

# ***DEVELOPMENT OF BRANCH DRILLING AND CONNECTION DEVICE FOR PLASTIC GAS PIPE INSERTION METHOD***

**n Tashiro The Japan Gas Association (Tokyo Gas Co., Ltd)**

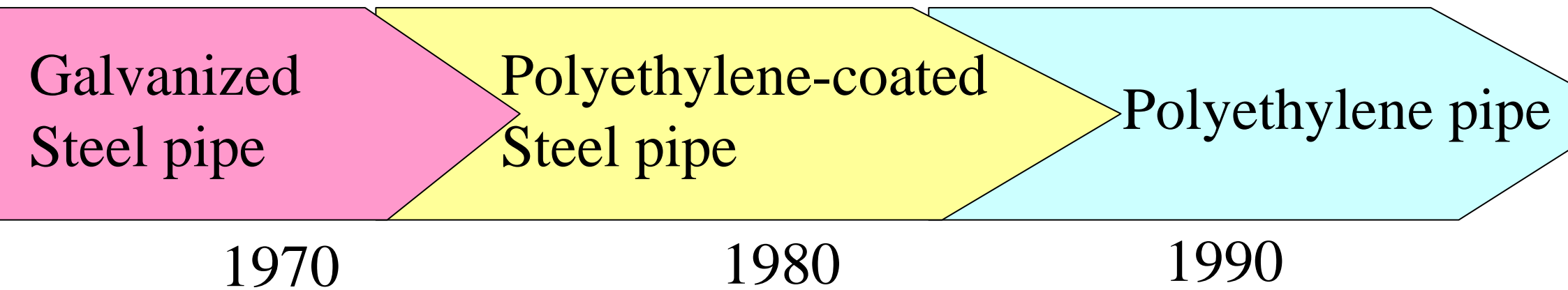
**i Higuchi The Japan Gas Association (Osaka Gas Co., Ltd)**

**saki Nose The Japan Gas Association (Toho Gas Co., Ltd)**

**uhiro Toyoda The Japan Gas Association (Saibu Gas Co., Ltd)**

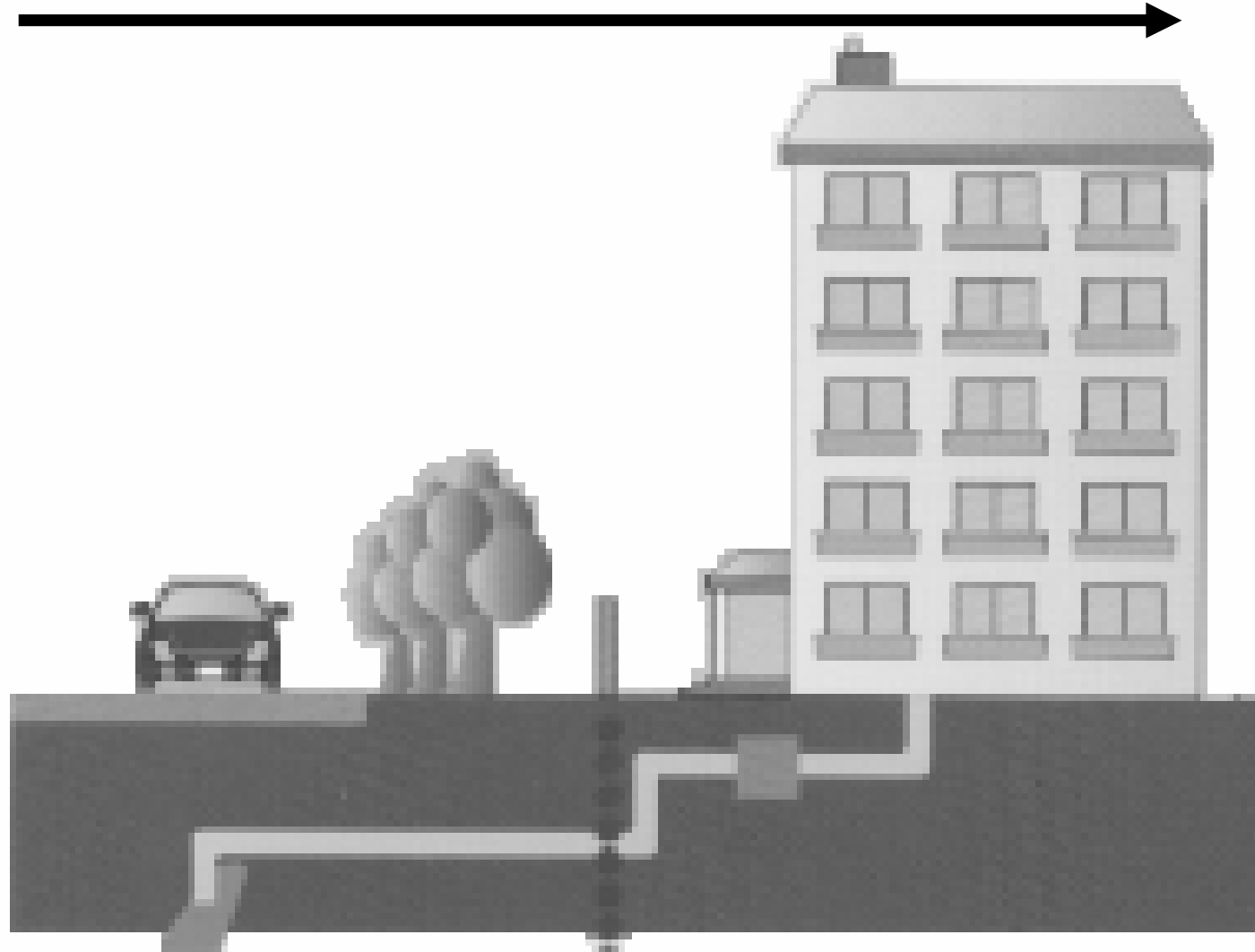
**gii Kitano The Japan Gas Association**

# *History of Materials for Buried Pipes*



**Risk of leakage from galvanized steel pipes by corrosion is increasing!!**

# Gas operator's responsibility (as far as gas valve in the house)

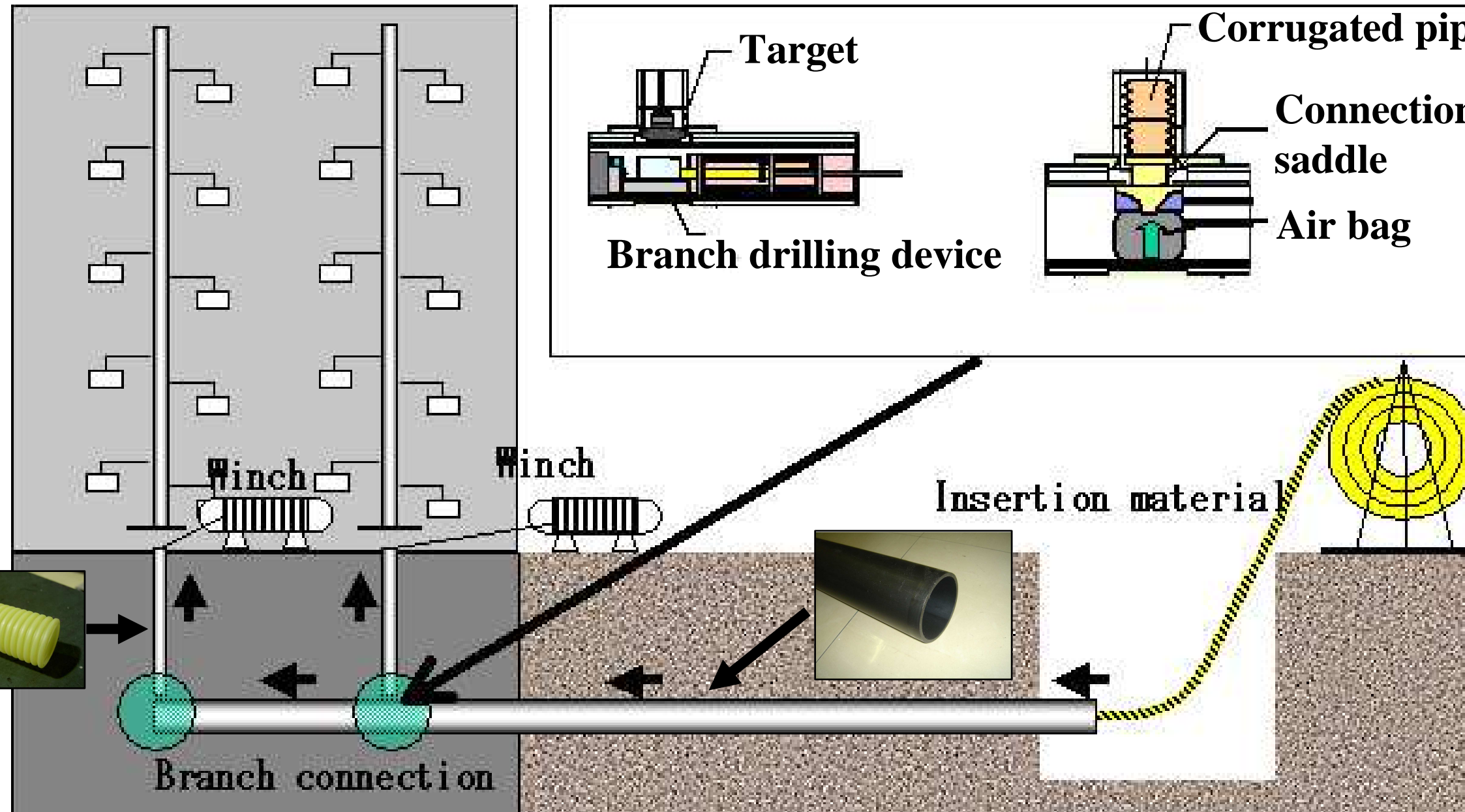


Gas operator's  
property



Customer's  
property

# Schematic of PE Insertion Method



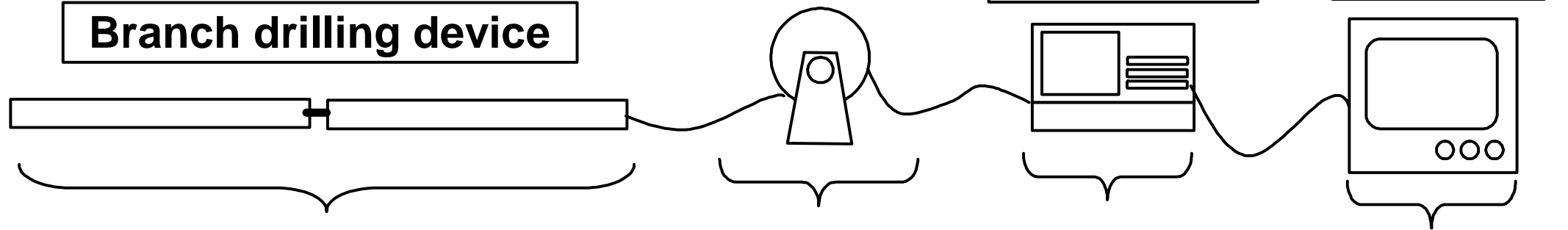
# Device

Cable drum

Controller

Monitor

Branch drilling device



+



# *processing unit*

**Processing unit**

**Hinge**

**Control unit**

*Diagram of branch drilling device*

**Air picker**

**Optical head (Assist gas outlet)**

**Rotating shaft motor**

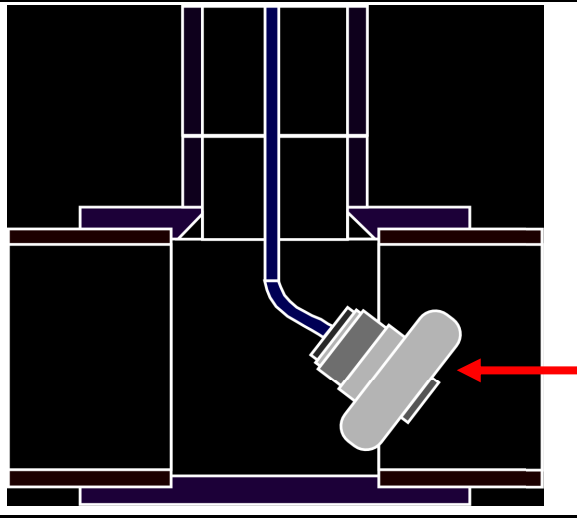
**Pipe length direction mo**

**Magnetic sensor**

**CCD camera**

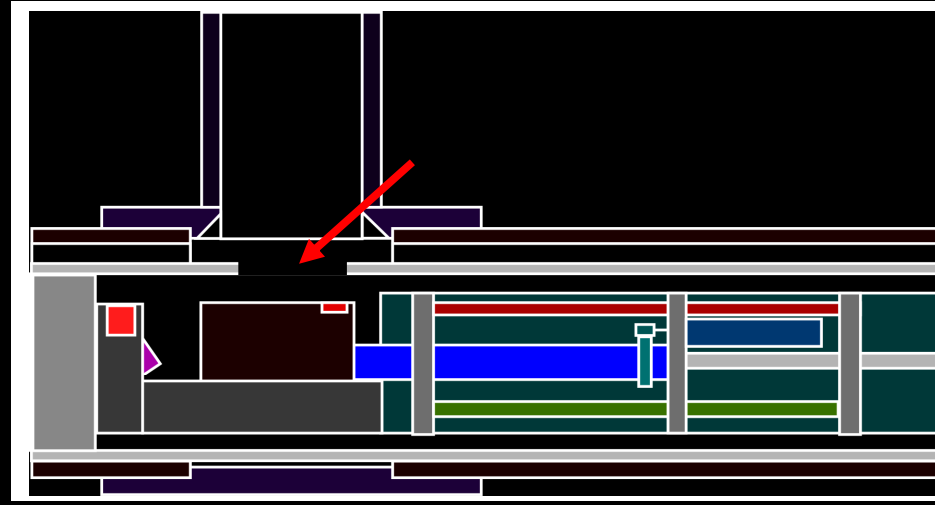
**Magnetic sensor**

# *Procedure of drilling the branch points*

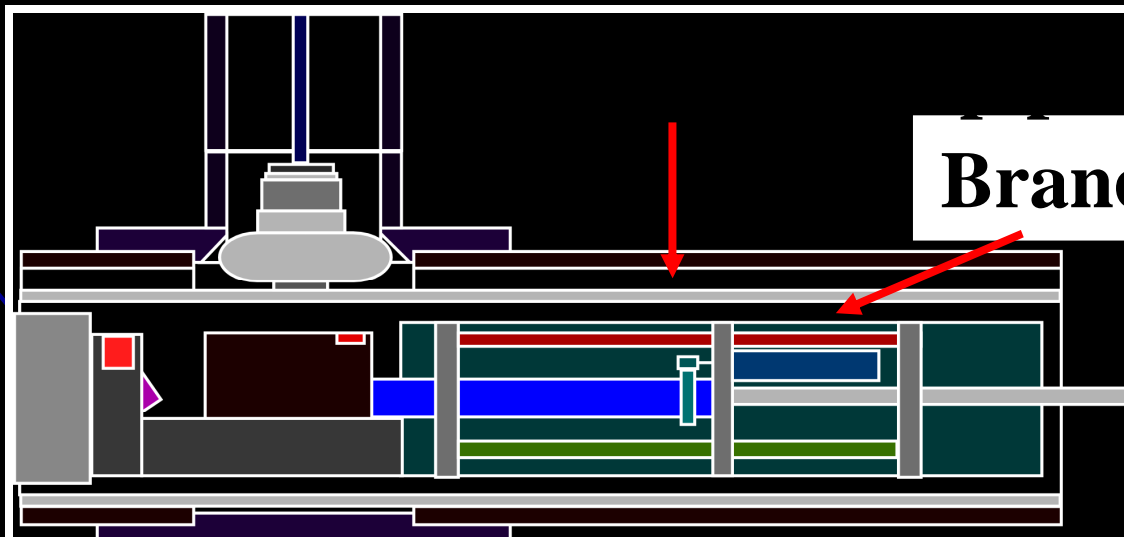


**Target**

**Installing the target**



**Drilling the branch point**



**Branch drilling device**

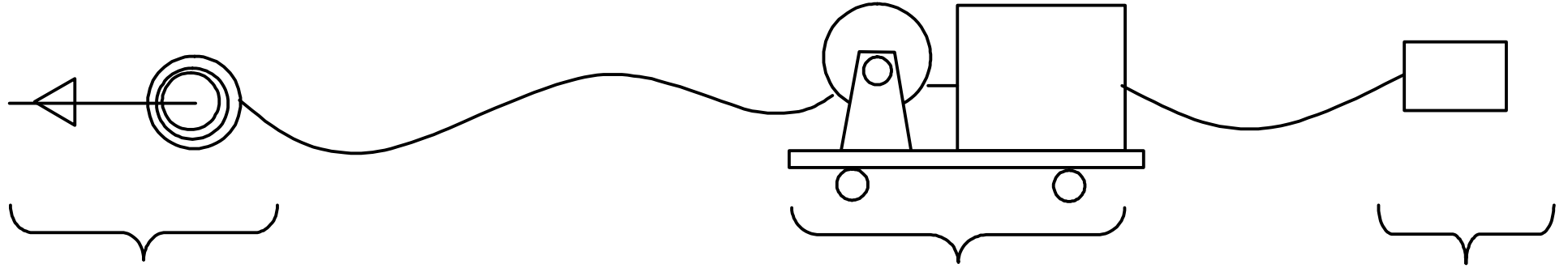
# *branch connection device*

Branch connection device

Cable drum

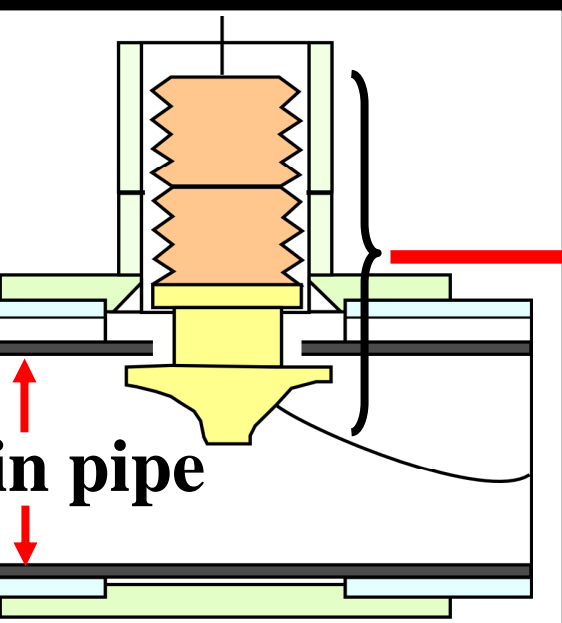
High frequency electrical generator

Cooling device

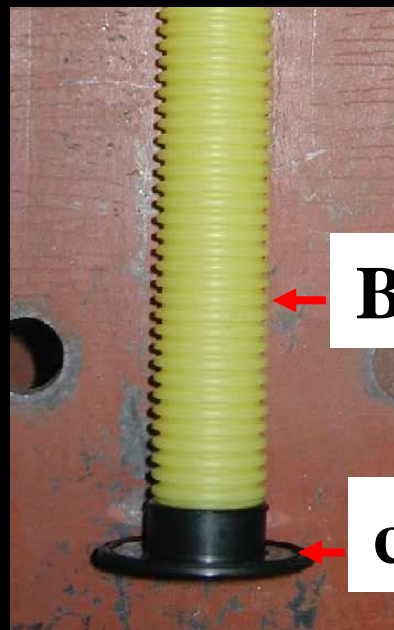




# *Procedure of drilling the branch points*

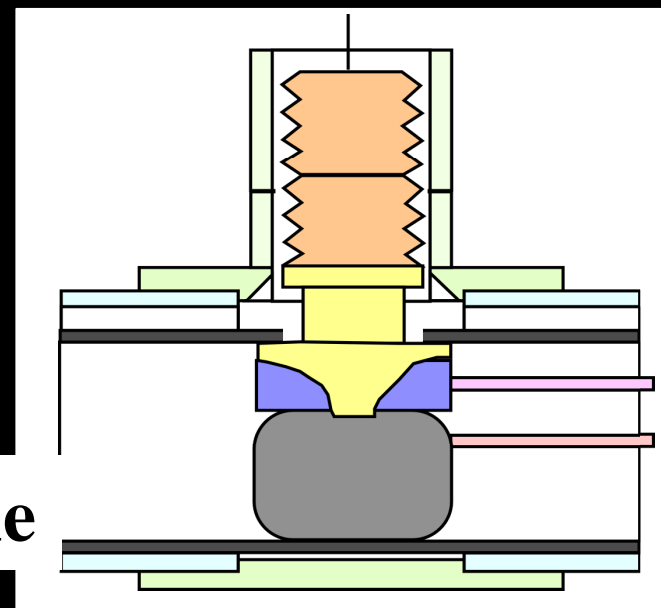


Installation of the branch pipe

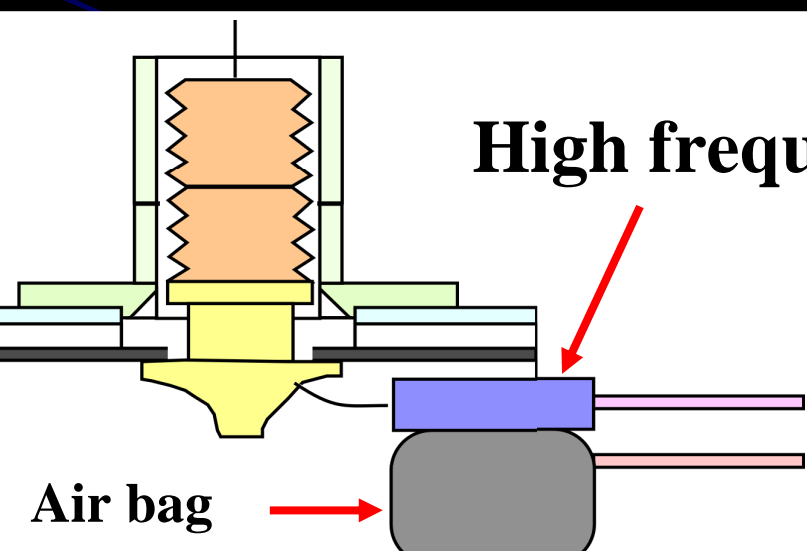


Branch pipe

connection saddle

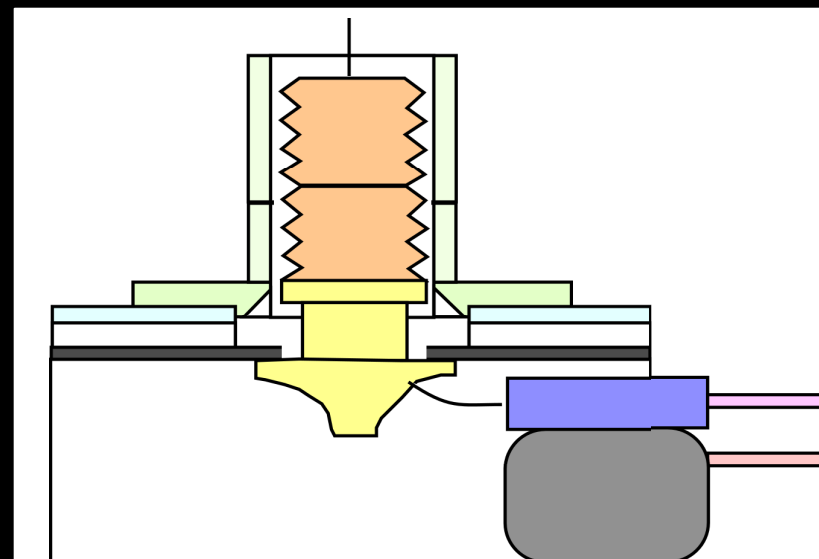
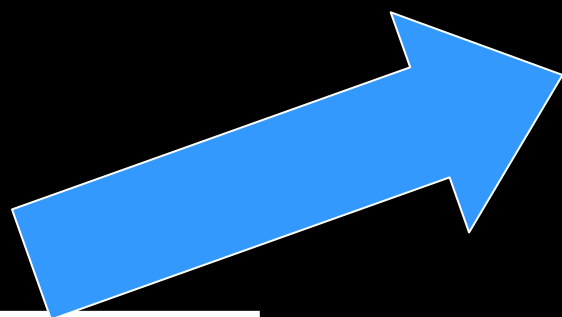


Connection of the branch pipe



High frequency coil

Air bag



# *Conclusion*

We have successfully developed a Branch Drilling and Connection Device used to perform branch pipe connections to apply the PE insertion method.

This device can be used in pipes with extremely small diameters of 50mm or 80mm.

This device can sharply reduce the costs of the PE insertion method by drilling branches and connecting branch pipes very quickly without excavating.