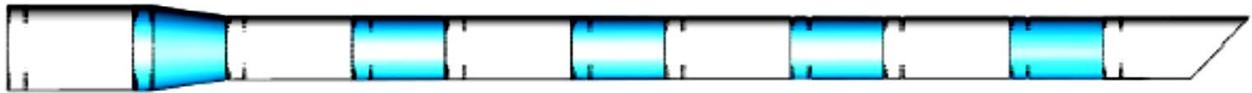


# Carrot Patch



In some cases where casing hanger seals have failed in oil wells, they will require some type of repair to regain the lost seal. This repair can be corrected in many different ways.

The Carrot Patch Tool (CPT) is one way to repair a damaged seal on a liner hanger. The CPT is a tapered tube that decreases in outside diameter size from the top to the bottom. The inside diameter of the CPT remains the same from top to bottom. The bottom of the CPT will have a mule shoe bottom to allow its entry inside the top of the existing hanger or casing. Each taper section on the O.D. will decrease by 0.020" every 1 meter of length of the CPT. The maximum and minimum O.D. sizes of the CPT are custom designed to match the I.D. of the tube it must enter down hole. The top taper of the CPT is always larger than the greatest I.D. of the tube down hole, to ensure the CPT does not totally enter the tube down hole. Depending on the well being repaired with the CPT, typically there would be a new hanger or packer type tool placed on the top of the CPT. This CPT will often allow thermal casing growth up the outside of the inserted CPT. Depending on the CPT design and the amount of force it is inserted into the tube down hole can often determine if expansion joints will be used between the CPT and the new packer.

The CPT assembly (complete with a casing hanger and release mechanism) is installed into the wellbore with drill pipe to the desired depth. At this point, the pipe string is rotated to allow the mule shoe of the CPT to enter the tube down hole. Depending on the design of the CPT, it may be lowered inside the tube to a calculated depth taking on no weight, or to a point where a calculated weight is achieved rather than a certain depth. Once the CPT is placed at the desired position or depth, the new casing hanger is set to the (larger) casing, and the drill pipe is released from the CPT assembly. On hot wells, upward thermal growth of the tube down hole, will seal tighter as the tube continues to grow up the CPT. Thermal movement of the tube down hole will not cause the new hanger to move from its setting point.

## APPLICATION

- For use to repair failed seals on casing hangers.
- For use in cold or thermal wells, vertical and horizontal.

## FEATURES

- Allows for thermal growth of casing without effecting the functioning of the new packer
- CPT contains no elastomeric materials. It seals steel on steel.

## BENEFITS

- Easy to install
- Can eliminate the use of expansion joints.