

 **A.R.I. R20-QM 3W****3W Quick Pressure Relief Valve**

The following is a step-by-step narrated description of the A.R.I. R20-QM 3W Quick Pressure Relief Valve installation, operation and maintenance processes.

The A.R.I. R20-QM 3W quick pressure-relief valve is an automatic control valve plumbed externally with a particular hydraulic pilot valve which opens to release upstream pressure above a preset value. The quick pressure relief valve remains closed while the upstream pressure is below the set pressure.

Refer to the control diagram for component illustration.



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1. Safety Instructions

General

1. Aquestia products always operate as components in a larger system. It is essential for the system designers, installers, operators and maintenance personnel to comply with all the relevant safety standards.
2. Installation, operation or maintenance of the product should be done only by qualified workers, technicians and/or contractors using only good engineering practices, complying with and observing all conventional safety instructions in order to minimize risk and/or danger and/or hazard to workers, the public or to property in the vicinity in accordance with all relevant local standards.
3. Extra safety considerations should be taken with hot and hazardous liquids or in hazardous environments' applications to avoid bodily/physical harm and damage to public or private property.
4. All individuals installing operating and/or handling the products including all workers should at all times adhere with the occupational safety and health (OSH) instructions and wear safety helmets, goggles, gloves, and any other personal safety equipment required by the local standards and regulations.
5. Use only appropriate standard tools and equipment operated by qualified operators when installing, operating and maintaining the product.
6. Prior to installation, operation, maintenance or any other type of action carried out on the product, read carefully the safety, installation and operation instructions of the product.
7. **Please note:**
 - Pressurized fluid and/or gas may be discharged from the product without prior warning. Make sure that the product's outlet port is not directed toward electrical elements (pumps) or people.
 - The pressurized fluid and/or gas that can be discharged from the product may create high noise levels. Take this into consideration when installing the product in areas sensitive to noise.
8. Always open and close valves slowly and gradually.
9. Please note that the maximum working pressure indicated at the product's specifications table doesn't include pressure changes caused by water hammer and pressure surge effects. Use the product only according to its designated pressure rate specifications.
10. Use the product only for its intended use as designed by Aquestia Any misuse of the product may lead to undesired damages and may affect your warranty coverage. Please consult with Aquestia prior to any non regular use of this product and make no change or modification to the product without a prior written consent to be provided by Aquestia at Aquestia's sole discretion.
11. Please note that Aquestia shall **NOT** assume any liability with respect to any damage losses and/or expenses caused to any person and/or property whatsoever unless the product has been duly installed and thereafter maintained in strict compliance with its designated maintenance Instructions and/or any other installation and operation manuals provided by Aquestia for the product and/or applicable ordinances and/or codes.

Handling

1. Shipping and handling the product must be done in a safe and stable manner and in accordance with the relevant standards and regulations.
2. For lifting and positioning the product, use only approved lifting equipment operated by authorized employees and contractors.
3. Prior to the installation visually verify that the product was not damaged during shipment to the installation site.

Installation

1. Install the product according to the detailed Installation Instructions provided with it by Aquestia and according to the description given in this manual.
2. The user should install a manual Isolation Valve under the product's inlet port.
3. In all installation sites the user should enable good visibility and verify that the work and auxiliary equipment used are done in accordance with the relevant local authorized standards. Extra safety considerations should be taken on hazardous environment sites.
4. Check and re-tighten the bolts connecting the product to the pipeline during commissioning and before operating the product for the first time.

Commissioning and operation

1. Read carefully the operation instructions prior to any attempt to operate the product.
2. Observe the safety stickers on the product and never perform any operation contradicting the instructions given.
3. In order to achieve maximum performance and smooth operation of the product it is crucial to perform the startup and first operation procedures exactly as described in this manual.
4. In cases where formal commissioning procedure is required it should be done by an authorized Aquestia technician prior to the first operation of the product.

Maintenance

Before any maintenance or non regular operation please read the following:

1. Servicing the product should be done only by qualified technicians for this type of work.
2. Make sure that you know the exact type of the system's fluid. Act accordingly and comply with all the relevant standards and regulations set for handling this type of fluid.
3. Before disconnecting the product from the system and before releasing the residual pressure do **NOT**:
 - loosen or unscrew the product bolts;
 - remove any protection cover;
 - open any service port.
4. Before any maintenance or non regular operation shut off the Isolation valve and release the residual pressure:
 - A. For air valves with pressure release outlet, slowly open the pressure release plug or the ball valve and make sure that all pressure is released. Please note that some air release valves, especially the waste water models, may contain significant volume of compressed gas with accumulated energy!
 - B. For air valves without a pressure release outlet, slowly unscrew the flange bolts until all the pressure is released from the valve.
5. Make sure the air valve is empty of all liquid prior to commencing maintenance.
6. Remove the product from the line only after ensuring that internal pressure has been released.
7. Place warning signs around the work area as required by the local standards and procedures.
8. Inspect the product's safety stickers and replace any damaged or faded sticker.
9. Manual cleaning of the product and/or its components using high water pressure or steam should be performed in accordance with its specific cleaning instructions, the local standards and regulations and without endangering the operator or the vicinity
10. Manual cleaning of product and/or its components using acid or other chemical agents should be performed in accordance with the specific cleaning instructions, the relevant safety instructions for using that chemical as given by its supplier, the local standards and regulations and without endangering the operator or his vicinity.
11. For products used in potable water systems if it is required to disinfect the product, do so according to the local water authority standards and regulations before putting the product into service.

Before returning to regular operation

1. Re-assemble any protection covers or protection mechanisms removed during service or maintenance operations.
2. Make sure that all the tools, ladders, lifting devices, etc. used during the maintenance procedures are taken away from the product area and stored.
3. Remove grease and fat material residues in order to avoid slipping.
4. In order to return the product to regular operation, follow the First Start-up Operation instructions as detailed in your user manual.

2. Installation

1. It is recommended that the valve be easily accessible as well as clearly marked to prevent damage.
2. Before installing the valve, flush the pipeline to remove scale, dirt and other particles that might affect the valve's performance.
3. Install the valve as indicated by the arrow on the valve's cover, showing flow direction.
4. It is recommended to install isolation valves, upstream and downstream of the control valve.
5. If fitted (optional), open ball lever isolating valves [b1] and [b2].
6. Turn the locking nut on the pilot valve adjustment bolt [p] anti-clockwise, until it touches the bottom of the adjustment bolt head.
7. Turn adjustment bolt on the pilot valve [p] clockwise for maximum tension on the spring (closes valve hydraulically, with high release set point).
8. Turn on the water supply to the valve.
9. Check for leaks; tighten bolts & fittings if necessary.

3. Adjusting the Release Pressure Set Point

1. Make sure the water pressure is at working condition.
2. Turn the adjusting bolt of the pilot valve [p] OUT (anti-clockwise), 1/4 turn at a time, allowing 2-5 seconds between turns for the valve to respond. Monitor the pressure gauge [g] and continue the process until water just starts dripping from the main valve outlet.
3. **As water starts dripping through the main valve, turn the adjustment bolt [p] IN (clockwise) one full turn. The release set point is now 5 to 10m above the current system pressure.**
 - a) To increase pressure release set point, turn the adjusting bolt of the pilot valve [p] clockwise, 1/4 turn at a time, allowing 2-5 seconds between turns for the valve to respond. Monitor the pressure gauge [g] and continue the process until the required downstream pressure limit is achieved.
 - b) To decrease pressure release set point, turn the adjusting bolt of the pilot valve [p] anticlockwise, 1/4 turn at a time, allowing 2-5 seconds between turns for the valve to respond. Monitor the pressure gauge [g] and continue the process until the required downstream pressure limit is achieved.
4. Prevent the adjustment bolt of the pilot valve [p] from turning, while turning the locking nut clockwise until it touches the pilot valve spring cover. Tighten the locking nut carefully.

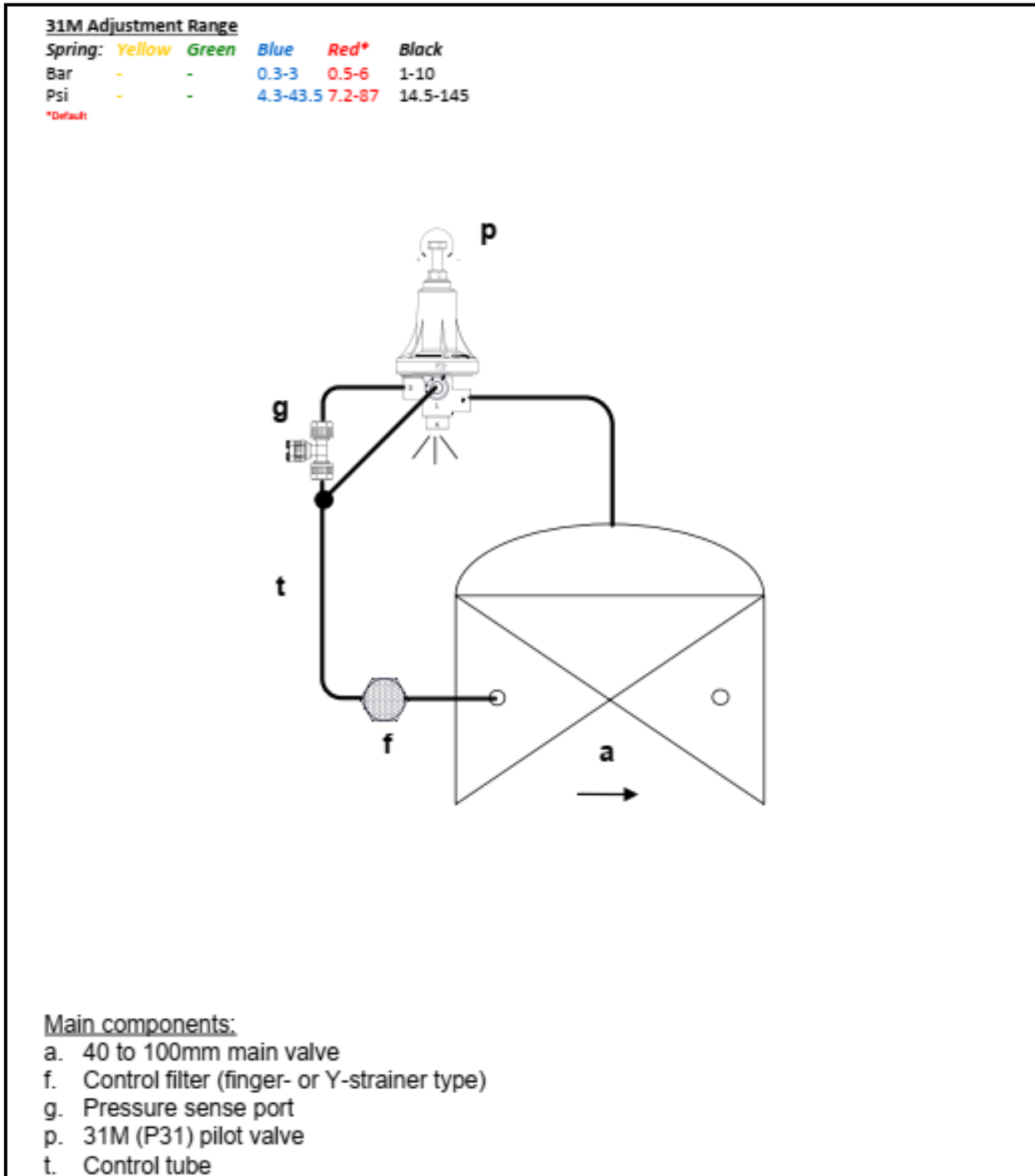
3. Operation Instructions

The 3-way controlled quick relief valve remains in quick relief mode only.

4. Troubleshooting

Symptom	Possible Causes	Check	Solution
Valve does not open	1. Release pressure set point is too high.	1. Valve opens when adjusting bolt [p] turned counterclockwise.	1. Adjust the release pressure set point.
	2. Incorrect pilot valve spring.	2. Published pilot valve spring ranges.	2. Replace spring with correct one.
	3. Pilot valve [p] is clogged or stuck.		3. Turn off water supply to the valve. Dismantle and clean the pilot valve
Valve does not close	1. Water pressure is too high.	1. Upstream water pressure.	1. Check water supply and/or consumers
	2. Release pressure set point is too low.	2. Valve closes as adjusting bolt [p] is turned clockwise.	2. Adjust release pressure set point.
	3. Blocked control filter [f].	3. Very little flow from the inlet port when the tube is disconnected downstream of the filter	3. Turn off water supply to the valve, remove the filter and clean or replace.
	4. Foreign object trapped between valve seal and seat.	4. The valve is constantly discharging a small amount of water.	4. Turn the adjusting bolt [p] counterclockwise, until valve is fully open, for 5 seconds to flush the object through the valve. Turn the adjusting bolt clockwise until valve fully closed, and repeat set point adjustment. If problem continues, turn off water supply to the valve. Remove the bonnet and diaphragm, remove the foreign object, and check that diaphragm, body and cover are not damaged.
	5. Diaphragm is damaged.		5. Replace diaphragm

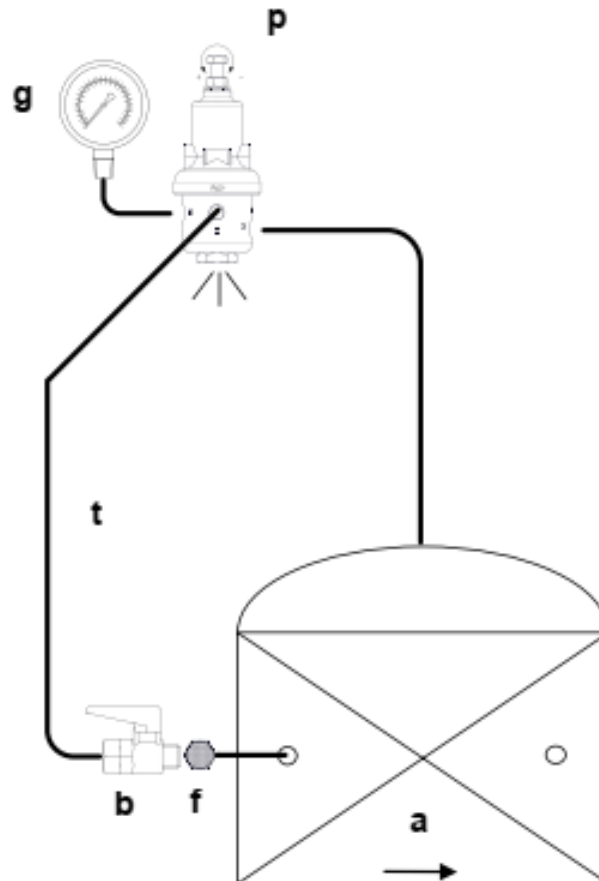
5. Control Loop Drawings



36U Adjustment Range

Spring:	Yellow	Green	Blue	Red*	Black
Bar	-	0.3-1.5	0.3-3	0.5-6	1-10
Psi	-	4.3-21.7	4.3-43.5	7.2-87	14.5-145

*Default

Main components:

- a. 40 to 150mm main valve
- b. Ball lever isolating valve
- f. Control Filter (Finger- or Y-strainer type)
- g. Pressure gauge
- p. 36U (P162) pilot valve
- t. Control tube