PRIMEHORIZONTAL

Smart Pulling Head

Installation guide

Pre-requisites

1. **Laid down pipe:** Lay out the pipeline in a straight run and not on a roll, sometimes on a series of rollers. The product pipeline is by default laid out in a straight line There can be exceptions to this, usually cramped inner city projects where there is no other option than to weld two rolls together as the pipeline is pulled into the ground.
2. **Hot Plate welder:** It is required that a hot plate welder be present on site. This is the same system used to weld the pipeline sections together. The pulling head is fused in the same way as the pipe sections to the head of the pipeline, it is the clients responsibility to provide this service.
3. **Pull line installed:** In order for the pulling head to deliver its measurements to the surface, a communication cable is inserted through the length of the pipe, connecting the Pull Head with the data handler.

Connection steps

i

- Once the pipe and pull head have been welded it is necessary to connect the wires.
- To retrieve the wire inside the pipeline, feed a curved steel (must be ferrous) into the inspection hole in the side of the pulling head. You will feel when contact is made with the magnetic catch sub as it has an attraction force of more than 40 kg (88.2 lbs).
- Once connected pull the wire and catcher out through the access hole.
- You are now ready to make connection, taking care to observe which wire is connected to which, as the system is polarity sensitive.
- Once connection is made at the pulling head, the wire should not as yet be pushed back into pipeline.
- First connection should be made with the data handler at the other end of the pipe, taking care once again to observe the correct polarity.
- Once connection has been made at both ends, a check can be made that the system is functioning properly. This is done with the 5m (16.4') umbilical cable connecting the data handler direct to the drill cabin display.

ii

- Having first armed the power unit inside the data handler (see powering up for pipe pull section). The system is deemed to be functioning when small fluctuations can be seen on (non zero) values on the display.
- When the system is functioning properly, the pulling head end of the pipeline can be sealed. It is very important that no ingress is allowed into the pipeline at any part of the process. For this reason the access hole must be sealed with same material that the pipeline is made from (PE).

- In order to achieve the correct seal on the pipe a PE extrusion welder is used. First feed the connected cable back into the access hole pushing well into the pipe to keep away from the hot extruded plastic during the sealing process.
- The hole is then sealed by building the weld up around the chamfered access hole until the hole is closed. Once cooled, any excess plastic should be neatly ground off.

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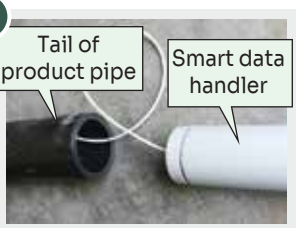
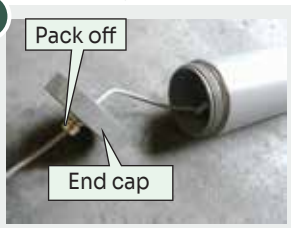
Powering up for Pulling Operation

A



- Once everything is connected, the pipe is sealed and the drill crew is ready for the pulling process to commence. Contact is required between the driller and the Prime engineer located at the tail of the pipe. The Prime engineer is given the go ahead to switch the measuring system on. In order to do this he must follow a simple procedure.

B

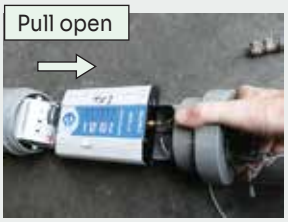


- The already connected data handler must be first turned on before it is inserted onto the tail of the pipeline.
- First the pack off in the down hole end should be loosened and the end cap unscrewed.

C

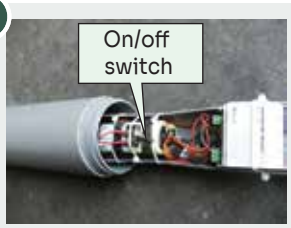
- In order to access the on/off switch the outer casing of the data handler must be unscrewed while the end cap is held stationary with the cable socket uppermost.

D



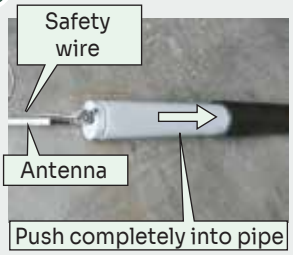
- Once loose pull the Data handler internal cartridge out until the on/off switch can be seen.

E



- Once switched on the system will run for approximately 8 hours. Should it be expected that more than 8 hours is required then a back up battery pack will be provided to give a further 8 hours of measurements.
- Now the system has been switched on the, the data handler should be screwed back together in the reverse order as described.

F



- The antenna should be screwed into place and the safety wire attached. The whole assembly should now be pushed completely into the end of the pipe so that the antenna no longer protrudes from the pipe.
- The safety wire should now be tied or taped to the external side of the pipe to ensure that the handler does not accidentally find its way too deep into the pipeline.
- It is also advised that a protective end cap be fitted to the end of the pipe. This not only prevents water and dirt ingress but prevents the data handler from being shaken out of the pipe during the pulling process.

- All that remains is for the driller to plug the display unit into a power source in or near the drill cabin. The antenna should be connected to the display and a signal should be observed coming from the Smart Pulling Head. Before pulling commences it should be confirmed that the Pulling Head is showing a zero reading for the applied pull force. If not, a simple press of the zero button will set the reading to zero.
- Pulling operations can now commence.

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