parts to prevent back flow of material.
- Stand Alone Bell Wash Module - These may be mounted seperatly away from the stack assembly. An external outlet port is included to provide a connection to an applicator or other such device. Both available assemblies contain external check valves on the inlet ports to prevent back-flow of material.
- 2 - Color Block Module
- 4 - Color Block Module
- 8 - Color Block Module
- Inline DR-2 Regulator with performance matching the industry standard Ransburg DR-1 regulator
- Flow Meter Module for use with bottom ported fluid flow meters.

The 78949-00 Microvalve was designed to trigger up to 2-million cycles. The fluid and air sections are separated by a weep port to prevent contamination between air and fluid.

NOTES

SPECIFICATIONS

Electrical / Physical

2-Color Modular Changer

Size:	4” wide (10.16cm) 3 3/4” High (9.53cm) 1 1/4” Long (3.8cm)
Weight:	0.98 lbs. (0.44 Kg)

16-Color Modular Changer

Size:	4” Wide (10.16cm) 3 3/4” High (9.53cm) 12 1/4” Long (31.1cm)
Weight:	9.8 lbs. (4.45 Kg)

Operating Pressure:

Fluid	300 psi max. (20.68 bar)

Operating Temperature Range:	55°F (12.8°C) 130°F (54°C)
Actuation Tube:	5/32” (4mm) OD
Air Actuating Pressure:	75-120 psi (5.2-8.3 bar)
Average Flow Rate:	202 fl. oz./6000cc per min @80 psi (50 centipoise)
Maximum Number of Colors:	32
Construction Materials:	Stainless Steel UHMW

DR-2 Regulator

Air Pressures:	Variable by Control (Manual or Automatic) 100 psi (7 bar max.)
Fluid Input:	300 psi (20.7 bar max.) (10 psi min. above output pressure)
Fluid Output:	Variable by Ratio

Pneumatic Connections

Air Pilot:	1/8” NPT (F) Thread (Cap) #10-32 (F) Thread (Plate)
Volume of Paint Held Within Regulator:	5 cc

Regulator Performance

The 78239-XX regulator performance matches that of the stand-alone DR-1. Figures X and Y show the performance curves associated with the 78239-XX regulator.

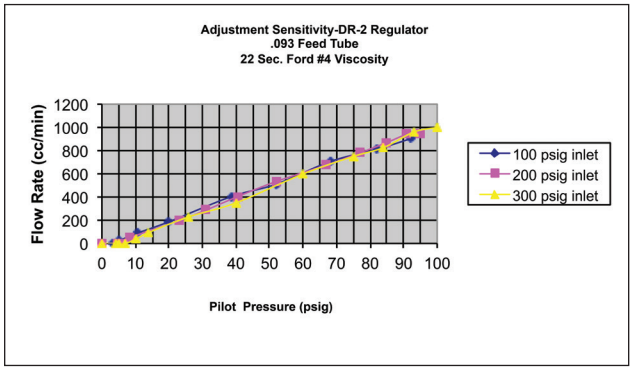


Figure X

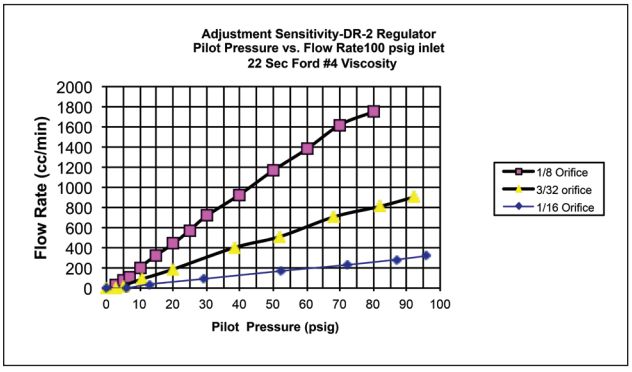


Figure Y

MCV PRE-ENGINEERED COLOR CHANGER ASSEMBLIES

The following is for “pre-engineered” color changer assemblies. Please reference “MCV Color Changer Matrix” for the changer assembly number.

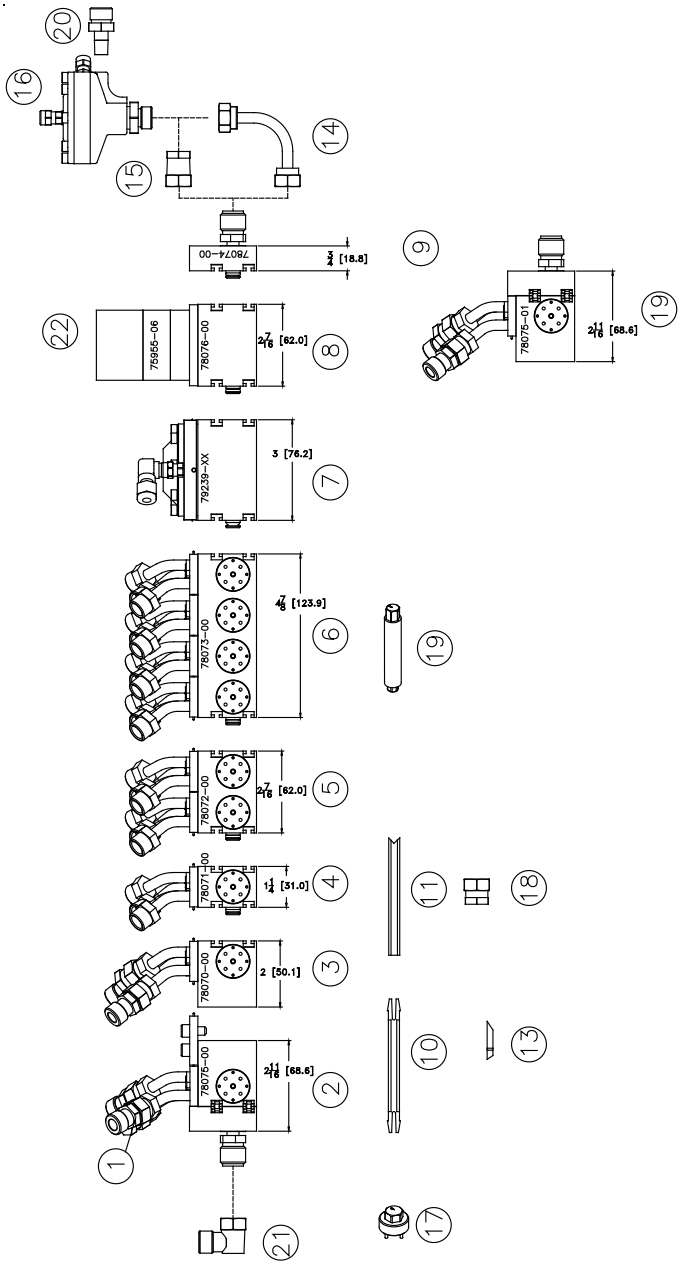


Figure 1: MCV Pre-Engineered Color Changer Assemblies

MCV COLOR CHANGER - PARTS LIST (Figure 1)

Item #	Part #	Description
1	78077-00	Check Valve Assembly
2	78075-00	Attached Cup Wash Assembly with 2 Check Valves
3	78070-00	Purge Valve Assembly with 2 Check Valves
4	78071-00	2-Color Block Assembly
5	78072-00	4-Color Block Assembly
6	78073-00	8-Color Block Assembly
7	79239-XX	DR-2 Regulator Assembly
8	78076-00	Flow Meter Block Less Flow Meter
9	78074-00	Outlet Block Assembly
10	77957-00	Retaining Clip, Color Changer
11	78078-00	Tool, Retaining Clip Removal
13	78099-00	Inlet Plug Assembly
14	78069-00	Fluid Regulator Inlet Tube
15	78114-00	Coupling, 1/4” NPS (F) X 3/8” NPS (F)
16	74151-XX	DR-1 Fluid Regulator (See “DR-1Regulator” Service Manual for details)
17	A10756-00	Tool, Valve Removal
18	78096-00	3/8” NPS (F) X CAP
19	A10766-00	Tool, Valve Seat Removal
20	78098-00	1/8” NPT (M) X 3/8” NPS (M)
21	78097-00	3/8” NPS (M) X 3/8” NPS (F), 90° Elbow
22	75955-06	“AW” Flow Meter - Consult Sales Rep. for Pick-Up

MCV COLOR CHANGER MATRIX:

Model No. 78011 - XX X X X X X X X

Denotes Color Selector Including:
1 Solvent Air Purge Assembly (78070)
2 Check Valve Assembly (78077)
1 Outlet Assembly (78074)

Number of Colors:
(Maximum of 32 Colors)

Fluid Supply:
0 = Circulating Paint Supply
1 = Dead Headed
2 = Dead Headed With Check Valves (78077 Assembly)

Fluid Fitting:
0 = 3/8” NPS Fitting

Flow Meter Type:
0 = No Flow Meter
1 = Block With Flow Meter Attached
2 = Block With No Flow Meter

Air Push Assembly (Assemblies consist of Color Valve, Check Valve, Regulator, Gage & Fitting):
0 = No Air Push Assembly
1 = 1 Air Push Assembly
2 = 2 Air Push Assemblies

Attached Cup Wash Assembly:
0 = None
1 = One Assembly (78075-00)

Fluid Regulator DR-1 Type:

0 = No Regulator	4 = 1:4 Ratio
1 = 1:1 Ratio	5 = 1:6 Ratio
2 = 1:2 Ratio	6 = 1:8 Ratio
3 = 1:3 Ratio	7 = 1:10 Ratio

Fluid Regulator DR-2 Type:

0 = No Regulator	4 = 1:4 Ratio
1 = 1:1 Ratio	5 = 1:6 Ratio
2 = 1:2 Ratio	6 = 1:8 Ratio
3 = 1:3 Ratio	7 = 1:10 Ratio
4 = 1:4 Ratio	

INSTALLATION

MCV INSTALLATION PROCEDURES

Determine Location For Color Changer

The color changer should be located as close as possible to the spray device in order to save paint and solvent with a color changer. If possible, use an enclosure to protect the color changer from airborne paints and solvents.

NOTE

► If using the optional flow meter block, include dimension (3) in calculation.

Calculate Footprint Of Color Changer (See Figure 2)

To calculate the footprint of the color changer add:

- The dimension of the purge assembly (1)
- The dimension(s) of the module(s) used to create the desired number of color valves (2)
- The dimensions of control devices (regulator and flow meter) (3)
- The dimension of the output assembly (4)

Example: To calculate the footprint of an 8-color MCV Assembly:

2” (purge assembly) + 4 7/8” (8-color valve assembly) + 3/4” (output assembly) = 7 5/8”

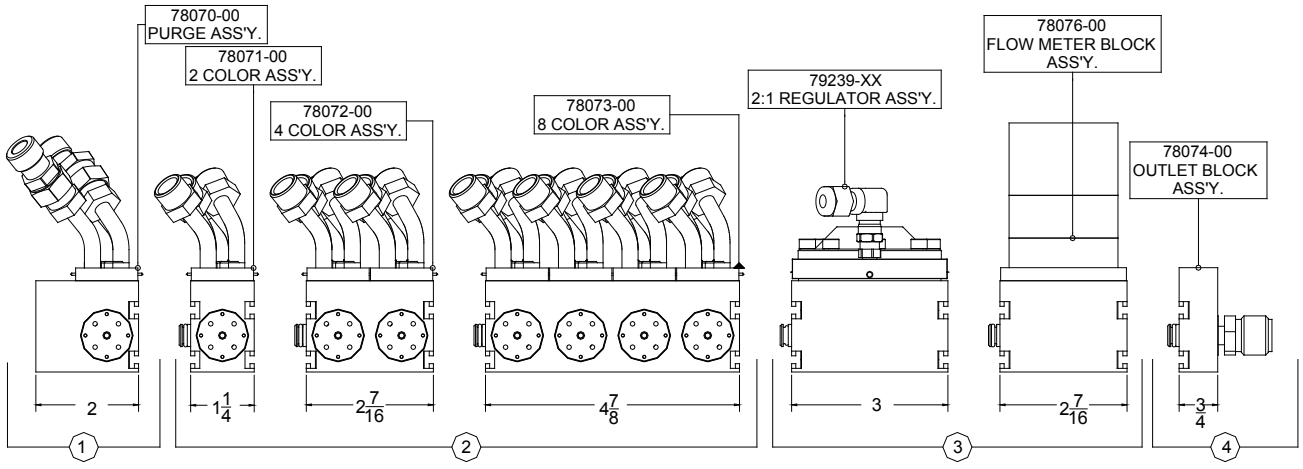


Figure 2: Calculating Footprint of Color Changer Example

Mounting The Color Changer

There are three mounting configurations as follows (reference Figure 3):

- 5/16” clearance holes for flush mounting to the booth wall
- 1/4” x 20 threaded holes in the end blocks
- 1/4” x 20 threaded holes in the back of the end blocks

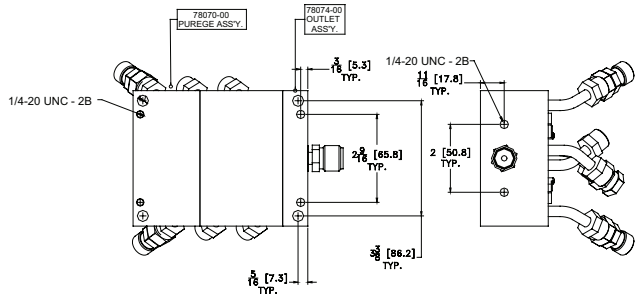


Figure 3: Mounting Configurations Footprint

WARNING

► The color changer MUST be properly grounded. Proper grounding (as described below) will prevent static charge buildup and possible discharge from the color changer.

Grounding of the Color Changer

For safety, the color changer MUST be grounded. Using a 12-gauge wire, ground the output plate of the color changer to a true earth ground. Using an ohm meter, check for ground, testing the earth ground to the purge assembly top plate. The resistance should be 10 ohms or less.

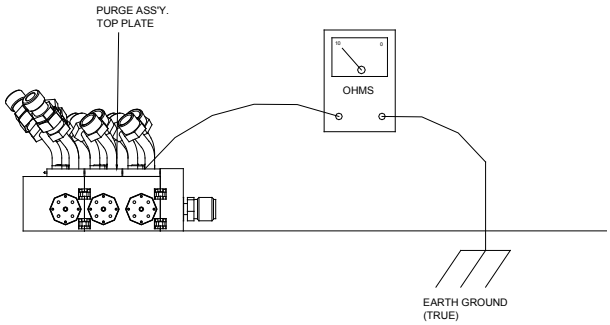


Figure 4: Grounding the Color Changer

OPERATION

OPERATING

The changer consists of modules stacked on top of each other with each module allowing two material selections. Modules may be added or removed from the assembly as desired; the user need only purchase the appropriately sized changer. If, for instance, the number of required materials increases, the changer can be expanded by adding more modules. Also, each module can be individually serviced. (Recommended for use with waterborne or solventborne paints.)

Figure 5 shows typical color changer schematics to prevent back flow of material.

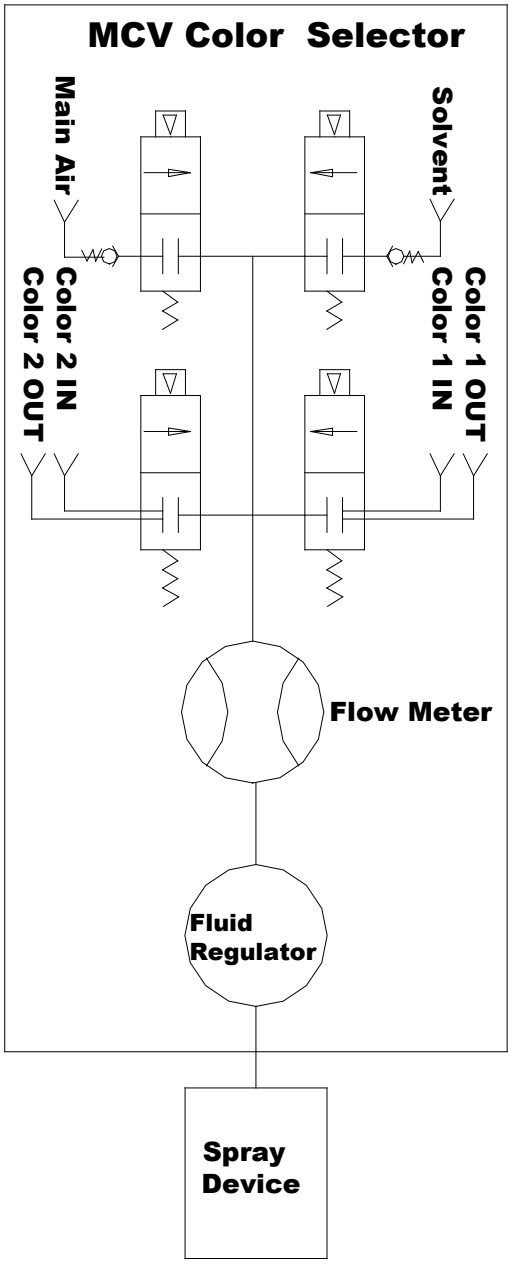


Figure 5: Color Changer Schematics

Fluid Inlet Circulating Hoses

A fluid hose connects to the 3/8” NPS (M) fitting on each IN and OUT tube of the color changer. It is recommended that a 1/4” to 3/8” ID nylon hose be used for these connections. Each hose termination for connection to the stack must have a 3/8” NPS (F) swivel connection.

NOTE

► IN and OUT hoses **CAN** be reversed on the color changer since ports are tied together.

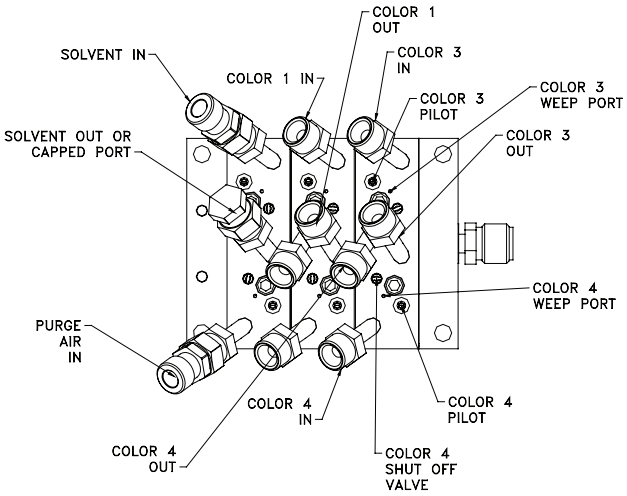


Figure 6: Hose Feature Locations

Air Pilot Hose

Each color changer valve requires a 5/32” (4mm) pilot hose to activate the color valve. This is a push to lock connection and no hose termination is required.

Fluid Output Hose

The fluid output hose of the color changer has a 3/8” NPS (M) Fitting. For safety and solvent savings it is recommended that a hose be used between the color changer and the spray device.

Weep Ports

Weep ports for the microvalve are located in each “slice” of the color changer. These ports will allow any fluid to exit the valve block should a seal failure occur. If fluid is present outside this port, maintenance will be required on the microvalve.

MAINTENANCE

⚠ WARNING

► Prior to servicing the unit, insure that all fluid pressure is relieved to atomsphere. A solvent purge should be performed if possible.

GENERAL MAINTENANCE

Removing A Valve From A Module

NOTE

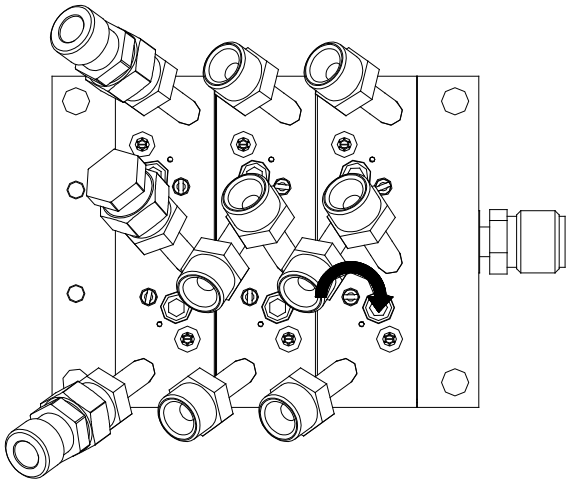
► When replacing or repairing any components in this system, before reassembling, apply a light coat of food grade petroleum jelly to all o-rings.

1. Tighten the shut-off valve in the clockwise direction until the shut-off valve completely bottoms out.

NOTE

► This procedure allows valve and/or seat removal without removing the valve slice from assembly.

2. Remove the valve (78949-00) and/or seat (77367-00) using the valve removal (A10756-00) and seat removal (A10766-00) tools.



3. Replace valves and/or seats as necessary.

4. Torque the valve seats to 15-20 lbs•in.

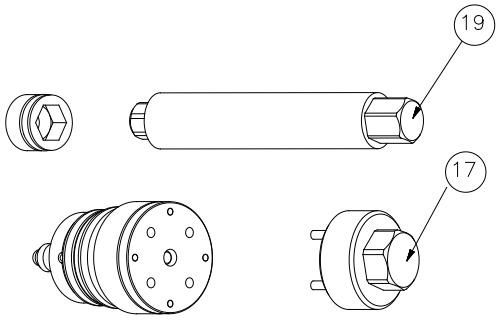


Figure 8: Valve and Seat Removal Tools

5. Tighten the valve to 15-20 lbs•in.

Removing/Adding A Valve Slice

⚠ WARNING

► Prior to servicing the unit, insure that all fluid pressure is relieved to atomsphere. A solvent purge should be performed if possible.

⚠ WARNING

► Be careful of residual fluid pressure or solvent pressure in the line. Cover over the area where the valve slice is being removed to prevent any solvent or paint from spraying on you.

1. Insure all pressure is bled off the system. If possible, flush the block with appropriate solvent.

2. Using the clip removal tool (78078-00), push on the installed locking clip with the “V” cut as shown in Figure 9.

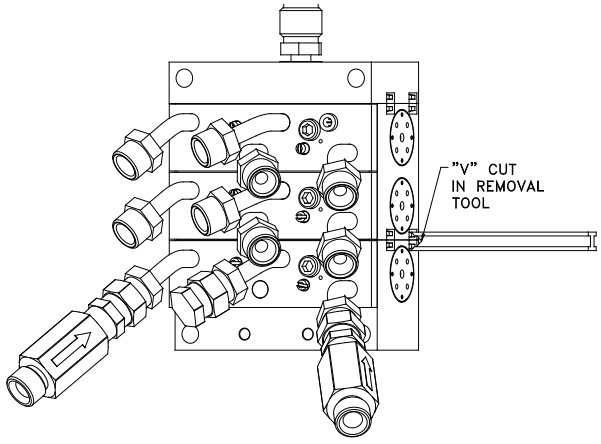


Figure 9: Slice Removal

3. Push the locking clips out of the locking slots.

4. Loosen and remove any mounting bolts holding the stack in place.

5. Carefully pull the stack assembly ends apart and remove the valve block.

6. Replace the valve slice, push the assembly together and insert the locking clips.

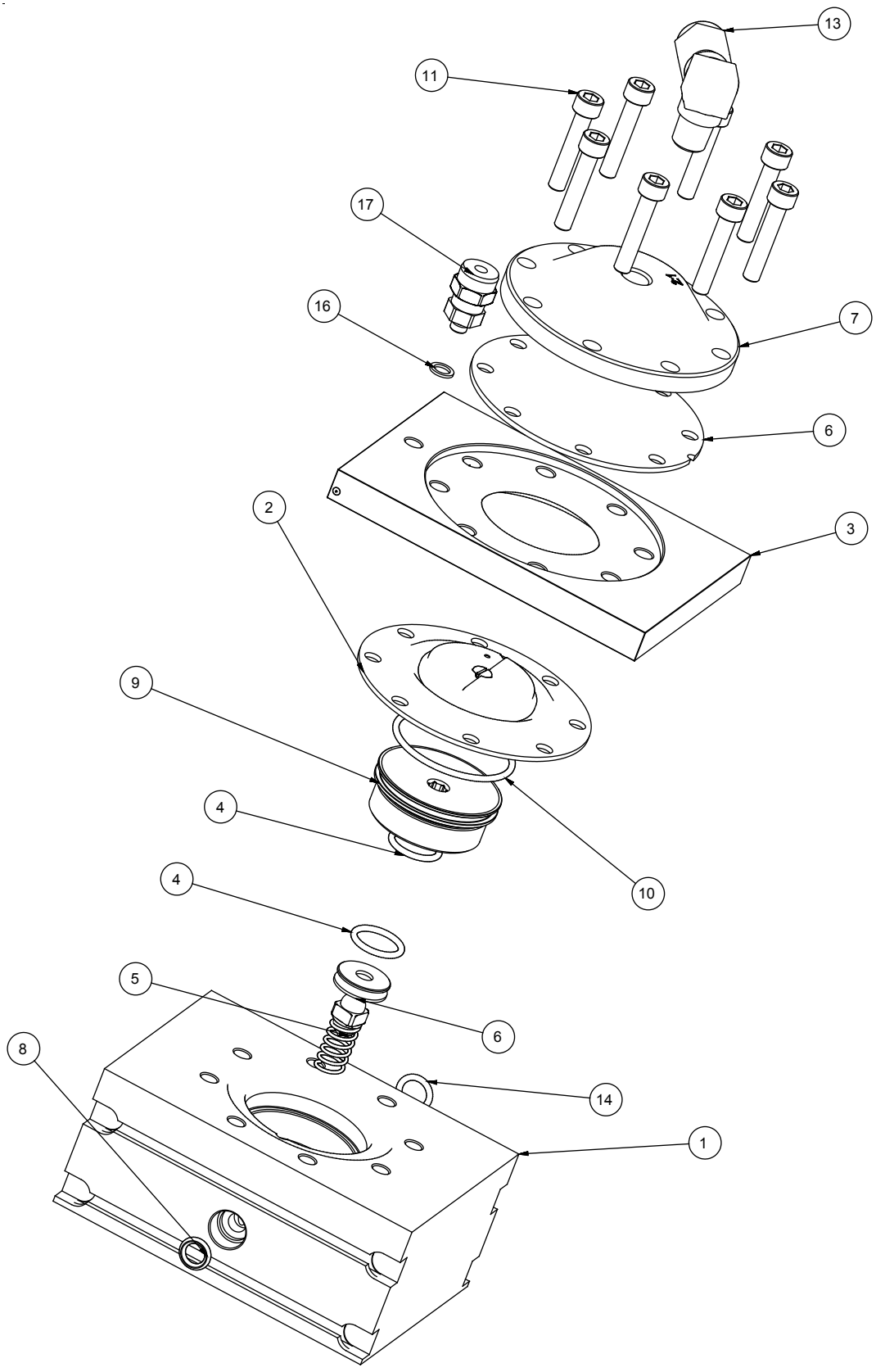


Figure 10: 79239-XX Regulator Disassembly / Reassembly

REGULATOR DISASSEMBLY PROCEDURE

1. Remove eight (8) screws [11] using a 5/32" Allen wrench.

2. Pull cap [7], upper diaphragm [6], and plate [3] from the assembly.

3. Pull diaphragm assembly [2] from the assembly.

4. Using a 3/16" Allen wrench, remove the regulator insert. By removing the insert, the seat wil be removed. To remove the carbide seat from the insert, blow compressed air in the hex end of the insert and the carbide seat will come out.

REGULATOR REASSEMBLY PROCEDURE

NOTE

► The seat and stem are matched sets of parts, each having a serial number engraved on them. Care must be taken not to mix non-matching seats and stems or the regulator will not perform properly.

1. Install all removed o-rings on the insert and the seat. Push the seat into the insert straight in, using an arbor press if possible.

2. Insert spring [5], seat [6], and one o-ring [4] into the regulator body [1].

3. Using a 3/16' Allen wrench, tighten the insert down until it bottoms out.

4. Locate the dot on the diaphram assembly [2] and place it so it is 180° from the outlet hole of the body.

5. Add plate [3], upper diaphragm [6], and cap [7]. Tighten the eight (8) screws [11] in a cross pattern to 10 lbs•in. Then follow by tightening each screw in a circular pattern to 20 lbs•in.

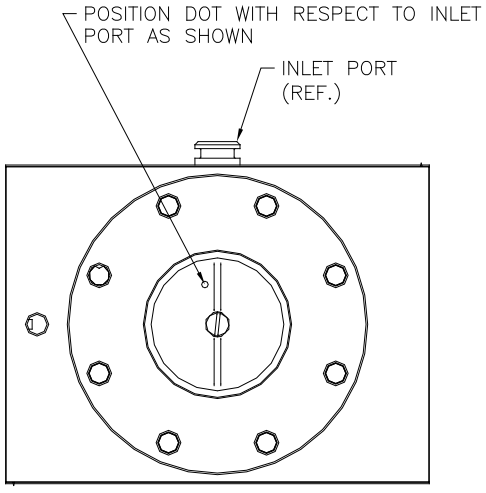


Figure 11: Diaphragm Assembly Position

TEST AND CHECKOUT PROCEDURE FOR COLOR CHANGER

Step 1:

1. Connect air line to a regulated air supply.
2. Attach the air line to a ball valve assembled to the outlet of the color changer.
3. Adjust the air supply pressure to 100 psi (6.9 bar).
4. Open the ball valve at the outlet of the color changer.
5. Apply a soap solution on the color changer manifold.
6. Check the manifold assembly's mating surfaces between color blocks for soap bubbles.

NOTE

► If bubbles are observed, dismantle color changer manifold and repair as required.

7. If no bubbles are present, rinse manifold with water and blow dry with air.

Step 2:

1. Attach two (2) regulated air supply hoses, one with a 3-way valve (normally closed) for operating the color valve cylinder on the color changer. (Set the pressure of the 3-way valve at 75 psi (5.8 bar) or more.)

The second hose will be used for supplying 100 psi (6.9 bar) of air to the color inlet port of each color changer valve.

2. Connect the air supply hose with 100 psi (6.9 bar) to color inlet valve. Connect a 2-way ball valve to the matching return port on the color changer manifold.
3. Turn the ball valve installed on the paint circulation fitting to verify recirculation ability.

NOTE

► Ensure valve is closed when completed.

4. Connect the air supply with a 3-way valve (normally closed) to the color valve cylinder.
5. Activate the 3-way valve to operate the color valve.

NOTE

► The piston rod on the top of the color valve assembly should EXTEND and air should blow out of the color changer outlet. Check for a crisp and sharp actuation of the color valve air cylinder.

6. Deactivate the 3-way valve and close the color valves.

NOTE

► The piston rod on the top of the color valve assembly should be RETRACTED, and the air should have stopped blowing out of the outlet of the color changer.

7. Connect a 1/4" (6.4 cm) ID hose, 3 ft. (91.4cm) long to the outlet of the color changer.

8. Acquire a container of water and fill it with about 4” (10.6cm) of WATER.

Position the hose in the container filled with water.

9. There should be no more than 6 bubbles per minute coming from the outlet of the hose that is submerged.

10. If there are more than 6 bubbles per minute, remove the color valve assemby, replace the valve seat (77367-00), and reinstall color valve assembly. If the new seat does not correct the problem, either the manifold block or color valve assembly is defective.

11. Proceed to the next color valve and repeat Steps 2 thru 11.

12. When all the color valves are checked out, then check the purge valve assembly, repeating Steps 2 thru 11.

13. Once all valves are operational, deactivate the 3-way valve, and then disconnect the air lines used for testing from the color changer.

WARNING

► **ALWAYS** test color changer for conductivity after assembly or repair. Proper conductivity is required to assure entire color changer can be properly grounded when installed.

14. With an ohm meter, check for conductivity between the top plate of the purge valve and the output plate on the color changer. There should be 10 ohms or less between the two points. (Reference Figure 12)

WARNING

► **NEVER** wrap the equipment in plastic to keep it clean. A surface charge may build-up on the plastic surface and discharge to the nearest grounded object. Efficiency of the equipment will also be reduced and damage or failure of the equipment’s components may occur. **WRAPPING THE EQUIPMENT** in plastic will void warranty.

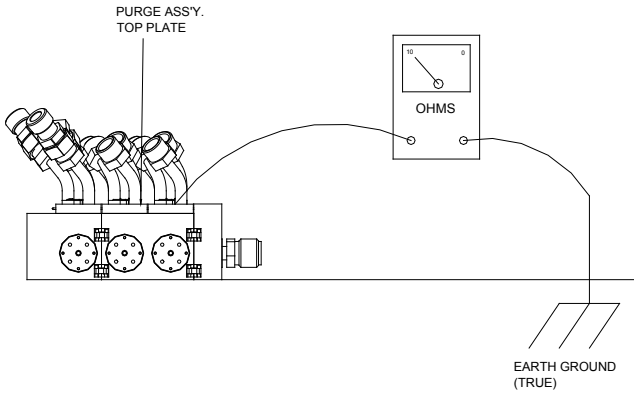


Figure 12: Ground Test

PARTS IDENTIFICATION

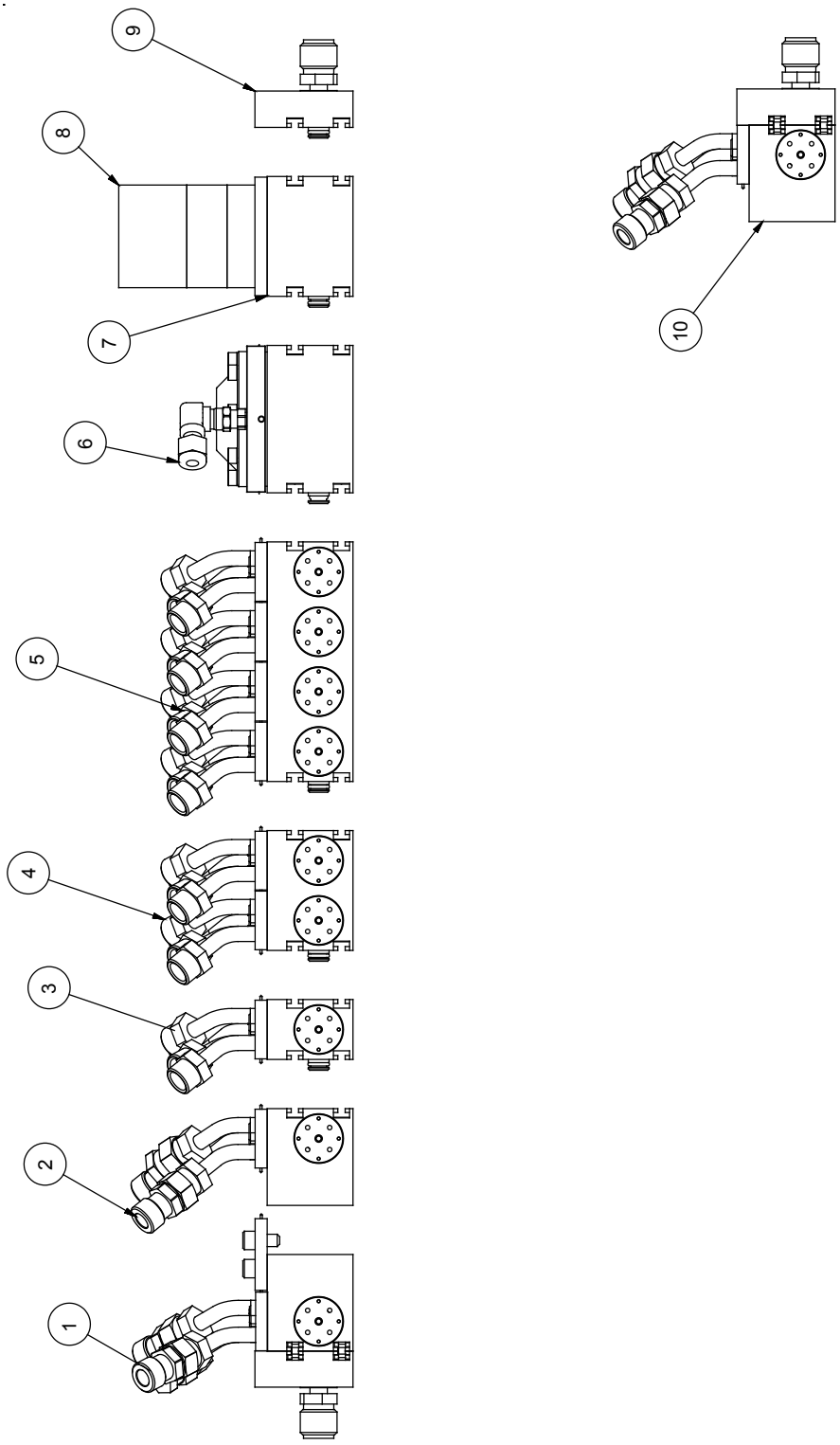


Figure 13: MCV Color Changer Assembly

MCV COLOR CHANGER ASSEMBLY - PARTS LIST (Figure 13)

Item #	Part #	Description	Qty
1	78075-00	Cup Wash Assembly, Attached	1
	78075-02	Cup Wash Assembly, Attached with Plug	1
2	78070-00	Valve, Purge Assembly	1
3	78071-00	2-Color Valve Assembly	1
4	78072-00	4-Color Valve Assembly	1
5	78073-00	4-Color Valve Assembly	1
6	**Table A - "EE"**	Assembly, DR-2 Regulator	1
7	78076-00	Assembly, Flow Meter Block	1
8	75955-06	"AW" Flow Meter - Consult Sales Rep. for Pick-Up	1
9	78074-00	Outlet Block Assy.	1
10	78075-01	Cup Wash Assembly, Detached	1
	78075-03	Cup Wash Assembly, Detached (With Plug)	1

TABLE A
79239-XX REGULATOR ASSEMBLY

Description	"EE"
DR 2 - 1:1 Ratio	79239-01
DR 2 - 1:2 Ratio	79239-02
DR 2 - 1:3 Ratio	79239-03
DR 2 - 1:4 Ratio	79239-04
DR 2 - 1:6 Ratio	79239-06
DR 2 - 1:8 Ratio	79239-08
DR 2 - 1:10 Ratio	79239-10

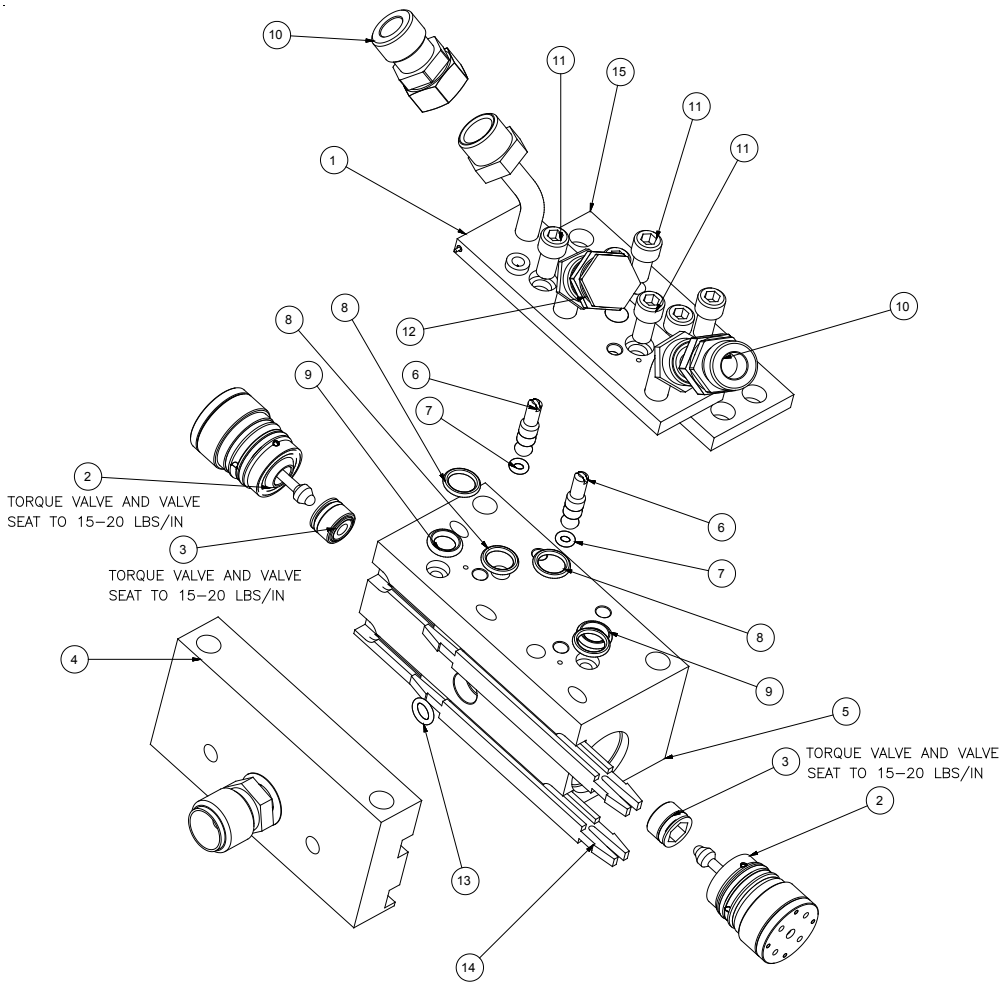


Figure 14: 78075-00 & 78075-02 Bell Wash Assemblies

78075-00 & 78075-02 BELL WASH ASSEMBLIES -PARTS LIST (Figure 14)

Item #	Part #	Description	Qty
1	78093-00	Assembly Fitting Plate “B” Assembly	1
2	78949-00	Assembly, Valve	2
3	77367-00	Assembly, Valve Seat	2
4	78074-00	Outlet Block Assembly	1
	79001-06	O-Ring, Solvent Proof (Included with 78074)	1
5	77952-00	Body, Valve Purge	1
6	77950-00	Shutoff Valve	2
7	79001-16	O-Ring, Solvent Proof	2
8	79001-14	O-Ring, Solvent Proof	4
9	7554-115	O-Ring, Solvent Resistant	2
10	78077-00	Check Valve, 3/8” NPS (F) X 3/8” NPS (M)	2
11	7959-16c	Screw, 1/4-20 X 3/4” Long, SHCS	6
12	78096-00	Cap, 3/8” NPS (F)	1
13	79001-05	O-Ring, Solvent Proof	1
14	77957-00	Retaining Cup, Color Changer	2
15	77964-00	Mounting Plate, Cup Wash	1

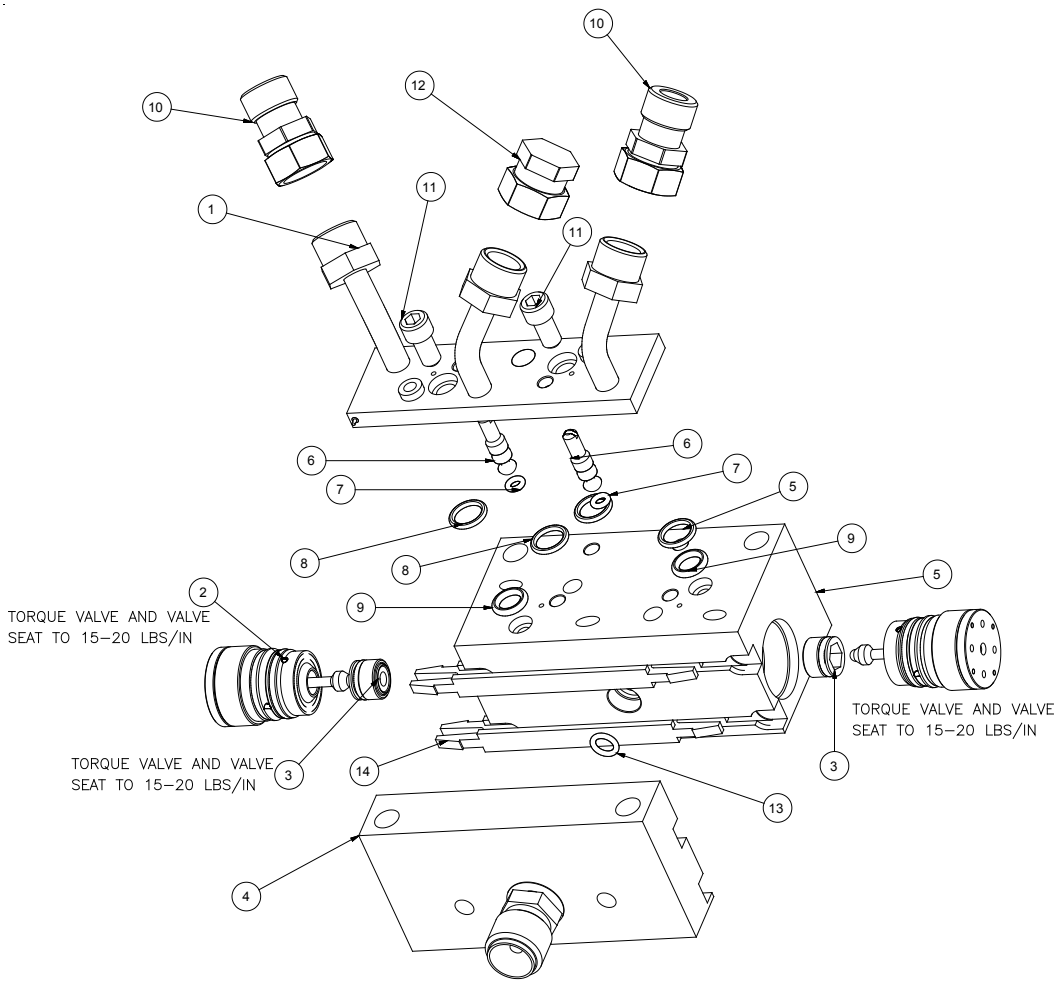


Figure 15: 78075-01 & 78075-03 Bell Wash Assemblies

78075-01 & 78075-03 BELL WASH ASSEMBLIES -PARTS LIST (Figure 15)

Item #	Part #	Description	Qty
1	78092-00	Assembly Fitting Plate “B” Assembly	1
2	78949-00	Assembly, Valve	2
3	77367-00	Assembly, Valve Seat	2
4	78074-00	Outlet Block Assembly	1
4A	79001-06	O-Ring, Solvent Proof (Included with 78074-00)	1
5	77952-00	Body, Valve Purge	1
6	77950-00	Shutoff Valve	2
7	79001-16	O-Ring, Solvent Proof	2
8	79001-14	O-Ring, Solvent Proof	4
9	7554-115	O-Ring, Solvent Resistant	2
10	78077-00	Check Valve, 3/8” NPS (F) X 3/8” NPS (M)	2
11	7959-16C	Screw, 1/4-20 X 3/4” Long, SHCS	2
12	78096-00	Cap, 3/8” NPS (F)	1
13	79001-05	O-Ring, Solvent Proof	1
14	77957-00	Retaining Cup, Color Changer	2

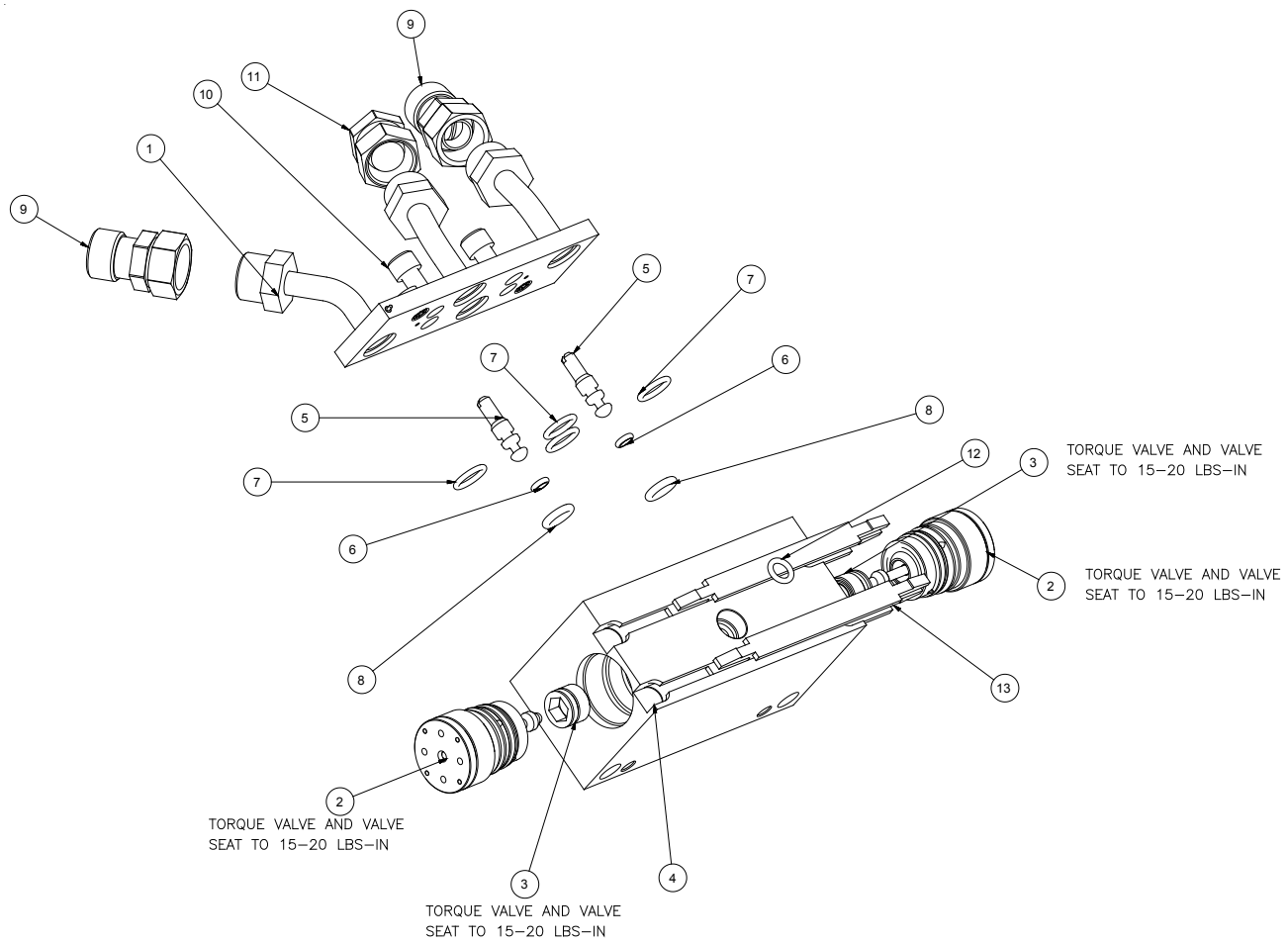


Figure 16: 78070-00 Block Purge Assembly

78070-00 BLOCK PURGE ASSEMBLY - PARTS LIST (Figure 16)

Item #	Part #	Description	Qty
1	78092-00	Assembly Fitting Plate “B” Assembly	1
2	78949-00	Assembly, Valve	2
3	77367-00	Assembly, Valve Seat	2
4	77952-00	Body, Valve Purge	1
5	77950-00	Shutoff Valve	2
6	79001-16	O-Ring, Solvent Proof	2
7	79001-14	O-Ring, Solvent Proof	4
8	7554-115	O-Ring, Solvent Resistant	2
9	78077-00	Check Valve, 3/8” NPS (F) X 3/8” NPS (M)	2
10	7959-16c	Screw, 1/4-20 X 3/4” Long, SHCS	2
11	78096-00	Cap, 3/8” NPS (F)	1
12	79001-05	O-Ring, Solvent Proof	1
13	77957-00	Retaining Clip, Color Changer	2

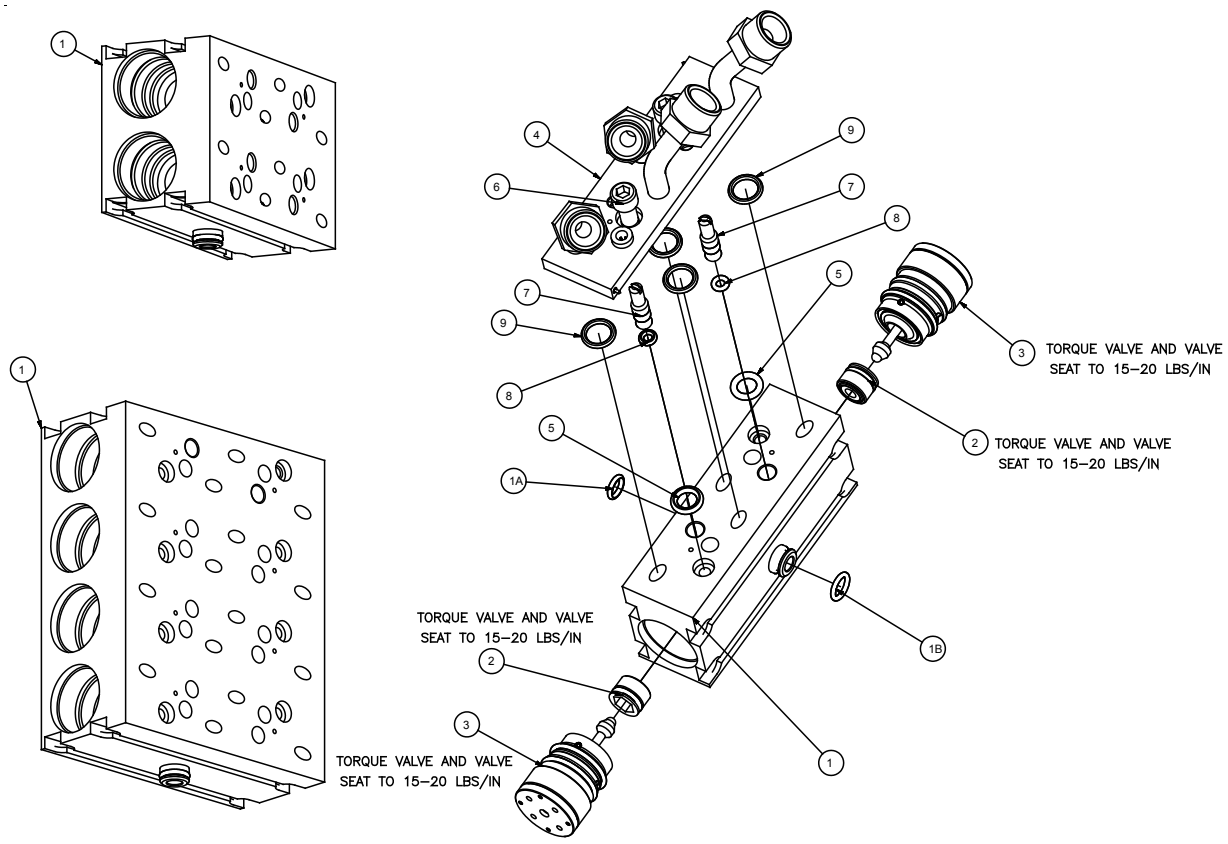


Figure 17: Manifold Assembly

MANIFOLD ASSEMBLY - PARTS LIST (Figure 17)			
Item #	**Part #**	**Description**	**Qty**
1	A10458-02	Assembly, Block MCV Stack 2-Color	1
	A10458-04	Assembly, Block MCV Stack 4-Color	
	A10458-08	Assembly, Block MCV Stack 8-Color	
1A	79001-05	O-Ring, Solvent Proof (Included with Block Assembly)	1
1B	79001-06	O-Ring, Solvent Proof (Included with Block Assembly)	1
1C	77957-00	Retaining Clip, Color Changer	2
Note: Below are per 2 valve color slice quantities.			
Item #	**Part #**	**Description**	**Qty**
2	77367-00	Assembly, Valve Seat	2
3	78949-00	Assembly, Valve	2
4	78068-00	Assembly, Fitting Plate Color Valve	1
5	7554-115	O-Ring, Solvent Resistant	2
6	7959-16c	Screw, 1/4-20 X 3/4” Long, SHCS	2
7	77950-00	Shutoff Valve	2
8	79001-16	O-Ring, Solvent Proof	2
9	79001-04	O-Ring, Solvent Proof	4

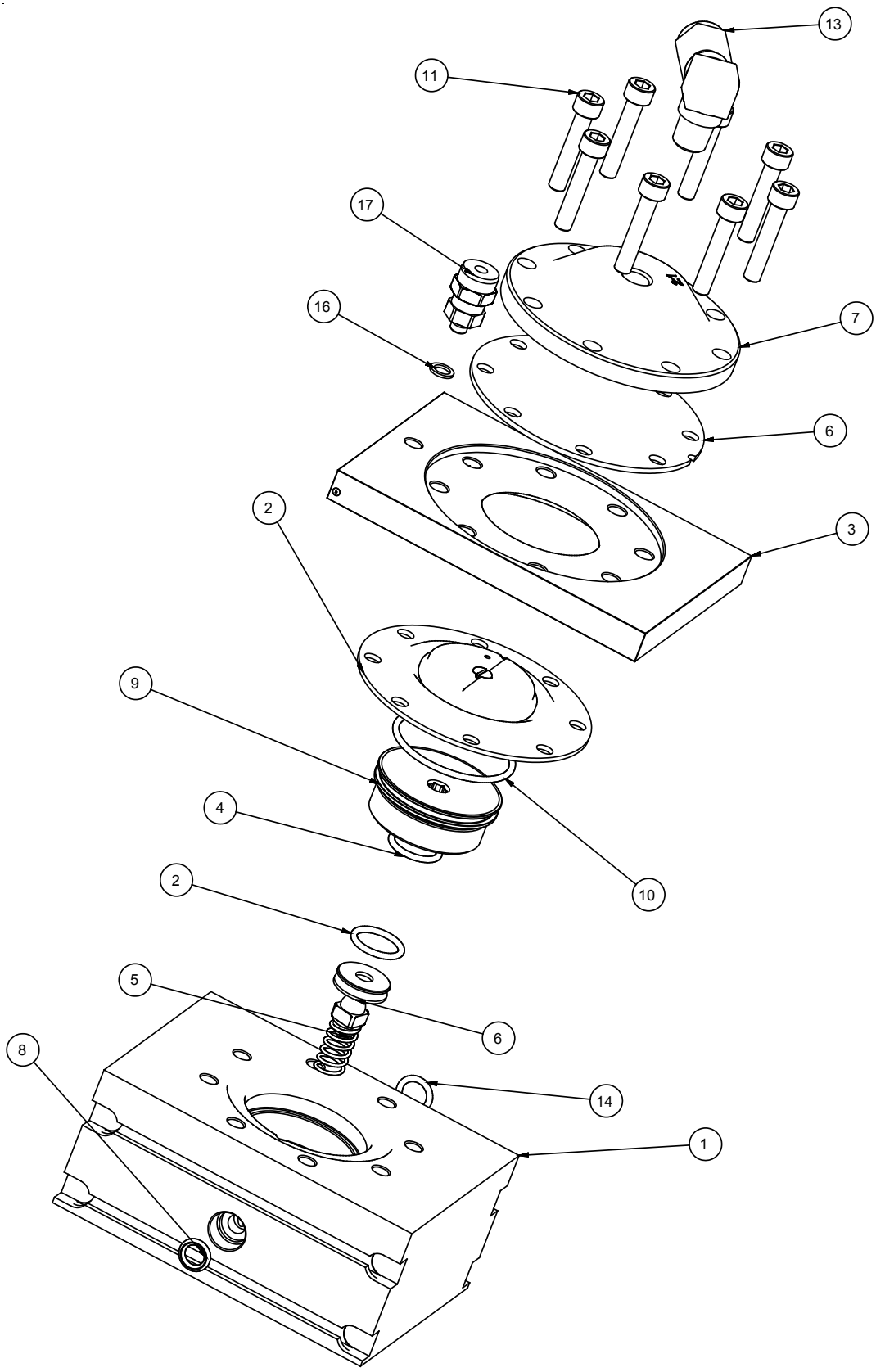


Figure 18: 79239-XX Regulator Assembly

79239-XX REGULATOR ASSEMBLY - PARTS LIST (Figure 18)

Item #	Part #	Description	Qty
1	79236-00	Assembly, Regulator Block	1
2	See Table A - “A”	Assembly, Diaphragm DR-2	1
3	See Table A - “B”	Assembly, Manifold Plate	1
4	79001-08	O-Ring, Solvent Proof	2
5	77354-00	Needle and Seat Lapped Set	1
6	74157-03	Diaphragm, Regulator	1
7	79231-00	Cap, Fluid Regulator	1
8	79001-05	O-Ring, Solvent Proof	1
9	79238-00	Insert, Regulator	1
10	79001-18	O-Ring, Solvent Proof	1
11	LSFA0006-40F	1/4-20 X 1 1/4” Lg. SHCS	8
12	74161-00	Spring, Regulator	1
13	14157-04	Fitting, 14” ODT X 1/8” NPT (M)	1
14	79001-06	O-Ring, Solvent Proof	1
16	72135-00	Gasket	1
17	7892-12	Fitting, 1/4” ODT X 10-32	1

TABLE A
79239-XX REGULATOR ASSEMBLY

Dash No.	Description	“A”	“B”
01	Regulator Ratio 1:1	79235-01	A11067-01
02	Regulator Ratio 1:2	79235-02	A11067-02
03	Regulator Ratio 1:3	79235-03	A11067-03
04	Regulator Ratio 1:4	79235-04	A11067-04
06	Regulator Ratio 1:6	79235-06	A11067-06
08	Regulator Ratio 1:8	79235-08	A11067-08
10	Regulator Ratio 1:10	79235-10	A11067-10

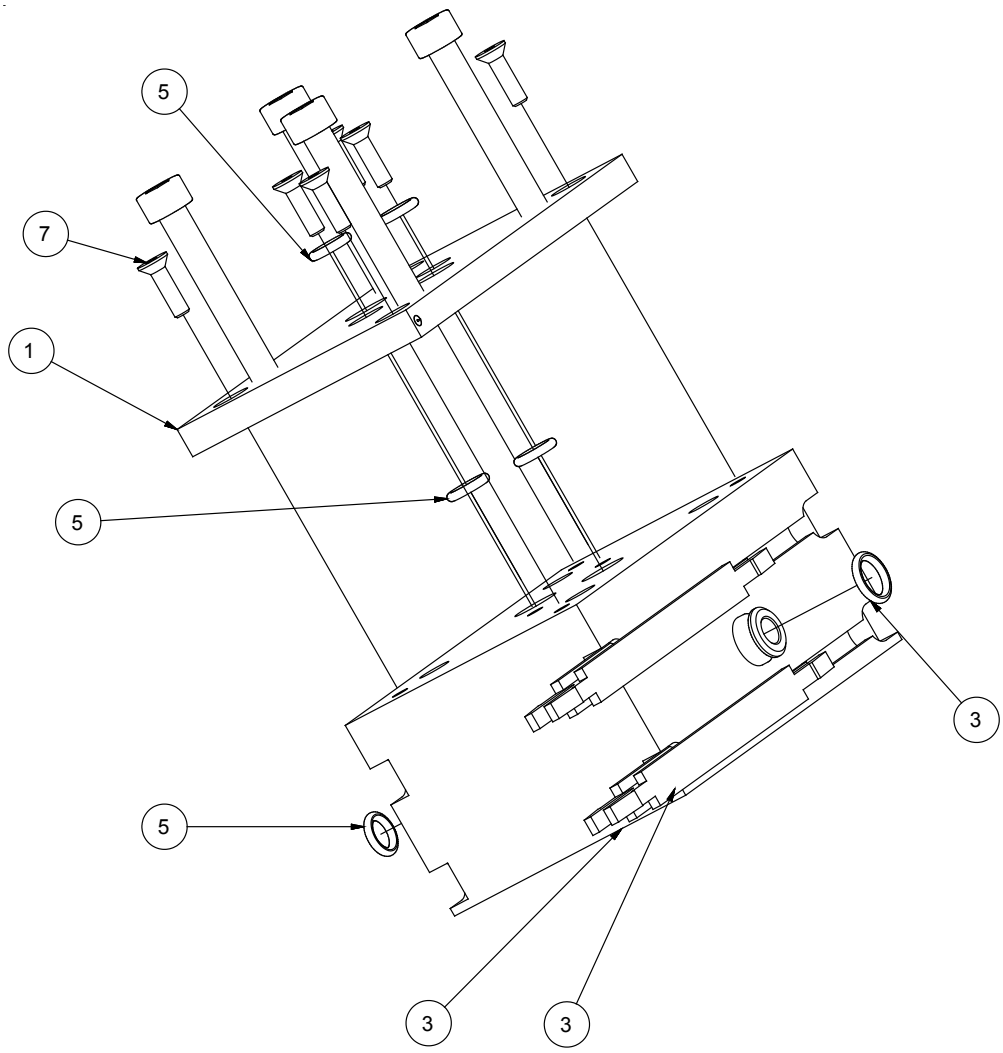


Figure 19: Flow Meter Block Assembly

FLOW METER BLOCK ASSEMBLY - PARTS LIST (Figure 19)

Item #	Part #	Description	Qty
1	A10467-00	Assembly, Flowmeter Plate	1
2	A10458-FM	Flow Meter Body Assembly	1
2A	79001-05	O-Ring, Solvent Proof (Included with Block Assembly)	1
2B	79001-06	O-Ring, Solvent Proof (Included with Block Assembly)	1
3	79001-05	O-Ring, Solvent Proof	4
4	78232-16C	Screw, Counter Sunk Head	6
5	77957-00	Retaining Clip, Color Changer	2

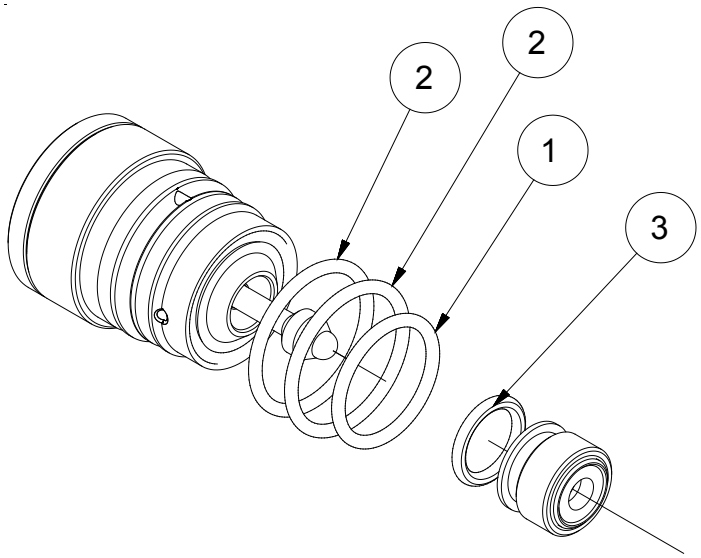


Figure 20a: 78949-00 Valve and 77367-00 Seat Replacement parts

78949-00 VALVE & 77367-00 SEAT REPLACEMENT PARTS (Figure 20a)			
Item #	**Part #**	**Description**	**Qty**
1	79001-01	O-Ring, Solvent Proof	1
2	79001-02	O-Ring, Solvent Proof	2
3	79001-14	O-Ring, Solvent Proof	1

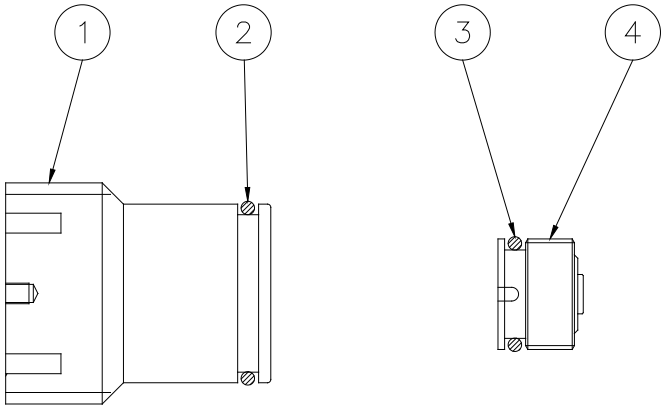


Figure 20b: 77620-00 Valve Plug Kit (Optional)

77620-00 VALVE PLUG KIT (Optional) (Use in place of Valve & Seat) (Figure 20b)			
Item #	**Part #**	**Description**	**Qty**
1	7924400	Plug	1
2	79001-19	O-Ring, Solvent Proof	1
3	79001-14	O-Ring, Solvent Proof	1
4	77618-00	Plug, Seat	1

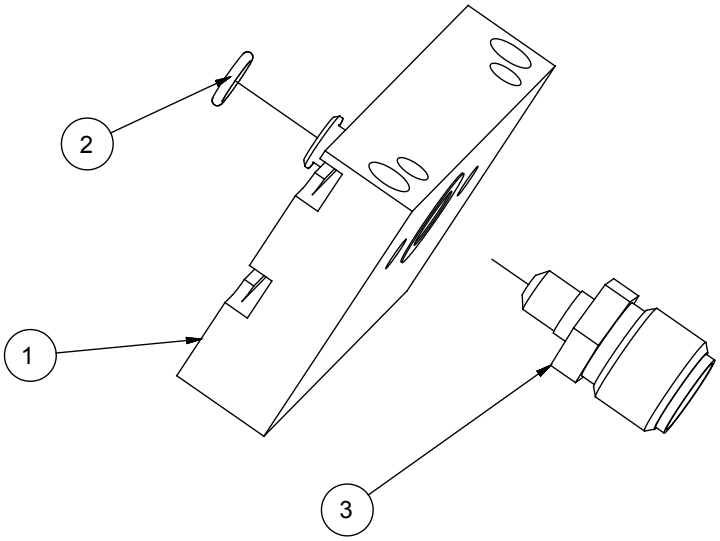


Figure 21: 78074-00 Outlet Block Assembly

78074-00 OUTLET BLOCK ASSEMBLY (Figure 21)

Item #	Part #	Description	Qty
1	77956-00	Outlet Block	1
2	79001-06	O-Ring, Solvent Proof	1
3	78079-00	Fitting	1

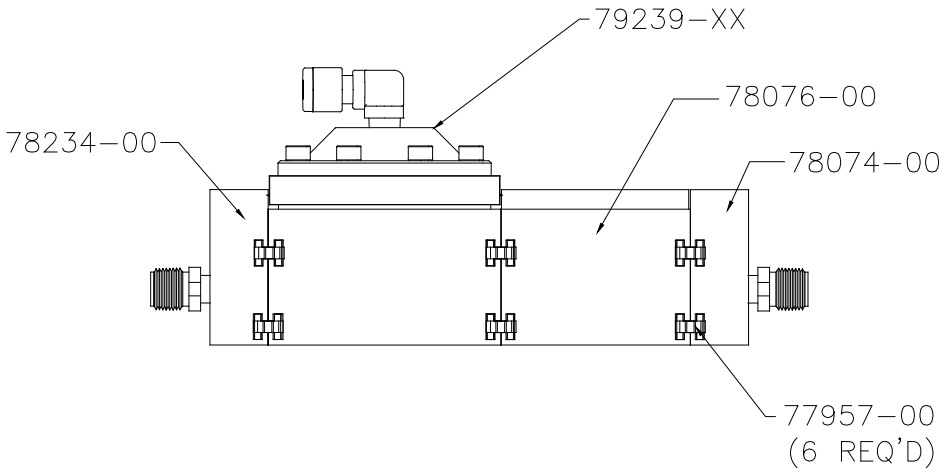


Figure 22: 78235-00 Regulator & Flow Meter Stand-Alone Assembly

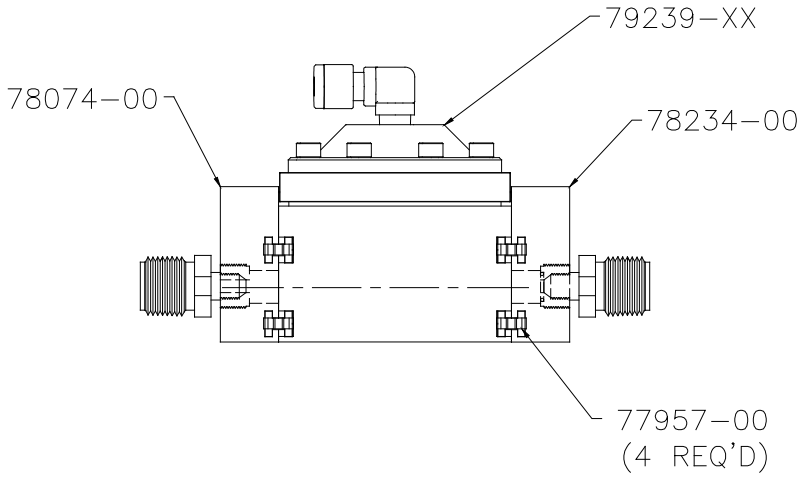


Figure 23: 79245-00 Regulator DR 2 Stand-Alone

WARRANTY POLICIES

LIMITED WARRANTY

Ransburg will replace or repair without charge any part and/or equipment that fails within the specified time (see below) because of faulty workmanship or material, provided that the equipment has been used and maintained in accordance with Ransburg's written safety and operating instructions, and has been used under normal operating conditions. Normal wear items are excluded.

THE USE OF OTHER THAN RANSBURG APPROVED PARTS VOIDS ALL WARRANTIES.

SPARE PARTS: One hundred and eighty (180) days from date of purchase, except for rebuilt parts (any part number ending in "R") for which the warranty period is ninety (90) days.

EQUIPMENT: When purchased as a complete unit, (examples: guns, power supplies, control units, etc.), is one (1) year from date of purchase. **WRAPPING THE APPLICATOR, ASSOCIATED VALVES AND TUBING, AND SUPPORTING HARDWARE IN PLASTIC, SHRINK-WRAP, OR ANY OTHR NON-APPROVED COVERING, WILL VOID THIS WARRANTY.**

RANSBURG'S ONLY OBLIGATION UNDER THIS WARRANTY IS TO REPLACE PARTS THAT HAVE FAILED BECAUSE OF FAULTY WORKMANSHIP OR MATERIALS. THERE ARE NO IMPLIED WARRANTIES NOR WARRANTIES OF EITHER MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. RANSBURG ASSUMES NO LIABILITY FOR INJURY, DAMAGE TO PROPERTY OR FOR CONSEQUENTIAL DAMAGES FOR LOSS OF GOODWILL OR PRODUCTION OR INCOME, WHICH RESULT FROM USE OR MISUSE OF THE EQUIPMENT BY PURCHASER OR OTHERS.

EXCLUSIONS:

If, in Ransburg's opinion the warranty item in question, or other items damaged by this part was improperly installed, operated or maintained, Ransburg will assume no responsibility for repair or replacement of the item or items. The purchaser, therefore will assume all responsibility for any cost of repair or replacement and service related costs if applicable.

MANUAL CHANGE SUMMARY

This manual was published to supercede Service Manuals **CS-01-01.7, MCV Series Modular Color Changer** to make the following changes:

1. Change logo.

Service Manual Price: $30.00 (U.S.)

Manufacturing
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Angola, Indiana 46703-9100
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Technical/Service Assistance
Telephone: 800/ 233-3366
Fax: 419/ 470-2071
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Technical Support Representative will direct you to the appropriate telephone number for ordering Spare Parts.

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