# K-PATENTS
## PROCESS INSTRUMENTS

| PROCESS REFRACTOMETER PR-23 | |
| --- | --- |
| TECHNICAL NOTE | 1.01.02 |
| APPLICATION CONSIDERATIONS: PRISM WASH | |

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**Sensor**   **Power relay unit**   **Transmitter**

25.31

◄ **Power**

**Warm water**

▲ **Power**

# AUTOMATIC PRISM WASH WITH HIGH PRESSURE WATER

| Availability/Compatibility of features: | |
| --- | --- |
| **Feature:** | **Availability/compatibility:** |
| Prism wash system with high pressure water | PR-23-AC/AP/GP |

## INTRODUCTION

For any refractometer it is necessary to keep the prism surface clean. Due to the K-Patents self-cleaning design, two out of three of all applications can be measured without any prism cleaning. In some applications the process flow does not keep the prism clean because of sticky process medium or low flow velocity. K-Patents has developed three cleaning options for these applications: prism wash with steam, water and with high pressure water. This note describes the wash system with high pressure water.

The components of a high pressure water system are a sensor with integral water nozzle mounted at the sensor head, a high pressure pump together with a power relay unit and an indicating transmitter equipped with relays. The power relay unit drives the high-pressure pump and the water valve. In high pressure wash systems, pressure increase can occur in a closed pipe section when the high pressure pump is operated.

It is recommended to mount a pressure relief valve in the pipe section. Relief pressure should be according to pipe pressure rating.

The water nozzle design is optimum for effective prism cleaning even in difficult scaling conditions. The small picture below shows how the high-pressure water jet reaches precisely its target: the prism surface.

The built-in relays of the Indicating transmitter can be configured to control the prism wash cycle.

**Recommended high pressure and wash times:**

| Minimum above process pressure | Maximum allowed pressure | Wash time |
| --- | --- | --- |
| 30 bar (450 psi) | 70 bar (1000 psi) | 10-15 s |

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**w w w . k p a t e n t s . c o m**

A prism wash system for high pressure water: components and wiring.



| | | | |
|---|---|---|---|
| 13 | POWER SUPPLY CABLE (3 x) FOR HIGH PRESSURE PUMP | K-PATENTS | 1 |
| 12 | POWER SUPPLY CABLE (3 x) FOR WATER VALVE | CUSTOMER | 1 |
| 11 | PIPE UNION R 3/8" FEMALE | CUSTOMER | 1 |
| 10 | HP PUMP PR-3600-230-400-550/110 + wash valve PR-3336 | K-PATENTS | 1 |
| 9 | POWER RELAY UNIT | K-PATENTS | 1 |
| 8 | POWER SUPPLY 100-240VAC/50-60Hz | CUSTOMER | 2 |
| 7 | HIGH PRESSURE HOSE | K-PATENTS | 1 |
| 6 | CHECK VALVE R 1/4" PR-350P AND WP nozzle | K-P/CUSTOMER | 1 |
| 5 | Flow cell AFC-HSS-H00/15/20/25-SI/R)-NC | K-PATENTS | 1 |
| 4 | CABLE BETWEEN DT-R AND SENSOR PR-8230 | K-PATENTS | 1 |
| 3 | POWER SWITCH | CUSTOMER | 1 |
| 2 | SENSOR PR-23-AC/AP/GP | K-PATENTS | 1 |
| 1 | INDICATING TRANSMITTER DT-R | K-PATENTS | 1 |
| PART | PART SPECIFICATION | SUPPLIER | PC |