

# EBSRAY PUMPS

INSTALLATION, OPERATION & MAINTENANCE  
INSTRUCTIONS



## ***RV Series Bypass Valves Models RV18 & RV19***



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## SECTION 1 - GENERAL

### 1.1 CAUTION

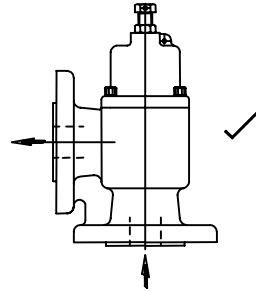
**INSTALLATION AND SERVICING OF THESE VALVES SHOULD BE CARRIED OUT BY QUALIFIED, COMPETENT PERSONNEL IN ACCORDANCE WITH RELEVANT STATUTORY REGULATIONS OR CODES, IN CONJUNCTION WITH THESE INSTRUCTIONS.**

### 1.2 ~~WARNING~~

**THESE VALVES MUST BE OPERATED WITHIN THE ORIGINAL SELECTED DESIGN PARAMETERS OF PRESSURE, TEMPERATURE, FLOW AND VISCOSITY. SHOULD ANY CHANGE BE CONTEMPLATED, PLEASE CONFER WITH EBSRAY IN ORDER TO VERIFY THE SUITABILITY OF SUCH A CHANGE.**

## SECTION 2 - INSTALLATION

Remove pipe scale and other foreign material such as PTFE tape residue from the connecting pipelines. If valve has screwed ports, apply a suitable pipe thread sealant to the male threads before fitting. The bypass valve should be installed with the adjusting screw in the 12 O'clock position, with flow into the port marked "IN". Mounting the valve horizontally may cause excessive wear on the spool valve depending on operating conditions.



## SECTION 3 - OPERATION

The EBSRAY Models RV18 and RV19 BYPASS VALVES are spring actuated pump and system protection devices that by design cannot be positively shut-off. There are three configuration options available:

1. Constant Bleed System (CBS) option which provides for controlled 'bleed-off' of vapour enhancing self priming and vapour clearing capabilities of the pump.
2. Vapour Removal System (VRS) option which provides rapid flow-through of vapour until liquid reaches the valve and then closes off the vapour orifice for maximum pump efficiency. i.e. fulfils an excess-flow valve type of function.

3. Non Return Valve (NRV) option which is soft seated and eliminates flow of either liquid or vapour in both directions when closed

All the above options provide pump and system protection when the differential pressure rises above the preset (adjustable) level. The valves are installed in the discharge system and:

- a) Normally return vapour/liquid to the supply tank.
- b) Return vapour/liquid to pump inlet (suction) pipework when system design criteria allows.

On commissioning, these bypass valves should be set in accordance with the required/specified pump differential pressure, ensuring that total system pressure does not exceed regulatory codes or system requirements.

## SECTION 4 - MAINTENANCE

**PRIOR TO ANY DISASSEMBLY OR SERVICE, VERIFY THAT ALL REQUIREMENTS OF STATUTORY REGULATIONS OR CODES ARE MET AND THAT SPECIFIC SITE REQUIREMENTS ETC ARE SATISFIED.**

Apart from Body replacement, other maintenance tasks and inspections can be carried out with the valve 'in-line', so long as complete isolation, depressurising and purging have been completed.

### 4.1 SPARE PARTS

1. When ordering spare parts, to ensure correct replacement to original specification, always quote Bypass Valve Serial Number, which is located on the nameplate of the Bypass Valve. Please advise if valve has been upgraded with any option since purchase.
2. Advise the name, item number and quantity required. Refer to Drawing on page 4.
3. Advise complete delivery instructions, transportation, etc.

#### 4.2 PREPARATION FOR DISASSEMBLY

1. Obtain the appropriate Work Permit if required.
2. Isolate Bypass Valve from liquids/vapour in inlet and discharge lines, depressurise and purge out any toxic, flammable, corrosive or air hardening liquid/vapour.
3. Ensure the associated Pump Motor power supply has been isolated, before proceeding with disassembly.

#### 4.3 DISASSEMBLY

1. Unlock Adjusting Screw Locknut.
2. Release Spring pressure by rotating Adjusting Screw anti-clockwise.
3. Unscrew four Setscrews, holding Cap onto Body.
4. Remove the Cap and 'O'ring, together with the Washer and its 'O'ring.
5. Remove Washer and 'O' ring from Cap.
6. Remove Valve Spring and Valve from Body.
7. **OPTIONAL VRS ONLY:** Carefully remove Circlip from inside Valve, then remove Ball and Spring.
8. **OPTIONAL NRV ONLY:** Remove O-ring from Valve.

#### 4.4 INSPECTION

1. Inspect Body and valve seat for damage or wear. If required, remove Body and replace.
2. Check Valve for damage or deposits. Clean thoroughly and ensure vent hole is clear and free from obstruction.
3. Inspect Valve Spring, replace if broken or damaged.
4. It is advised that 'O'rings be replaced at every overhaul.
5. Check Cap, Washer, Adjusting Screw and Locknut for damage. Replace as required.
6. **OPTIONAL VRS ONLY:** Check condition of Ball, Spring and Circlip. Replace as required.

#### 4.5 REASSEMBLY (Refer drawing on page four.)

**NOTE:** Lightly smear all 'O'rings with a compatible good quality lubricant before assembly.

1. **OPTIONAL VRS ONLY:** Insert Spring (13) into Valve (3) with large end seating in Valve, insert Ball (12) after Spring and retain in place with Circlip (14).  
**NOTE:** Ensure Circlip locates correctly in groove.
2. **OPTIONAL NRV ONLY:** Fit 'O'ring to Valve.
3. Fit Valve (3) into Body (1), ensuring freedom of movement.
4. Fit Spring (5) on to top of Valve (3).
5. Fit 'O' ring (7) to Cap (2).
6. Fit 'O'ring (6) to Washer (4) and insert into Cap with spring location boss facing out.
7. Fasten Cap (2) to Body (1) using four Setscrews (9).

#### 4.6 ADJUSTMENT

**NOTE:** Final pressure setting is carried out after the Valve is installed or reassembled 'in-line'.

1. For increased bypass pressure, rotate Adjusting Screw (8) in clockwise direction (i.e.screw in ). **DO NOT** exceed system design pressure.
2. For decreased bypass pressure, rotate Adjusting Screw (8) anti-clockwise (i.e. screw out).
3. Lock Adjusting Screw Lock Nut (10) against Cap immediately after any adjustment is made.
4. After setting is completed wire and seal Adjusting Screw, utilising holes provided for passing wire through head of Adjusting Screw and lug on Cap.

**NOTE:** Bypass Valves characteristically exhibit two distinct pressures during their operation :

- a) The setting or cracking pressure which occurs when product initially begins to be bypassed against the preset Spring load.
- b) Maximum pressure, which occurs when the full flow of the bypassed product passes through the Bypass Valve.

It is important to ensure both these above characteristics are understood fully in order to apply correctly the Bypass Valve in a given system.

## SECTION 5 - PARTS DESIGNATION

EBSRAY MODELS: RV18 and RV19 Bypass Valves

Note: Reference to drawing below enables parts identification for all models (flanged or screwed ports) including valves fitted with CBS, NRV & VRS options.

**CAT # DESCRIPTION QTY**

- 1 Body (flanged/screwed).....1
- 2 Cap.....1
- 3 Valve.....1
- 4 Washer.....1
- 5 Spring.....1
- 6 'O' Ring - Washer.....1
- 7 'O' Ring - Cap.....1

**CAT # DESCRIPTION QTY**

- 8 Adjusting Screw.....1
- 9 Set Screw.....4
- 10 Lock Nut.....1
- 11 Plug.....1
- 12 Ball.....1
- 13 Spring.....1
- 14 Circlip.....1
- 15 'O' Ring - Valve.....1

