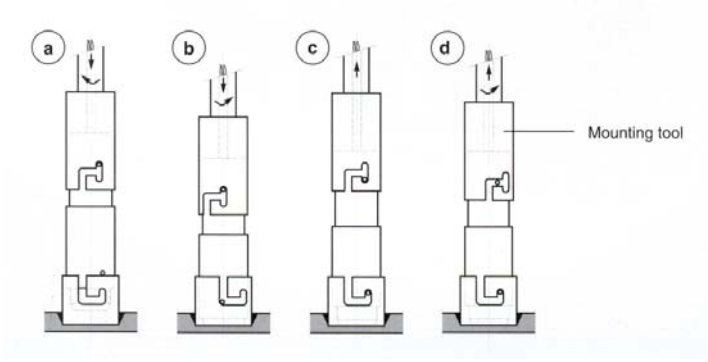
De Dietrich PROCESS SYSTEMS

TEMPERATURE MEASURING PROBES
TYPE DR & SVR

De Dietrich

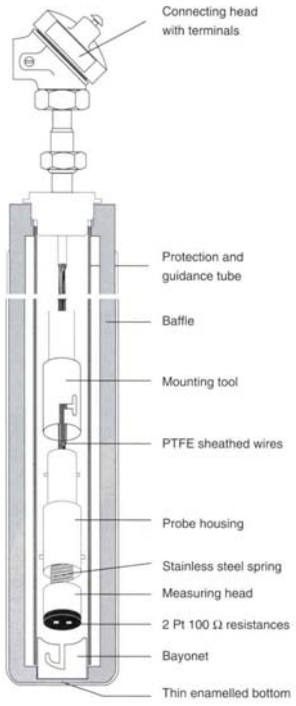
Product Description

The externally removable measuring probe consists of a measuring head, held against the thin, flat bottom of an entirely glass-lined baffle thermowell (DR) or valve head/stem (SVR) with a spring device. The head features 2 (DR2) or 3 (DR3) platinum 100 W resistors with a thin ceramic support which are embedded into insulating materials. For the DR probe, a bayonet at the lower end of the baffle permits easy assembly into the socket. Spring pressure maintains the necessary force to hold the measuring head against the thin corrosion resistant bottom of the baffle or thermowell. The assembly or removal of the system is made from the outside of the vessel by means of a tool, which incorporates another bayonet welded to an extension tube.

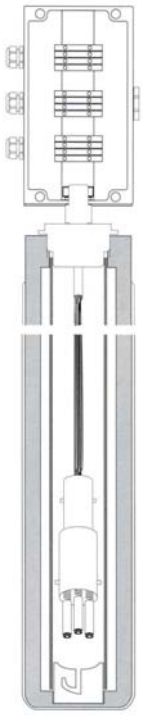


ADVANTAGES

- Separate electric circuit for each element
- Completely glass-lined:
  - -No gasket to leak
  - -No maintenance required
- Probe disengages from the outside of the reactor
  - -During the process
  - -For replacement or calibration
- Spring loading and special conductive grease ensure good contact
- Short response time due to:
  - -Thin film ceramic Pt 100 W elements
  - -Minimum wall thickness
  - -Anti-oxidation treatment of the thin bottom
  - -Ceramic insulation material



DR2 Probe



DR3 Probe

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Response Time
By utilizing platinum resistors embedded on thin ceramic supports, which are then mounted in an insulating material, the system achieves a response time equivalent to that of a tantalum tip. Also, the quality of the contact between the measuring element and the bottom of the baffle or thermowell, together with the constant force of the spring and locking bayonet design, assures quick and reliable response times.

Δ T(%)	50%	63.2%	80%	90%
Tantalum tip	11	18	27	35
DR probe standard execution	10	17	31	51
SVR probe in 2" x 1-1/2" valve	13	23	41	67
SVR probe in 3" x 2" valve	20	33	61	98
Enamel thickness 1mm	Response time in seconds			

Accuracy
Equipped with 3-wire, Pt 100 W resistors, the probes give an accuracy of ± 2.7°F (1.5°C) throughout the working range of the vessels, i.e. –20°F to 400°F (-28°C to 204°C). Calibration certificates are available upon request. The recommended current intensity is: I < 2mA. Beyond this value a deviation must be taken into account due to the self-heating of the probe. Maximum current intensity: I = 10mA.

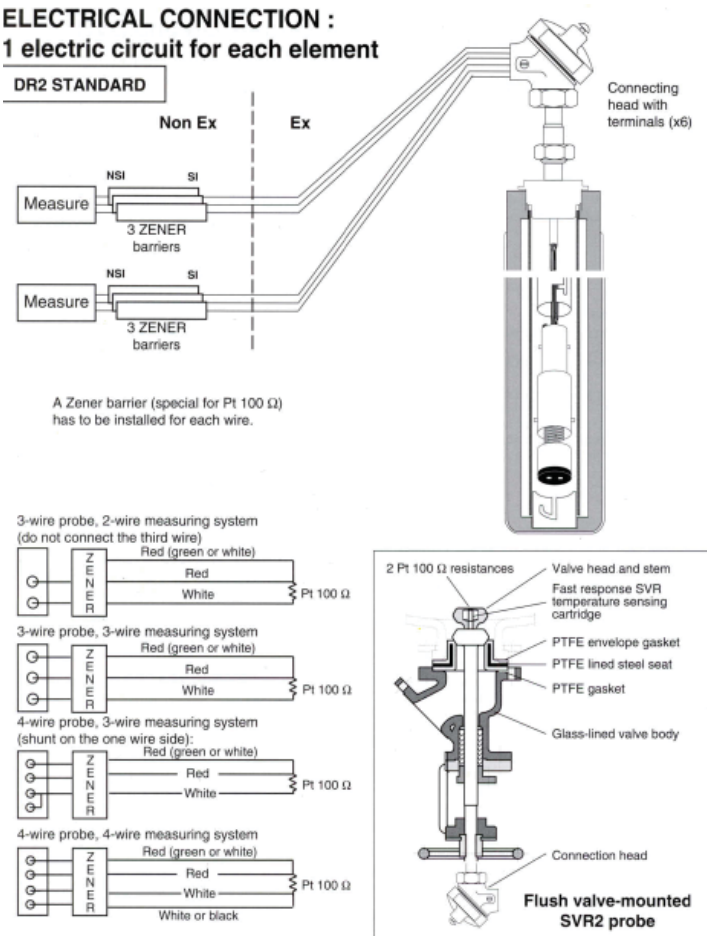
Protection class: Intrinsically safe electric circuit
The Pt 100 W probes, situated inside the baffle or valve (without gasketing), are in a Zone 1 area. They are passive elements of the measuring circuit and require a very low intensity (2mA, 150mV). Due to this fact, they are classified as intrinsically safe electric circuits, which exempts them from certification and marking when one of the 2 following conditions is fulfilled:

1. The circuit is protected by Zener barriers placed in a non-dangerous Zone, or
2. A 4-20mA intrinsically safe transmitter is assembled inside the connection housing

Optional Features
- Thermocouples J, K, T or E with 1, 2 or 3 elements
- Mixed Pt 100 W and thermocouples, for example:
  DR2J = 2 Pt 100 W +1 J thermocouple
  DR2K = 2 Pt 100 W + 1 K thermocouple
  DRJ2 = 1 Pt 100 W + 2 J thermocouple
  DRJK = 1 Pt 100 W + 1 J thermocouple +1K thermocouple

Maintenance
The DR probe reduces the down time of the reactor to a minimum since it is easy to replace externally without entering the vessel, or removing the baffle or thermowell.

Possible Configurations Standard
DR2 & SVR2 with 2 Pt 100 W elements
DR3 with 3 Pt 100 W elements



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