

Stack Heater Construction, July 2011

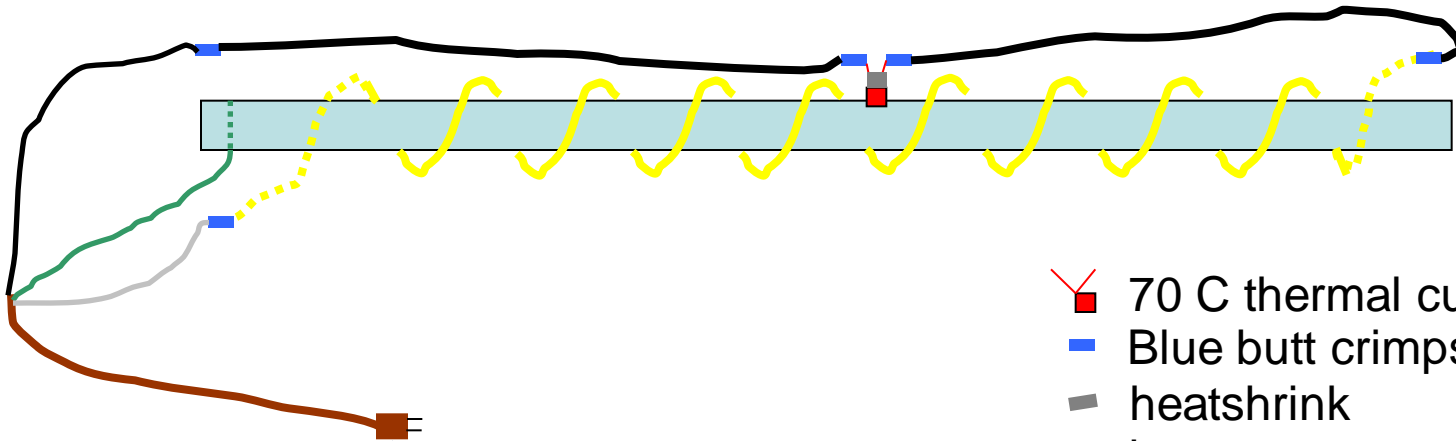
Parts list

- 1 – 8' 2" OD stainless steel pipe, chamfered at both ends
- 1 – 7' 4" PVC pipe
- 2 – 4" PVC end caps, with appropriate holes
- ~~1 – heater (model#=Omegalux fibrox heating cord, HTC-120, 144", 260 W, 2.17 Amp)~~
- 1 – heater (model#=SRT051-120 from Omega.com, 12', 313 W)
- 1 – 70° C thermal cutoff switch (Selco UP62 UCHIYA 70C 066) (rated to 4 Amps for 125Vac)
(also used UP72 – slightly different gauge wire)
- 1 – 8' of 105° C high T wire
- heatshrink
- 5 – blue heatshrinkable butt crimps
- 1 – appropriate length of extension cord (105° C)
- 1 – roll of foil tape
- 1 – 1" thick sheet of fiberglass insulation
- N – zip ties (high T)
- 1 – three prong 120 Vac plug or 3 pin connector for back of PID and pins
- 2 – hoseclamps for holding pipe in position









Tools list

- Springloaded crimper
- Wire strippers
- Gloves (for fiberglass)
- Screwdriver(s) for pipe clamps and plug
- Heat gun
- Scissors (for fiberglass and foil tape)
- Crimper for PID connector

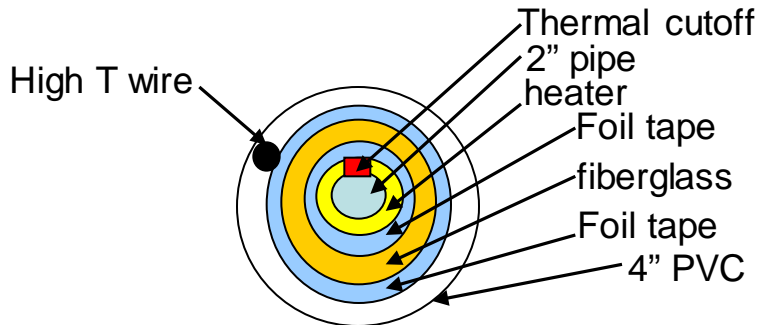
Electrical connections

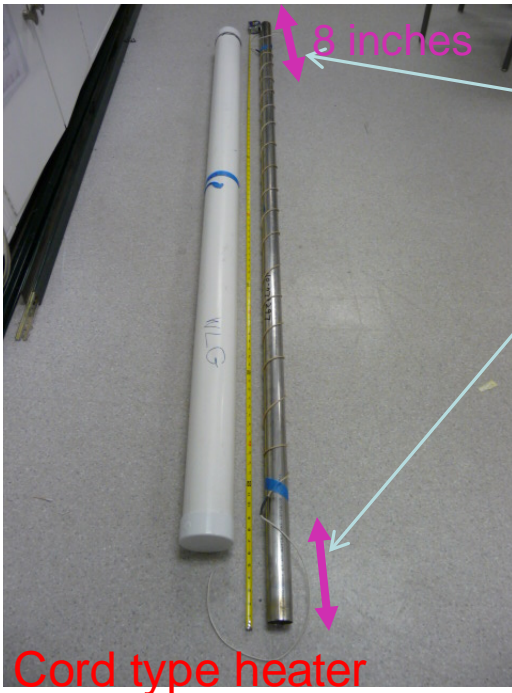


Note: this connector can be either standard 3 prong 120 V for wall or 3 pin for back of PID

-  70 C thermal cutoff
-  Blue butt crimps
-  heatshrink
-  heater
-  heater cables
-  High T wire
-  Extension cord, for power
-  Wires inside extension cord

End view of layers





Leave ~8" unwrapped on either end of pipe.

Note: there are two types of heaters depicted in these pictures (a cord type heater and a tape type heater). The general construction concept is the same regardless of heater type.

Wrap heater around pipe – spacing is ~4-5".
Leave ~8" unwrapped on either end of pipe.





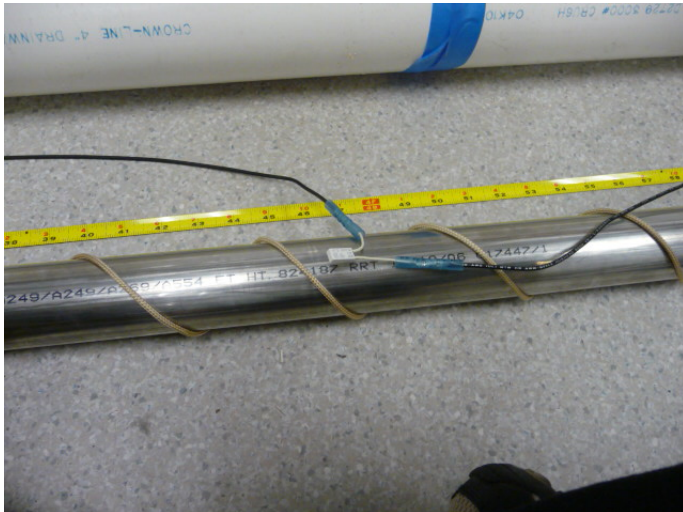
Double or triple fold skinny wires on high T wire for better crimp.



Triple fold skinny wires on thermal cutoff switch for better crimp.

Notes:

- (1) may want to double fold heater power wire. At the very least twist it together so it doesn't spread out and not crimp so well.
- (2) Want high T wire outside of fiberglass insulation so leave enough slack to be able to get insulation between wire and pipe easily.

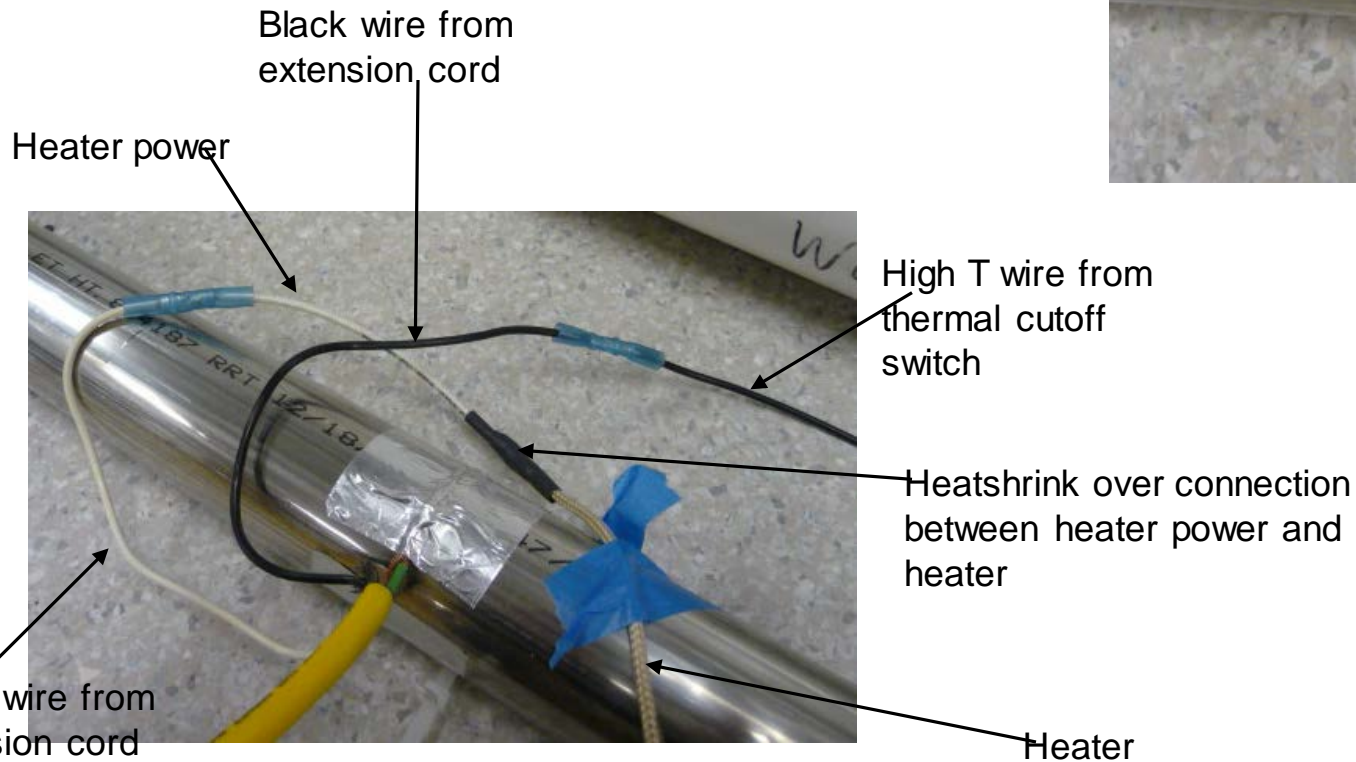


- Heat shrink over thermal cutoff switch wires and crimps so foil tape doesn't cut through wire insulation.
- Tape thermal cutoff switch to pipe with foil tape.



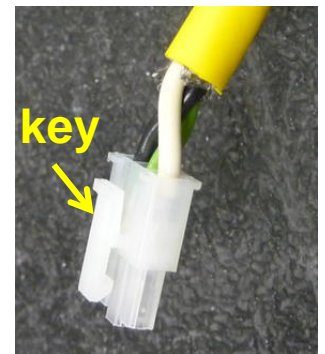
Thermal cutoff switch goes in middle of pipe. (note: heater in this picture is old version – cord heater)

Strip ~8" of insulation off green ground wire from power cord. Wrap bare wire around pipe ~ 8" from end of pipe. Twist together. Tape bare wire to pipe with foil tape.



For wall plug:
 Black → gold
 White → silver
 Green → green

For PID connector:
 If 'key' is on top
 [white][green][black]



For consistency:
 Black wire from extension cord to high T wire (also black in this picture)
 White wire from extension cord to heater power

Attach heater to pipe using foil tape. (Careful – the tape has got sharp edges!)



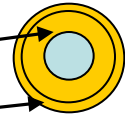
Wrap heater in fiberglass insulation.

Two wraps:

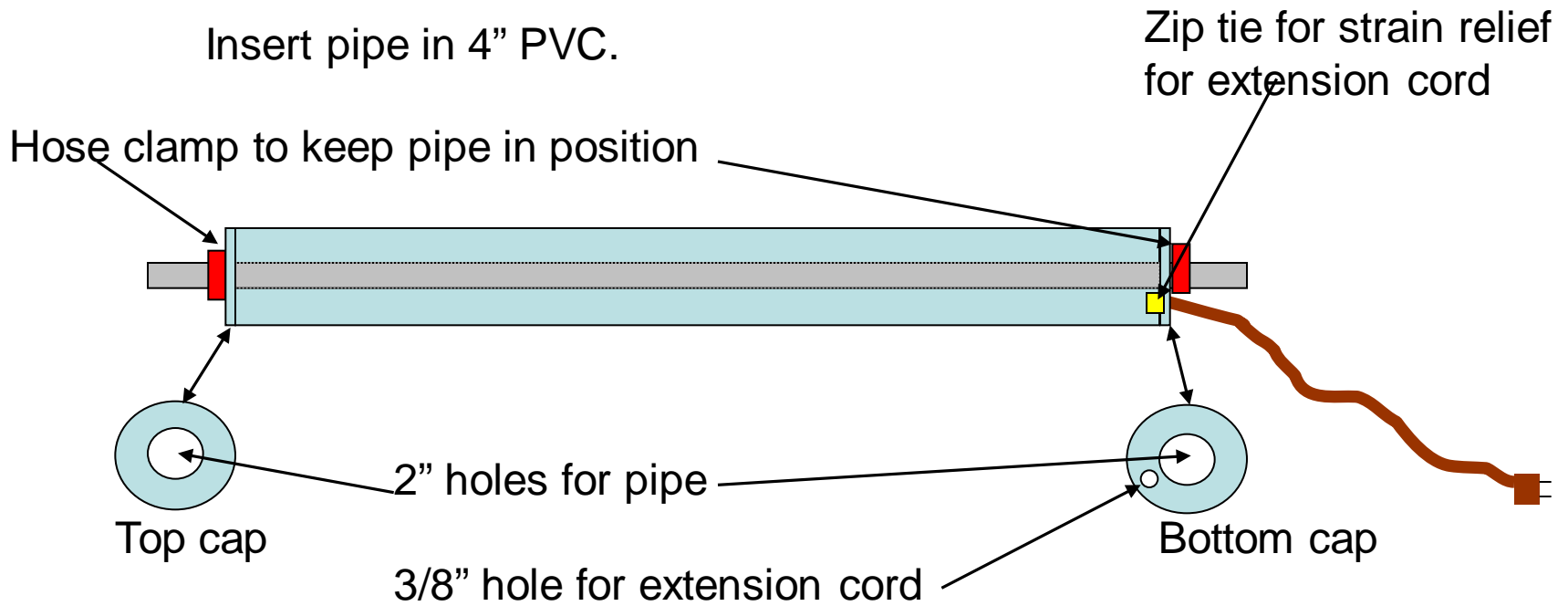
(1) Normal thickness (1") once around

(2) Half thickness once around

This picture shows the fiberglass insulation being held in place with foil tape. It would probably be much easier to use high T zip ties – the tape is difficult to use when wearing gloves and doesn't stick well to the fiberglass.



High T wire is outside of insulation.



No need to glue together, although could glue top cap if desired.

Should goop with silicone any places where water might get in, e.g., around hole in top cap and around edges of bottom cap.