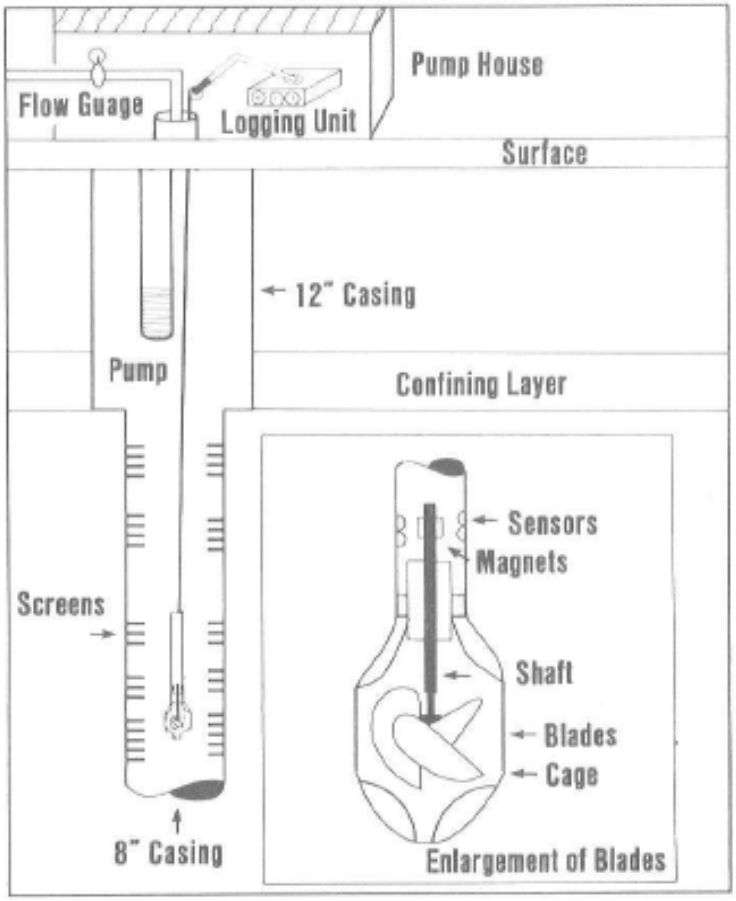
# FLP-2492 – Spinner Flow Meter

## Theory of Operation

Pulses from a driver circuit representing impeller rotation (4 pulses per revolution) are sent up the cable. Direction of rotation is not available with this data, so the operator must determine flow direction by logging at different speeds in the same direction and noting whether the impeller rate increases or decreases with respect to changes in rate. See notes in appendix for more information.

The impeller is fitted on rotor which has 2 fiber optic cables imbedded in it which are looped in 180 degree planes in the mounting body. The impeller is held onto the shaft by a nut. . The sensor assembly has two small openings (lenses) that are aligned 180 degrees apart. They set in a radial distance from the center axis of the probe, as are the ends of the fiber optic loop on the rotor. When the rotor spins, the light from one of the lenses (led) passes through the loop of fiber optic cable and is received at the other side (photodiode). This occurs 4 times per revolution.




## Applications

The tool is typically used in ground water production projects. In a multi screened water production well the flow meter is used to determine quantitative interval specific flow rates, as long as well diameter and pumping rated are known.

## Specifications:

| | |
|---|---|
| Diameter | 4.2 cm (depends on cage/impeller config.) |
| Weight | 9 kg |
| Length | 122 cm |
| Measuring range | 2-70 meters/minute |
| Resolution | < 0.3 m/min |
| Pressure | 2000 psi |
| Temperature | 70 degrees C |


Terraplus Inc.
52 West Beaver Cr. Rd. #12, Richmond Hill, ON. Canada L4B 1L9
**Tel: 905-764-5505**
**Fax: 905-764-8093**
**Email: sales@terraplus.ca**
**Website: www.terraplus.ca**

# FLP-2492 – Spinner Flow Meter

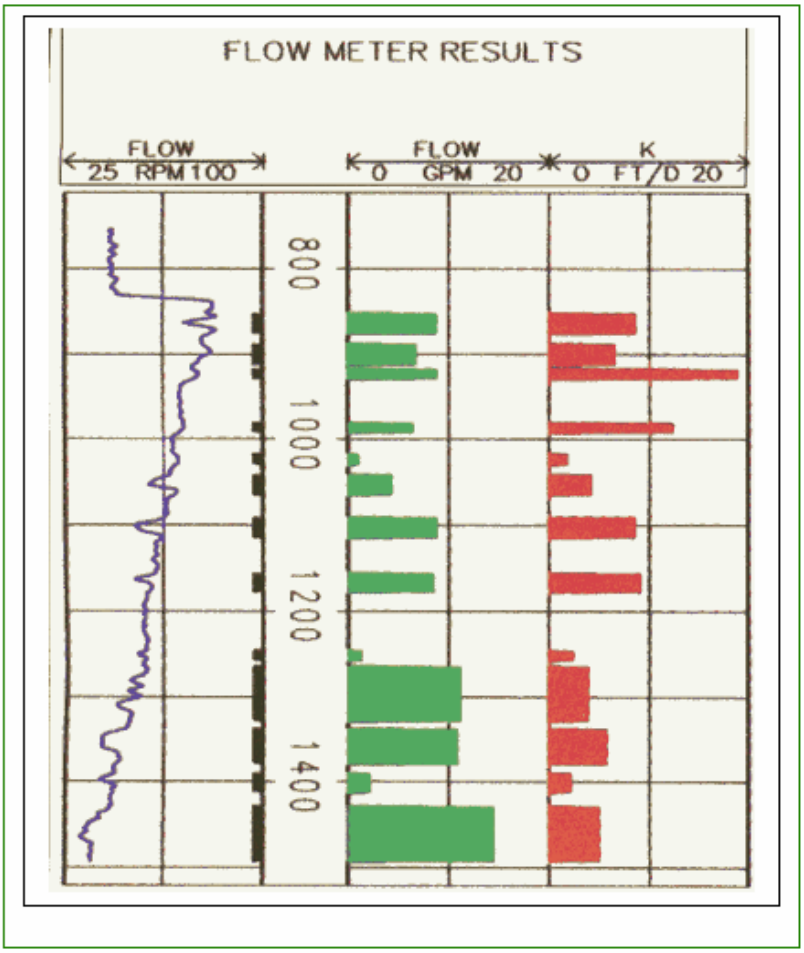
Flow meter data presented as RPM of the impeller shaft (which is calibrated as a flow). Incremental flow for each screened section (green), and the K of each section (red) indicated. K is derived by calculating a constant of proportionality for each screened interval between incremental flow per foot of screen (measured by flow meter), and total pump rate for the whole interval, as given by the equations above.

C = constant of proportionality
Ka = Average K for the whole interval (5.2 ft/day, pump test data)
Ki = K for individual screened section
Zi = individual sceened length per section
B = total sum length of screen (135 ft, example)
Qi = flow rate for individual seceened section
Qp = total pumped flow rate (pump test)

$$K_i = C \times K_a$$

$$C = (Q_i / Z_i) / (Q_p / B)$$

$$T_i = K_i \times Z_i$$




Terraplus Inc.
52 West Beaver Cr. Rd. #12, Richmond Hill, ON. Canada L4B 1L9
**Tel: 905-764-5505**
**Fax: 905-764-8093**
**Email: sales@terraplus.ca**
**Website: www.terraplus.ca**