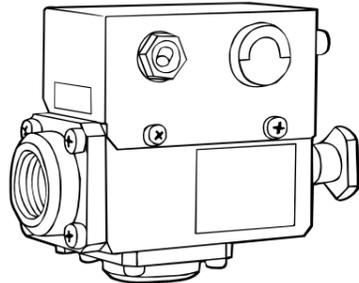


Instruction Manual for the Dry-Run Detector

Yamada

Doc. No. OSA034U-00



Name: Dry -Run Detector
 Product Number: 854008
 Model: DRD-100

Introduction

Thank you for purchasing our product. This manual describes important instructions for using the DRD safely, properly and efficiently. Before using the DRD, please read this manual thoroughly, especially the section "Warnings and Cautions". Keep this manual handy for easy reference when you use the DRD.

Warnings and Cautions

To use the DRD safely, the following warnings and cautions should always be followed. In this manual, the warnings and cautions are described together with the corresponding symbols; they are provided so that you can operate the DRD safely and properly. Consequently, an accident that may result in injury or death of persons around the DRD or damage to property located around the DRD can be avoided. Each symbol and its meaning are described below. Please read it thoroughly.

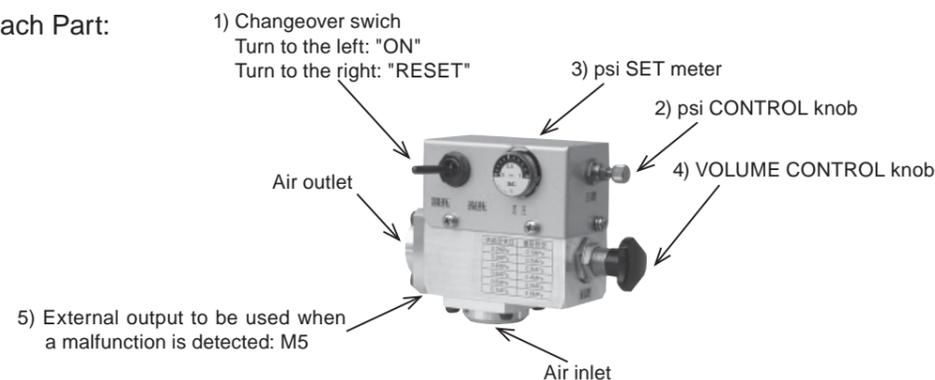
	WARNING: If you mishandle the DRD by ignoring this symbol, it may cause an accident resulting in serious injury or death.
	CAUTION: If you mishandle the DRD by ignoring this symbol, you may be injured or your property may be damaged. To indicate risk or damage, either of the following symbols is used together with the symbols above.
	This symbol indicates an action that is prohibited. What you must not do is described beside this symbol.
	This symbol indicates that you must follow the instructions described beside it.

Application: The DRD is applicable to every device that is driven with compressed air. It detects a malfunction of a pump; [an increase in airflow or decrease in air pressure], and shuts down the compressed air supply.

CAUTION: Use either compressed air or nitrogen gas only.

Specifications: Working pressure range: 25 to 140 psi
 Bore diameter to be connected: Air inlet NPT 3/4
 Air outlet NPT 3/4

Name of Each Part:



Function of Each Part:

- 1) Changeover switch
 "ON"; detects a malfunction of a pump and shuts down the air supply.
 "RESET"; resets a pump after detecting a malfunction and shut down the air supply. Set the switch to this position to reset the pump.
- 2) psi CONTROL knob
 This is a knob that allows you to set the differential pressure according to the pressure of air supplied to a pump.

"Reference value to be set"

Pressure of air supplied to a pump	Setting of the differential pressure
25psi	15psi
40psi	25psi
55psi	40psi
70psi	55psi
85psi	70psi
100psi	85psi



3) psi SET meter
 The pressure controlled with the psi CONTROL knob is shown.



4) VOLUME CONTROL knob
 This knob controls the airflow according to the operation status of a pump.

5) External output connector to be used when a malfunction is detected: M5
 Use this connector to detect a malfunction of a pump and transmit it to an external device. The connecting port is an M5 type, and so use a tube fitting to connect this connector to a control device. (When you use a pneumatic-electro converter, you can convert the output from this connector into electrical signals.) The air pressure equivalent to the supplied air pressure is always supplied when the DRD is in normal operation, and if the DRD detects a malfunction, the air pressure is released.

1. Installation

- 1) Install this valve between FRL (filter, regulator and lubricator) and pump in order to keep air pressure constant. Do not connect the valve directly to the air supply source.
- 2) The valve must be placed less than 50 inches from the pump.
- 3) Do NOT use the valve to operate multiple pumps. This valve must be used only for single pump.
- 4) To connect with the valve, use an air hose or equivalent whose air inlet bore diameter is the same or more than that of the pump.

2. Operating Instructions

- 1) Rotate the "psi CONTROL" and "VOLUME CONTROL" knobs counterclockwise with care so as not to be pulled out until they are wide-open.
- 2) Open the supply air valve, and set the changeover switch to "RESET" to operate the pump. Once the pump starts, set the changeover switch to "ON".
- 3) Fix the pressure of air supplied to the pump, then, rotate "psi CONTROL" knob clockwise and set the "psi SET" according to SUPPLY AIR – psi SET comparative table.
- 4) Set lock nut of the "psi CONTROL" knob after the psi setting.
- 5) Rotate the "VOLUME CONTROL" knob clockwise until the pump stops. Then, rotate it counterclockwise 90-degrees (1/4 turn) from the stopping position of the pump.
- 6) Set the changeover switch to "RESET" to operate the pump. Then, set this switch to "ON".
- 7) If the pump stops with procedure 6, rotate the "VOLUME CONTROL" knob further 90-degrees counterclockwise, set the changeover switch to "RESET", and then, set this switch to "ON".
- 8) Repeat procedure 7 until the pump operates normally under the "ON" mode.
- 9) Set lock nut of the "VOLUME CONTROL" knob after checking if the pump operates normally.
- 10) If the condition of the pump operation is changed, repeat procedures 1 to 9.
- 11) If you want to use the pump in the continuous operation, set the changeover switch to "RESET".



CAUTION This valve operates by detecting the change of the air volume. Consequently, a lost motion may be not detected if the pump operates at a cycle speed in nearly lost motion.

3. Troubleshooting

State	Cause	Action to be taken
Pump does not stop if dry running is detected.	A foreign substance is caught between Spool Valve (No16 772920) and the valve seat.	Remove Adapter B (No18 715715) and clean the valve seat surface.
	Insufficient lubrication for sliding surface of Spool Valve (No16 772920).	Remove Adapter A (No11 715708), Adapter B (No18 715715), then remove Spool Valve (No16 772920). Grease sliding surface of Spool Valve (No16 772920) and the grooves of O ring (No14 685912).
	O ring (No.9 640015) is damaged.	Replace the damaged part with new one.

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Use the DRD properly only after reading the safety precautions and this instruction manual thoroughly. The performance and/or dimensions of the DRD may be subject to change without notice due to continual improvement.