

Installation & Operation Manual



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Model RD11-VAC
Zero-Loss Condensate Drain

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GENERAL INFORMATION

SAFETY

Locate, read, understand, and follow all Danger, Warning, Caution, and Operating Instructions on the product and in all manuals. Failure to comply with safety precautions described in the manuals supplied with the product this manual or any of the labels and tags attached to the product may result in death, serious injury or property damage.

Check that all labels, tags and data (name) plates are in place and legible. It is your responsibility to ensure this information available to others.

If you have any questions about safety or procedures not included in this manual, ask your distributor or contact Air System Products, LLC.

GENERAL DESCRIPTION

For condensate to properly enter the Robo-Vac reservoir, the condensate line to the Robo-Vac must always be installed below the source to be drained. It is equally important to provide a means, such as a balance line, for the air in the reservoir to be displaced as condensate enters the drain. If the air cannot be displaced, the condensate will not enter the reservoir. Please review the following suggestions that might best fit your installation. The use of unions and shut-off valves are recommended for both the condensate line and the balance line.

WARRANTY

The Robo-Vac is warranted to be free from defects in workmanship and materials for a period of two years from the date of shipment. The liability of the manufacturer is limited to repair or replacement of the drain at its option. In no event shall the manufacturer be liable for special or consequential damages or for delay in performances of this warranty.

The Robo-Vac is designed for trouble-free operation. When installed and operated properly, the Robo-Vac will provide years of reliable service collecting and discharging condensate, along with pipe scale and other contaminants typically found in vacuum systems.

INSTALLATION



Before installing the drain, ensure the source vessel is isolated from the interconnecting piping to the drain.

Confirm the air system pressure will not exceed the 90 PSI (6.2 bar) rating of the drain and the inlet temperature should not exceed 180 °F (82 °C).

The condensate source must be connected to the 3/4" NPT inlet connection on the pinch valve. The installation of a pre-strainer is not required or recommended.

Install the drain on a level surface and as close to the source to be drained as possible. Since the Robo-Vac uses gravity to fill the reservoir, the entire drain must be installed below the source. It isn't recommended that flexible tubing be used on the discharge to prevent it from whipping causing damage or injury.

If the drain is to be installed where the temperatures can fall below 32°F (0 °C), special precautions are needed, including but not limited to heat tracing pipelines and the optional immersion heater.

The Robo-Vac will only accept condensate via the pinch valve connected to the upper drain inlet connection. The lower inlet connection has been permanently sealed to prevent inadvertent use.

The use of isolation valves and bypass piping will permit quick and easy routine maintenance.

The Robo-Vac uses compressed air to drive (control) a drain cycle. **ONLY CLEAN DRY AIR MUST BE USED!** The required control air pressure for the standard models, irrespective of system pressure is 60-130 PSIG (4.1-9.0 barg). The Robo-Vac can be supplied as an LP variant and will model should be between 40 and 130 PSIG (2.8 and 9.0 barg). The Robo-Vac is supplied with a filter for installation on the control head. The use of unfiltered air can result in failure and can void the product warranty.

Once installed and control air supplied, the drain is ready to be placed in service.

CHECKING THE OPERATION

After installation is complete and the drain is in service, a check should be made that the drain is functioning properly.

1. Ensure that condensate is properly entering the reservoir. This can be easily done looking through the translucent reservoir
2. Press the test button to ensure the drain valve opens and closes when the button is released.

3. Inspect for any air or condensate leaks. Correct as necessary.

TROUBLESHOOTING

If condensation is not entering the reservoir, check for the following:

1. Check that any valves between the source and drain are open.

If the drain is not emptying:

1. Press the test button to force a manual drain cycle. If the air actuator does not open the valve, check that the control air supply is at least the minimum pressure required.
2. If the valve opens, but the drain does not empty quickly, no more than 20 seconds, ensure that there is system pressure.
3. If still not emptying, check the downstream piping from the drain valve to ensure there isn't a closed valve or an obstruction.
4. If the drain is still not draining, suggest contacting the factory.

OPTIONS

High Level Alarm
Mechanical Cycle Counter
Digital Cycle Counter

GENERAL INSTALLATION CONSIDERATIONS

For the condensate to properly enter the drain reservoir, the condensate line to the drain must always be installed below the bottom of the vessel to be drained. It is equally important to provide a means for the air that is contained in the reservoir to escape (balance line) as the condensate enters the reservoir. If the air cannot escape, the condensate will not enter the reservoir. Below are suggestions on how to best install the drain on typical types of vessels that have to be drained of condensate. However, it is possible to install the drain without a balance line (Dwg. not shown), providing the condensate enters the top inlet and the flow rates are less than 9 GPH (750 SCFM for an aftercooler or 1,500 SCFM dryer) for a 1/2" drain line and 19 GPH (1,500 cfm for an aftercooler or 3,000 SCFM dryer) for a 3/4" line. The use of unions and shut-off valves are recommended for both the condensate line and the balance line.

RECEIVER TANK

The preferred installation for this drain on a receiver tank is having the condensate enter the top inlet port and having the balance line go back to the tank at a position that is above the level of the condensate. (See Dwg. 1).

FILTER and AFTERCOOLER MOISTURE SEPARATOR

If a cyclone separator or filter has pipe plugs located in the top of the head, the plug closest to the discharge pipe should be removed and the balance line should be installed (Dwg. 2). If there is no provision on the cyclone separator or filter for a balance line, install it in the discharge side of the pipeline and as close to the cyclone separator as possible.

REFRIGERATED DRYER

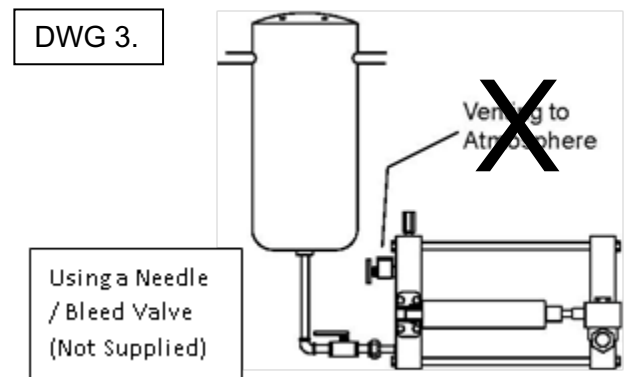
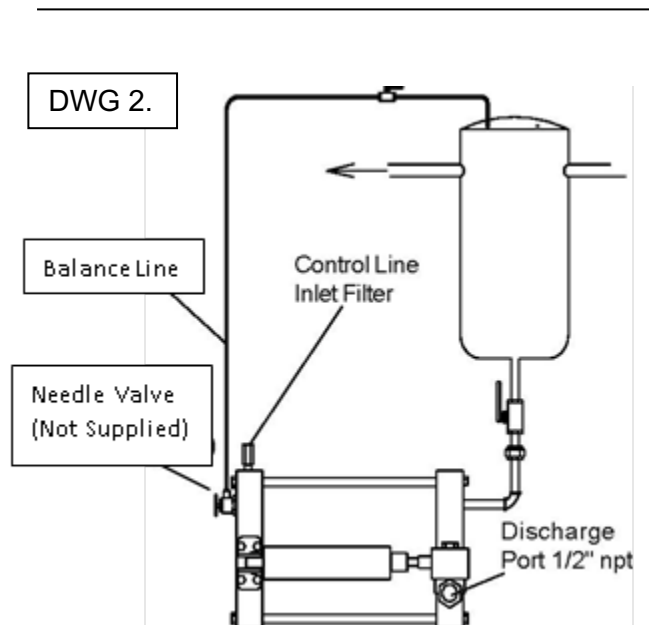
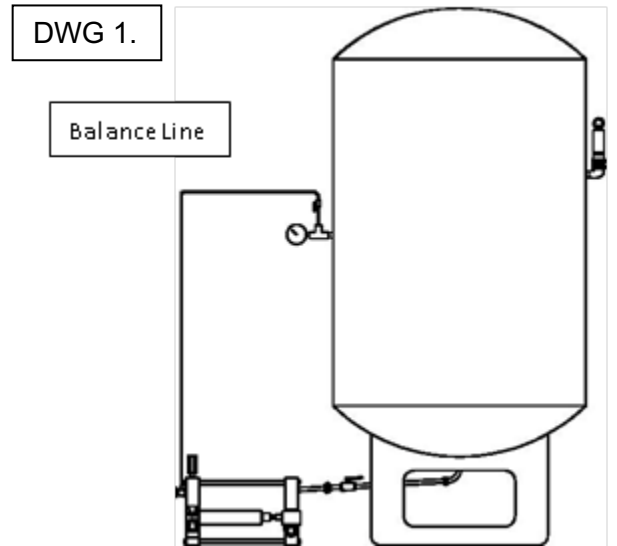
If a balance line is required, it must be connected to the port located on top of the separator that is closest to the discharge side (Dwg. 2), or between the separator and the air-to-air heat exchanger. If a port is not available as described above, then venting to atmosphere is recommended. When venting to atmosphere, the condensate should enter through the bottom entry port on the drain. The bleed or needle valve is installed on the 1/8" NPT vent port and allows the air in the drain reservoir to escape to the atmosphere (Dwg 3). The bleed valve (not included) should be adjusted so that only 3 to 5 bubbles per second are visible. It is not recommended to install a vent line downstream from the dryer. The vent line can be a conduit for transferring moisture from the drain to the previously dried air. This can result in unwanted moisture being sent down stream.

INTERCOOLERS

Install the condensate drain line into the upper port only. This will prevent the possibility of condensate being drawn back into the intercooler on some systems. It is important that the vent line be installed on the same stage that is being drained or to atmosphere.

BALANCE LINE

As mentioned above, both the use and the placement of a balance line is very important. Most drain failures are the result of an improper balance line installation. The balance line should be 1/4" tubing or larger, and installed on top of a pipe or vessel, not the bottom. A needle valve is recommended for controlling the air flow. Avoid having any loops or low areas in the balance line that might allow moisture to collect in the line and prevent the passage of air from the drain's reservoir.



GENERAL SPECIFICATIONS

Inlets:	One (1) 3/4" NPT
Outlet:	1/2" NPT
Power: Clean, Dry Air:	60 - 130 PSI (Standard Design) 40 – 130 PSI (Low Control Pressure Design Option)
Operating Pressure:	26" Hg to 90 PSI High Pressure and Stainless Steel Designs Available
Operating Temperature:	32° to 180° F. Optional Immersion Heater Available
Weight:	17 lbs. (Shipping) 26 lbs. Filled & Installed
Discharge:	24 ounces per cycle
Capacity:	6,600 SCFM at aftercooler*
*Capacity may be more or less depending on application	

MATERIALS

Reservoir:	Aluminum and Composite Stainless Steel and Nickel-plated Optional
Drain Valve:	Bronze w/SS Ball and Stem (Full SS Optional)
Trigger Float:	Stainless Steel
Trigger Seat:	Stainless Steel
Trigger Seal:	Viton®
Control Tubing:	Nylon 66 Stainless Steel Tubing and Fittings Optional

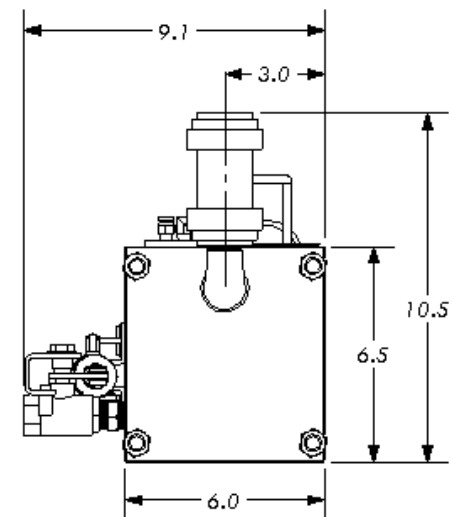
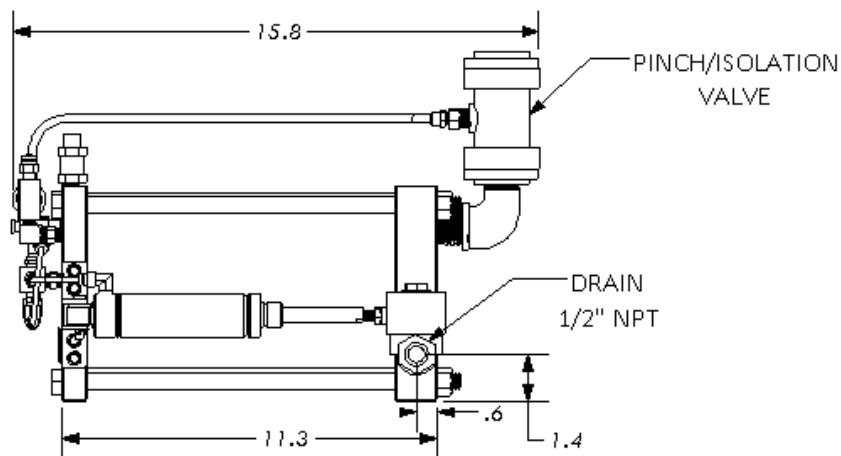
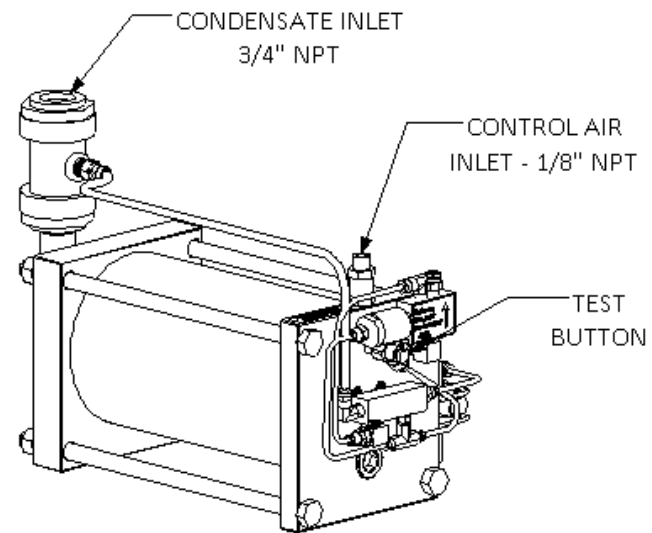
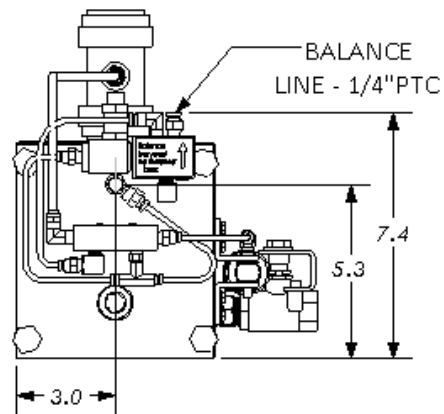
MODEL CONFIGURATION

RD11-VAC	- LP	T	- A	- H	- V	- SSV SSE SS	NPT
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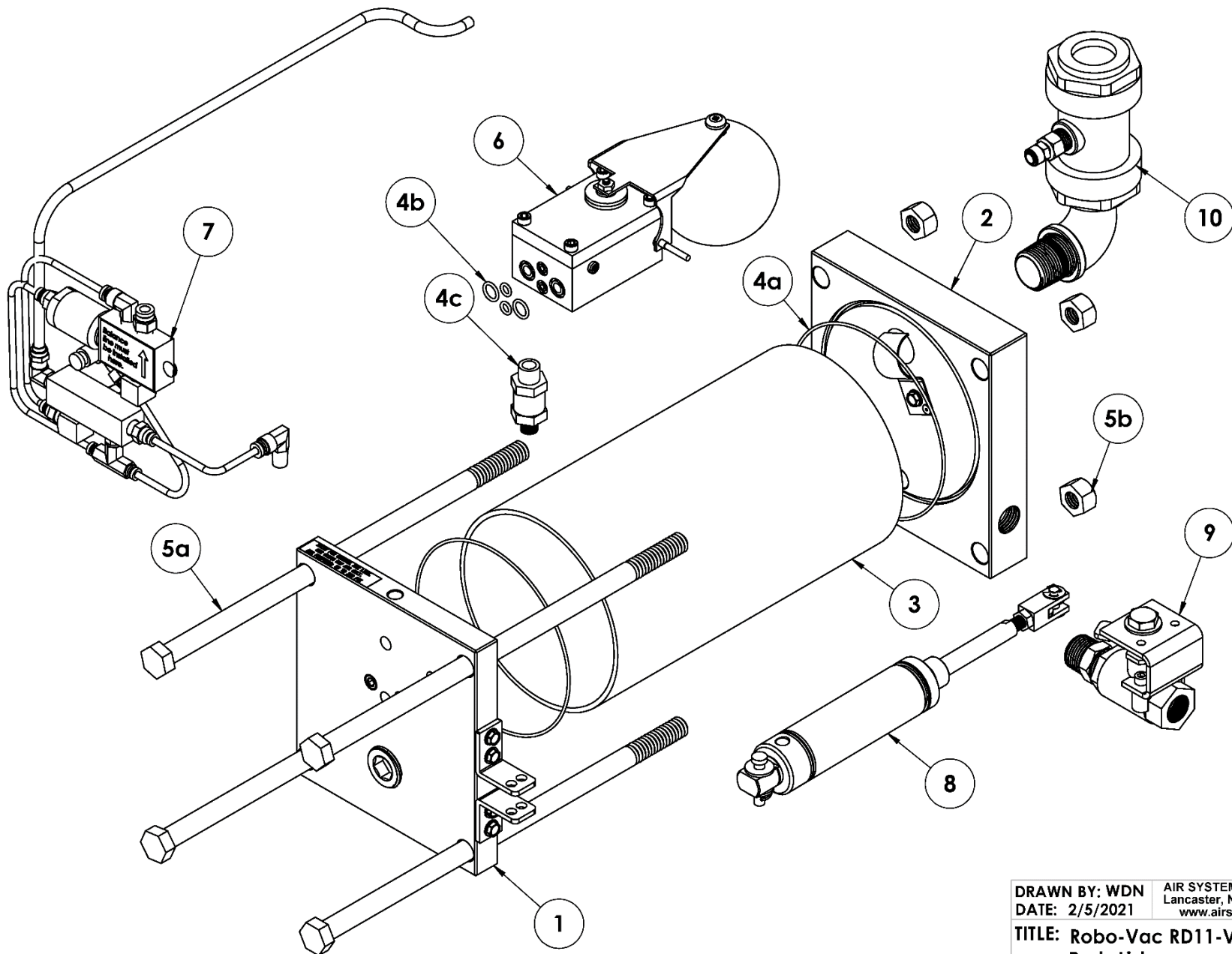
EXAMPLE: RD13-T-NPT

LEGEND:

LP	-	Low Control Pressure Design (40-130 PSIG)
T	-	Test Button (Standard)
A	-	High Level Alarm
H	-	Heater
V	-	Valve Open Indicator
SSV	-	Stainless-Steel Valve
SSE	-	Stainless-Steel Valve and Control Tubing and Fittings
SS	-	Complete Stainless-Steel Construction
NPT	-	NPT Process Connections



DRAWN BY: WDN	AIR SYSTEM PRODUCTS
DATE: 2/8/2021	Lancaster, NY 14086 USA
	www.airsyspro.com
TITLE: Robo-Vac	
Dimensional Drawing	
DWG.: RDVAC-OUTLINE-IOM REV. -	



DRAWN BY: WDN	AIR SYSTEM PRODUCTS
DATE: 2/5/2021	Lancaster, NY 14086 USA
	www.airsyspro.com
TITLE: Robo-Vac RD11-VAC	
Parts List	
DWG.: RD11-VAC-NPT-EXP	REV. -

SPARE PARTS

(Refer to RD11-VAC-NPT-EXP drawing on previous page.)

Item No.	Qty.	Part No.	Description
1	1	RDP-H2-KIT	Control Head Assembly
2	1	RDP-H1-KIT	Inlet Head Assembly
3	1	SSP-COCYL	Translucent Cylinder
4a	2	ED-G	Cylinder O-Rings
4b	2/2	RDP-VHG2, RDP-VHG3	Trigger Assembly O-Rings
4c	1	RDP-FILTER	Control Air Inlet Filter
5a,b	4/16	RDP-BOLT-KIT	Bolt/Nut Kit
6	1	RD11-FA1	Float and Trigger Block Assembly
7	1	RDP-VAC-FIT-KIT	Control Tubing Assembly
8	1	RDP-AC-KIT	Air Actuator Assembly
9	1	RDP-BV-KIT	Ball Valve Assembly
10	1	RDP-PV-KIT	Pinch Valve Assembly

MAINTENANCE

The Robo-Vac has been designed and continuously improved to provide many years of trouble-free service. Most Robo-Vacs outlast the life of the compressor that it is serving.

Still, the Robo-Vac is a mechanical device and routine inspection and maintenance are important and recommended.

Weekly/Monthly

1. Use the test button to ensure the drain valve opens and closes.
2. Inspect interconnecting piping and tubing to ensure there are no leaks or damage.

Annually

1. Use the test button to ensure the drain valve opens and closes.
2. Inspect interconnecting piping and tubing to ensure there are no leaks or damage.
3. Replace Control Air Inlet Filter.
4. Check the four body bolts to ensure tight.
5. On the standard Robo-Vac with the translucent vessel, if the condensate level isn't visible due to vessel coated with contamination, it is recommended to remove the drain from service and follow the simple disassembly instructions to permit the vessel to be thoroughly cleaned.
6. With the drain disassembled, exercise the float assembly to ensure it moves freely.
7. Again, with the drain disassembled, ensure the float is securely attached to the float bracket.



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All design specifications subject to change without notice
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