ISEKI
MICROTUNNELLING

INTERJACK STATIONS

- *Permit drives in excess of 100 metres*
- *Suitable for all machines of over 1000mm i.d.*
- *Only outer sleeve remains in ground after completion*
- *Various sizes of jacks available to suit different configurations*

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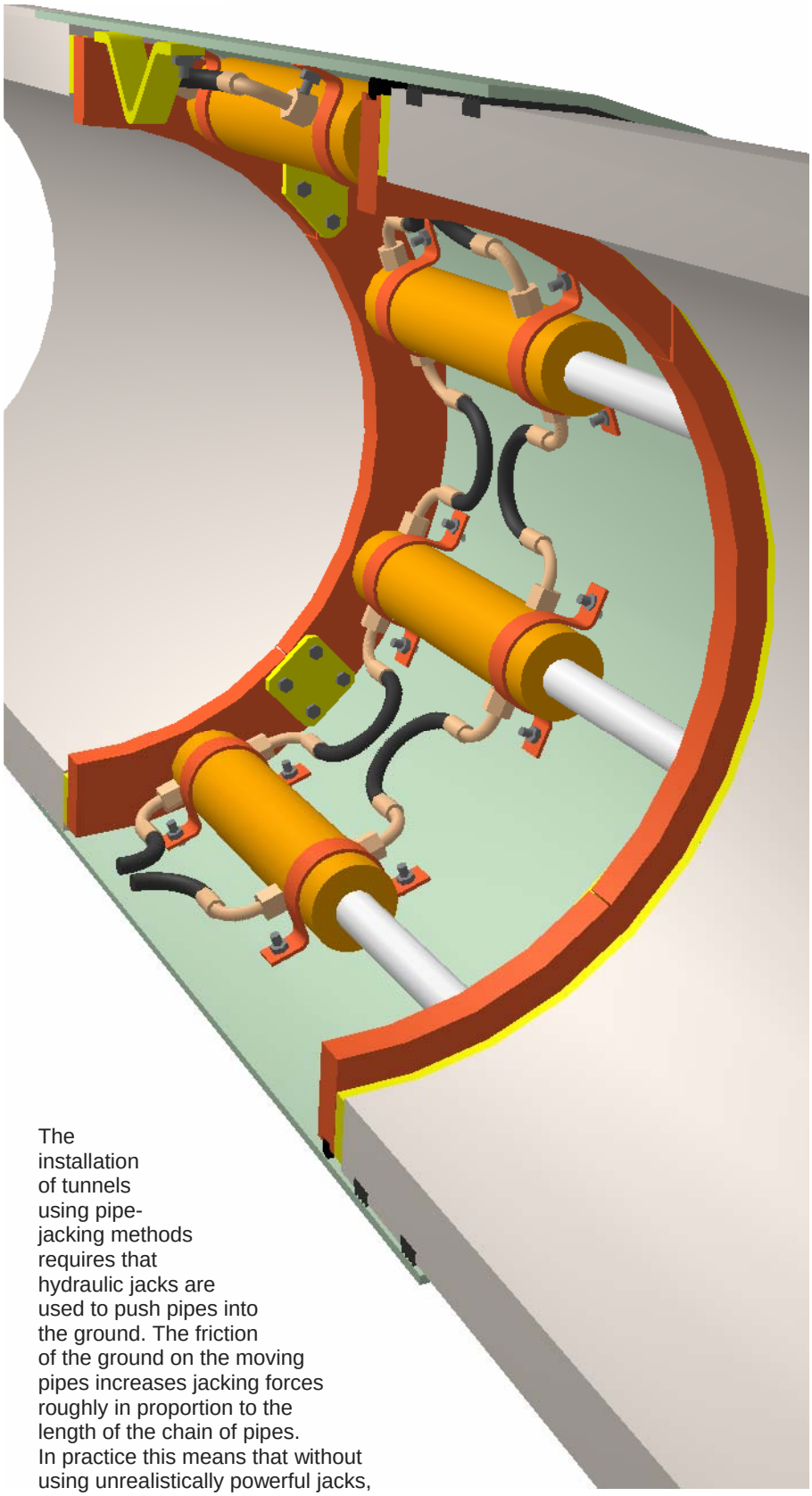
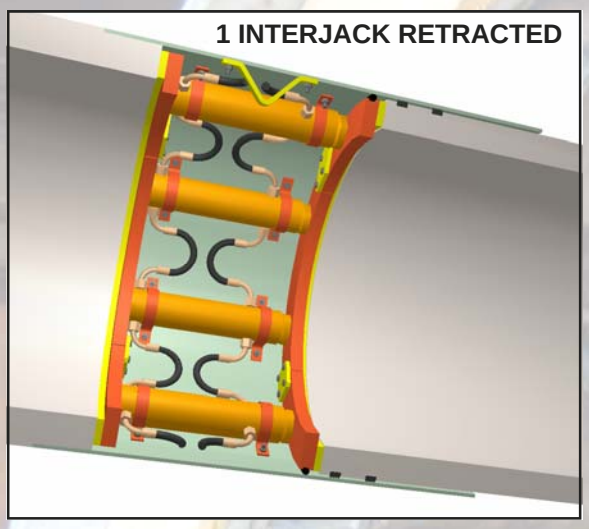


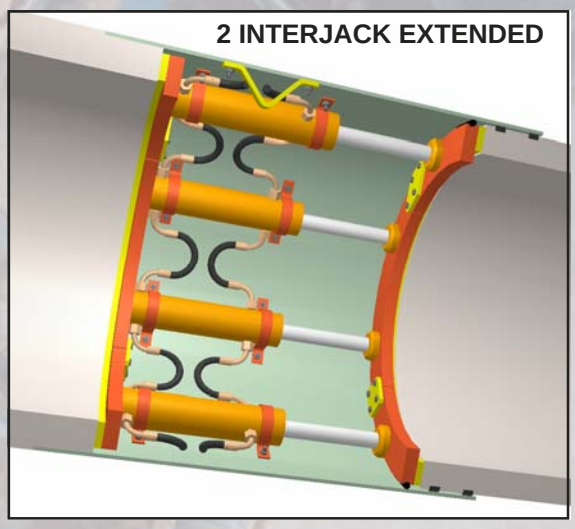
The installation of tunnels using pipe-jacking methods requires that hydraulic jacks are used to push pipes into the ground. The friction of the ground on the moving pipes increases jacking forces roughly in proportion to the length of the chain of pipes. In practice this means that without using unrealistically powerful jacks, 100m is the longest length of tunnel which can be installed.

Interjacks are supplementary pipe-jacking rigs, installed temporarily in the line of pipes, and they overcome this limitation, by splitting a long drive up into several separate stages, which can be jacked one at a time.

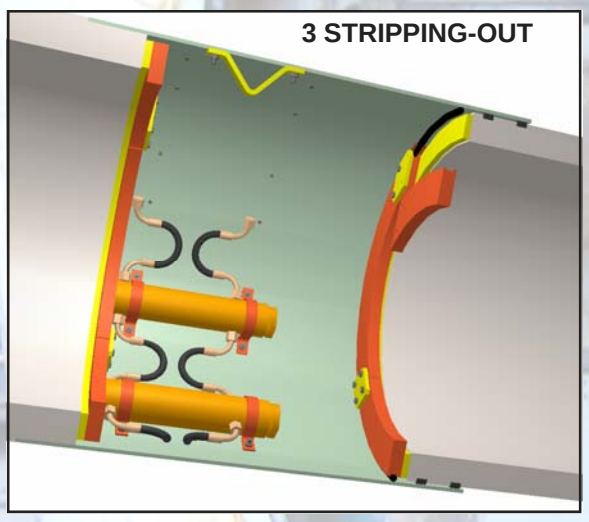
The method is basically to jack normally, but to also install interjack stations at appropriate places in the line of pipes. When the jacking forces rise close to the force available from the main jacks, the interjacks are then used in addition to the main jacks. The front interjack is extended first, to move the tunnelling machine and first few pipes forward. Then the second interjack is extended, to move the next set of pipes forward, and to close up the first interjack. This procedure is then followed for all interjacks in turn until the main jacks take their turn, and then the whole sequence starts again with the front interjack.



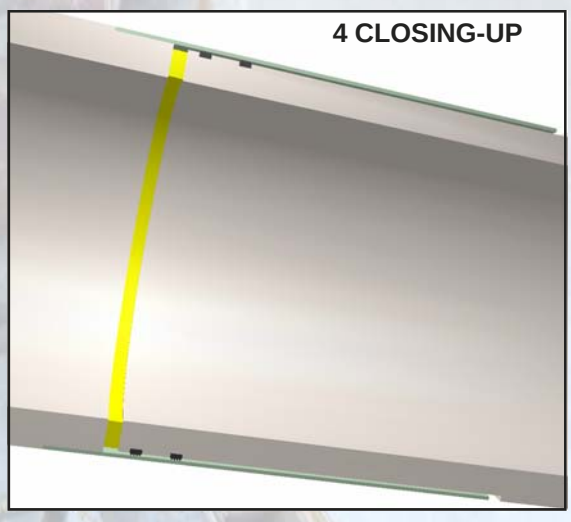
The interjack comprises a set of hydraulic jacks mounted inside a tube, usually of steel. The tube can be a separate sleeve, or be an integral part of the jacking pipe. A special rebated jacking pipe fits into this sleeve with one or more sliding seals. The jacks may be mounted directly onto the sleeve, or using various cradle methods, and spreader rings are used to transfer the jacking forces into the pipe ends. These spreader rings are designed for removal at the end of the project.



Extending the interjack results in the string of pipes forward of the interjack being advanced. The interjack at the rear of the following stage is then activated, and that stage is then jacked forward, thus closing up the first interjack. Subsequent stages duplicate the same procedure. There is no theoretical limit to the number of stages that can be used, but practical considerations mean that drives in excess of 500m are rarely used on pipe diameters of less than 3 metres.



When the tunnelling machine has arrived in the reception shaft and been removed, the interjacks can then be removed, using the same method. The first interjack is stripped out by retracting the jacks and removing the spreader ring segments and the jacks.



This allows the following stages to be jacked forward until the rebated part of the trailing sleeve is fully inside the sleeve. Subsequent stages are closed up similarly.
The finished tunnel shows little evidence of the interjack, apart from the steel sleeve which remains on the outside of the completed tunnel.

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