

FCV-31/ -31N S1/ -31N S1-R4/ -31N S1-R8

Paint Flow Control Valve




GB Before use, adjustment or maintenance, it is important to read this instruction manual very carefully. This manual must be stored in a safe place for any future reference that may be necessary.



IMPORTANT

This flow control valve should be operated only by an adequately trained operator, for safe use and maintenance of the equipment. Any misuse or handling other than those indicated in this Instruction Manual is not covered by guarantee. ANEST IWATA disclaims all responsibility for any accident or damage caused by failure to observe the operational and safety procedures in this manual. In the interest of user friendliness, this manual contains information in a brief and concise form.

For any additional information you may require regarding flow control valve operations, or if any missing parts or any damage during transportation is found, please contact your nearest ANEST IWATA Company (see last cover page).

Be sure to observe warnings and cautions in this instruction manual.	
If not, it can cause paint ejection and serious bodily injury by drawing organic solvent.	
Be sure to observe following  marked items which are especially important.	
 WARNING	Indicates a potentially hazardous situation which, if not avoided, may result in serious injury or loss of life.
 CAUTION	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or property damage.
IMPORTANT	Indicates notes which we ask you to observe. The safety precautions in this instruction manual are the minimum necessary conditions. Follow national and local regulations regarding fire prevention, electricity and safety as well as your own company regulations.

IMPORTANT SPECIFICATIONS



Max. Working Pressure:	Fluid IN: 25 bar (360 PSI)	Fluid OUT: 6.0 bar (87 PSI)	Control AIR: 6.0 bar (87 PSI)
Max. Temperature range:	Atmosphere 5°C ~ 40°C Fluid/Air 5°C ~ 43°C		

TECHNICAL SPECIFICATIONS

Model	Material of wet section	Diaphragm area ratio Air : Paint	Adj. Air Pressure bar (PSI)	Max. primary pressure bar (PSI)	Max. flow l/min.	Connection	Weight g
FCV-31	Aluminium	1:1	0~6.0 (0~87)	25 (360)	2.0	FLUID IN: G3/8" FLUID OUT: Rc 1/4" AIR HOSE: Ø 6x4	750
FCV-31N S1	Stainless Steel	1:1					950
FCV-31N S1 R4	Stainless Steel	1:4					950
FCV-31N S1 R8	Stainless Steel	1:8					950

SAFETY WARNINGS

FIRE AND EXPLOSION

- Sparks and open flames are strictly prohibited.**
Paints can be highly flammable and can cause fire. Avoid any ignition sources such as smoking, open flames, electrical goods, etc. 
- With FCV-31 never use the following HALOGENATED HYDROCARBON SOLVENTS.**
With FCV-31N-S1 models, make sure its exterior does not come into contact with the following halogenated hydrocarbon solvents, which can cause cracks or dissolution of body (In aluminium) caused by chemical reaction:
methyl chloride, dichloromethane, 1,2-dichloroethane, carbon tetrachloride, trichloroethylene, 1,1,1-trichloroethane
(Be sure that all fluids and solvents are compatible with flow control valve parts. We can supply a list of materials used to manufacture the product.)
- Securely ground flow control valve by connecting to grounded metal bracket / to grounded pump or to grounded fluid pipelines.**
Ground flow control valve : Less than 1MΩ. Check the earth stability periodically. If not, insufficient grounding can cause fire and explosion due to static electric sparking. 

SAFETY WARNINGS



IMPROPER USE OF EQUIPMENT

1. Before operation, confirm that each section is properly fitted and adjusted.
Install a pressure relief valve to connected piping route, to relieve paint pressure in an emergency.
2. Never spray towards people or animals. If done, it can cause inflammation of eyes and skin or bodily injury.
3. Never exceed maximum operating pressure and maximum operating temperature.
4. Firmly connect flow control valve to fluid hose and pump to avoid leakage and looseness. If not, hazardous hose movement and paint ejection can cause severe bodily injury. If you are injured, see a doctor immediately without regard to the degree of injury.
5. Be sure to use at lower than max. primary pressure. Use at higher than max. primary pressure can cause damage which is very dangerous.
6. Be sure to use fluid hose that can withstand Max. primary working pressure 25 bar.



PROTECTION OF HUMAN BODY

1. Use in a well-ventilated place to avoid serious injury caused by paints or solvents. If not, poor ventilation can cause organic solvent poisoning and catch fire.
2. Be sure to reduce fluid pressure down to 0 bar before cleaning, disassembling or servicing. If not, remaining pressure can cause bodily injury through ejection of cleaning liquid due to wrong operation.
3. During cleaning, disassembling or servicing, be sure to wear protective gear such as glasses, masks or gloves.
If not, cleaning liquid, etc., can cause inflammation of eyes and skin. If you feel something wrong with eyes or skin, see a doctor immediately.



OTHER PRECAUTIONS

1. Never alter this equipment. If done, it can cause insufficient performance and failure.
2. Never use it for foods or chemicals. If done, it can cause accident by corrosion of paint passages and foreign matter can cause health problems.
3. If something goes wrong, immediately stop operation and find the cause. Do not use again until you have solved the problem.
4. Never use commercial or other parts instead of ANEST IWATA original spare parts.

HOW TO CONNECT

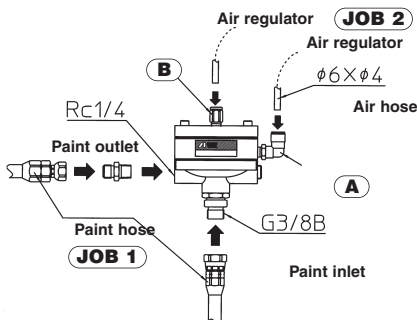
IMPORTANT:

When connecting joints to exhaust thread section (Rc1/4"), apply medium strength adhesive to thread section or wind sealing tape around thread section to prevent liquid from leaking.

Make sure that paint does not include dirt or foreign matter. Using paint containing foreign matter can cause leakage from seated section and unstable fluid output.

Primary side fluid pressure supply must be set 0.5 bar higher than operating air pressure. If primary side fluid pressure supply is lower than operating air pressure, fluid output will be unstable.

Connections of adjustment air pressure inlet and compulsion air pressure inlet are different in FCV-31/31N S1 and FCV-31N S1-R4/R8. Refer to NOTE: A and B.



Connecting Example:

1. Firmly connect fluid hose to fluid inlet and outlet.
2. Connect air hose (Ø 6x4) coming from air regulator.

How to operate:

- Increasing air pressure to air regulator, secondary side fluid pressure will increase.
- Decreasing air pressure to air regulator, secondary side fluid pressure will decrease.
- If you fully open the valve at the adjusted air pressure, air pressure should be fixed higher than adjusted air pressure.

NOTE:

AIR INLET	A	B
FCV-31/ 31N S1	Adjustment	Compulsion
FCV-31N S1-R4/ R8	Compulsion	Adjustment

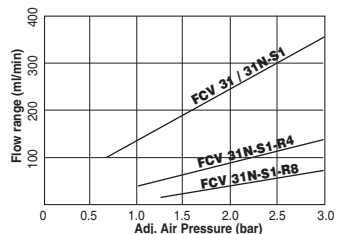
FLOW VS ADJ. AIR PRESSURE

Testing condition:

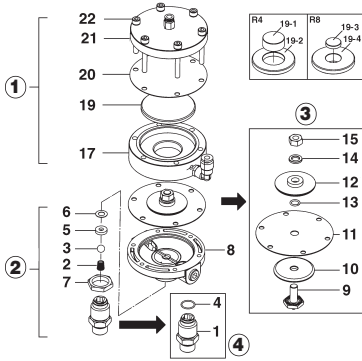
- Inlet Paint Pressure: 6.0 bar • WA-101 spray gun ø 0,8
- Paint Viscosity: 13sec(NK2) • Air Hose ø 6x4mm

Recommended flow range:

FCV 31 / FCV 31N S1	0.7 bar	over 100	ml/min
FCV 31N S1-R4	1-23 bar	35-100	ml/min
FCV 31N S1-R8	12-23 bar	20-50	ml/min



DISASSEMBLING

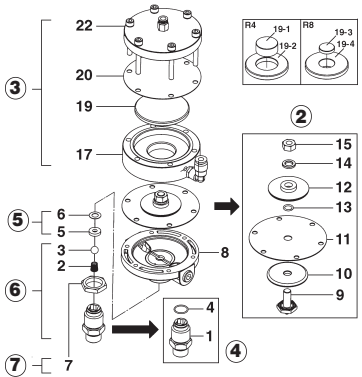


IMPORTANT:

Whenever disassembling tungsten carbide ball and seat, make sure there is no wear or damage. If there is any wear or damage, replace with new one.

1. Remove bolts with hex. hole (22), diaphragm cap (21), and diaphragm section (20).
2. Loosen jam nut (7), and remove joint (1), valve spring (2), ball (3), seat (5) and packing (6).
3. Remove hex. nut (15), spring washer (14), diaphragm stopper (12), O'ring (13), diaphragm (11) and diaphragm holder (10).
4. If O'ring (4) built into joint (1) is damaged or deformed, remove O'ring from joint and replace.

ASSEMBLING



1. Check for damage and foreign matter on each section.
2. Fit diaphragm holder (10), diaphragm (11), O'ring (13), diaphragm stopper (12) and spring washer (14) into diaphragm bolt (9) and tighten hex. nut (15). Tightening torque of hex. nut : 9.8 Nm (100 kgf.cm)
3. Assemble diaphragm section (20) and diaphragm cap (17) on main body (8), and evenly tighten hex. bolts (22) diagonally.
4. Fit O ring (4) to joint (1).
5. Fit packing (6) and tungsten carbide seat (5) to main body (8).
6. Fit valve spring (2) and ball (3) to joint (1), and then fit joint to main body (8). Tightening torque of joint 14.7 Nm (150 kgf.cm)
7. Fix joint (1) with jam nut (7).

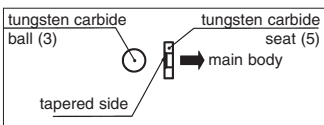
IMPORTANT:

Fit tungsten carbide seat to main body so that tungsten carbide ball can be fitted on tapered side. Do not forget to fit packing.

Incorrect assembly can cause leakage from seat section, resulting in insufficient performance.

Pay attention to tightening torque when fitting joint. Too much tightening can damage main body. Tightening torque of joint: 14.7 Nm.

When fitting joint, make sure that tungsten carbide ball does not slip out of the seat.



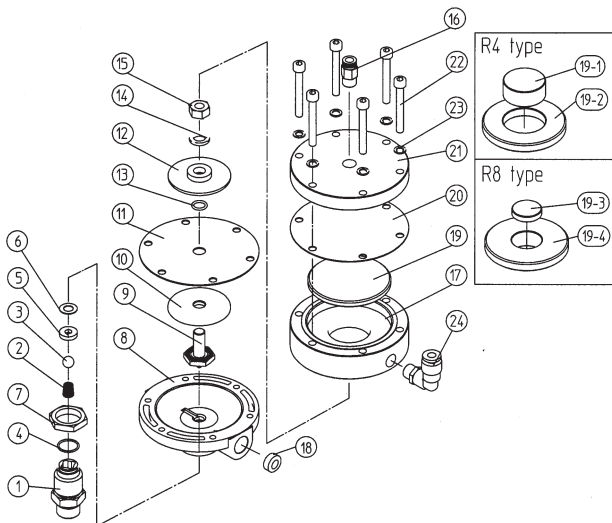
PROBLEMS AND REMEDIES

IMPORTANT: Contact and ask the shop which sold it to you regarding * marked items. Wrong remedies can cause insufficient performance.

Problems	Causes	Remedies
Secondary pressure exceeds	<ol style="list-style-type: none"> 1. Flow control valve not properly seated, or foreign matter 2. Wear or damage on tungsten carbide seat (5). 2. Wear or damage on tungsten carbide ball (3). 3. Packing (6) is damaged. 	<ol style="list-style-type: none"> 1. Clean and assemble again. 2. Replace. 2. Replace. 3. Replace.
Paint leaks	<ol style="list-style-type: none"> 1. Joint (1) is loosened. 2. Bolts with hex. hole (22) loosened. 3. Hex. Nut (15) is loosened. 4. Diaphragm (11) is damaged. 5. O'ring (4) is damaged. 	<ol style="list-style-type: none"> 1. Tighten. 2. Tighten. 3. Tighten. 4. Replace.* 5. Replace.
Secondary pressure does not increase	<ol style="list-style-type: none"> 1. Primary pressure are too low. 	<ol style="list-style-type: none"> 1. Increase primary pressure.
Pressure is instable	<ol style="list-style-type: none"> 1. Valve spring is damaged (2). 	<ol style="list-style-type: none"> 1. Replace.

SPARE PARTS LIST

DESCRIPTION	REF.	
JOINT	1	
SPRING VALVE	2	•
BALL in Tungsten Carbide	3	•
O'RING	4	•
SEAT in Tungsten Carbide	5	•
PACKING	6	•
JAM NUT	7	
MAIN BODY	8	*
DIAPHRAGM BOLT	9	•
DIAPHRAGM HOLDER outer	10	•
DIAPHRAGM	11	•
DIAPHRAGM HOLDER inner	12	
O'RING	13	
SPRING WASHER	14	
HEX. NUT	15	
HALF UNION	16	
DIAPHRAGM CAP	17	
PLUG WITH HEX. HOLE	18	
DIAPHRAGM HOLDER	19	
PISTON	19-1	-R4
DIAPHRAGM HOLDER	19-2	-R4
PISTON	19-3	-R8
DIAPHRAGM HOLDER	19-4	-R8
DIAPHRAGM	20	•
SPRING	18	
SPRING HOLDER	20	
DIAPHRAGM CAP	21	
BOLT WITH HEX. HOLE	22	
SPRING WASHER	23	
ELBOW UNION	24	



*As the only difference between models is the main body

FCV-31= Aluminium

FCV-31N S1/ -R4/ -R8= Stainless Steel

Please specify model name ref. no. and part name when ordering parts.

• Marked parts are wearable parts.

- Never use commercial or other parts instead of ANEST IWATA original spares.
- When unpacking, make sure there is no damage and that parts are not missing.
- If parts are missing, or have been damaged during transportation, do not use the equipment and contact the shop which sold it to you.



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