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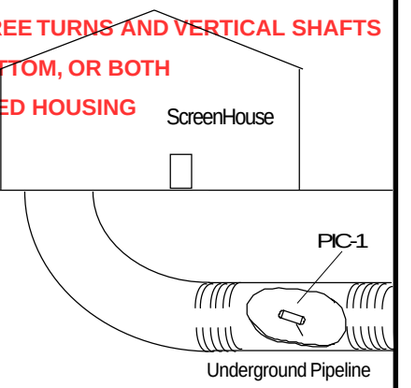
TECHNICAL DATA SHEET

AUTONOMOUS LONG PIPELINE INSPECTION CAMERA

- INTERNAL PIPELINE INSPECTIONS
- FOR SHORT OR LONG PIPELINES
- AUTONOMOUS, NO CABLES TO THE SURFACE
- TRAVELS WITH WATERFLOW DOWN THE CENTER OF PIPELINE
- COMPUTER CONTROLLED CAMERA AND LIGHTING
- TIME AND DATE STAMP ON VIDEO
- NEGOTIATES 90 DEGREE TURNS AND VERTICAL SHAFTS
- VIDEO TAPES TOP, BOTTOM, OR BOTH
- 500 FOOT DEPTH RATED HOUSING
- 2 YEAR WARRANTY



PIC-1 Pipe Inspection Camera

JW Fishers patented pipe inspection camera is an autonomous underwater vehicle (AUV) capable of performing long pipeline inspections. There are no umbilical cables to the surface. The AUV system is completely self contained with video camera(s), underwater lighting, batteries, and a computer system to control the lights and camera on/off times. The original system has made many long video pipe inspections, including a 5 mile pipeline in Cleveland, Ohio. With a water flow of 2 feet per second, a 2.7 mile pipe can be video taped on a single trip through the pipe. The computer controlled "delayed start" allows almost any length pipe to be video taped using multiple trips. The system was designed to videotape intake pipes for municipal water supplies and hydro plants, however, the AUV can also be used for other applications.

The AUV's streamlined design and unique ballast system enable it to travel down the center of the intake pipe using natural water flow for propulsion. The maximum water flow speed for clear video is approximately 3 feet per second. The system can traverse pipes that contain 90 degree turns and up or down vertical shafts with the camera housing always perfectly aligned with the water flow. The AUV travels through the pipe with the camera tilted at a 45 degree angle giving a clear, well illuminated picture of the top or bottom of the pipe. The operator adjusts the upward or downward angle by moving the ballast point. The single camera system requires two trips through the pipe to record both the top and bottom. With the two camera system both top and bottom can be taped simultaneously. The AUV is deployed at the intake point and is removed when it arrives at the screenhouse.

Time and date stamp on the video, with known video references in the pipe, confirm the exact location of the AUV for any video segment. The audio channel is also active and provides valuable data on probable leak points in a pressurized pipeline.

Camera power is supplied by its own internal 10 hour rechargeable battery. Power for the computer and lighting is supplied by two 12 volt rechargeable gell-cell batteries. Switches on top of the AUV control overall operation.

The video is viewed by removing the camera and playing it back through a monitor (TV). Copies of the tape can be made on a VCR.

SPECIFICATIONS

- Dimensions/Weight ..... 28"L x 8"Dia ..... 75 lbs.
- Materials/Color ..... PVC, urethane/yellow, black.
- Maximum depth ..... 500 Feet.
- Maximum continuous video taping ..... 2 1/2 hours.
- Maximum "one-pass" pipeline run (at 3 fps) ..... 4.6 miles.
- Maximum "delayed start" time ..... 5 hours.
- Lighting ..... "super white" LEDs.
- Power ..... camera: internal 10 hr battery.
  ..... computer and LEDs: two 12 volt batteries.
- Power consumption ..... 4 watt.
- Total Shipping ..... 34"L x 15"D x 15"H ..... 125 lbs.

OPTIONS

- Dual cameras and dual lighting.
- 220 vac charger.