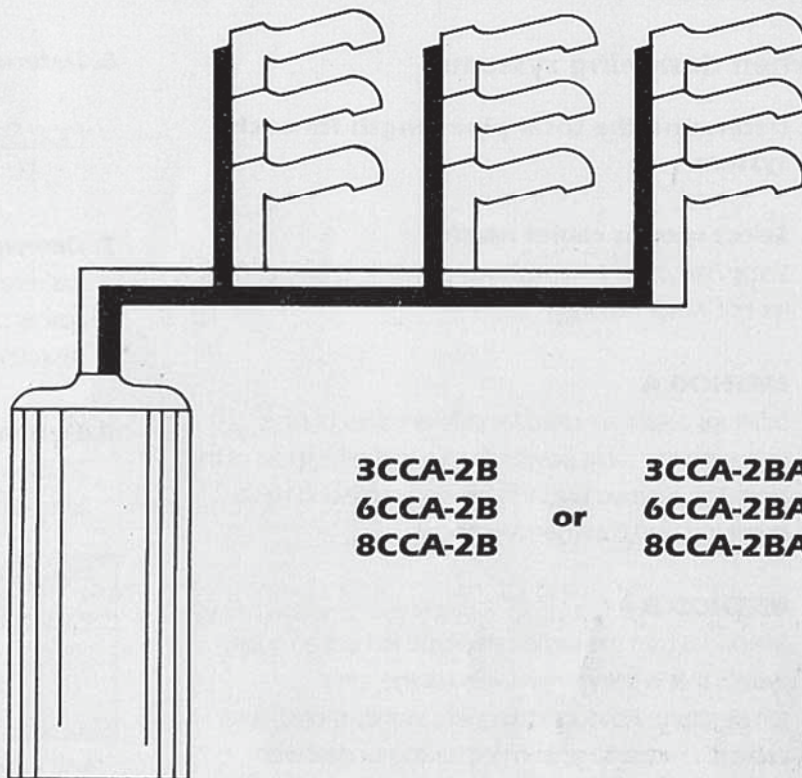




H O T W A T E R H E A T I N G

Serge Baril's Self-Regulating Heater Cable System can be used on a single pipe system because it does not require recirculation of the water. Using a conductive core material, Serge Baril's CCA heating cable replaces heat loss at the proper rate throughout the supply piping to maintain desired water temperature at every hot water tap.



All large buildings — hotels, office buildings, hospitals — require a ready supply of hot water.

Serge Baril's Self-Regulating Heater Cable Systems Cost Less to Install and Less to Operate. The conventional solution to the problem of supplying instant hot water to the tap is to use hot water recirculating systems. Although they assure quick availability of hot water, they require an elaborate system of return piping, recirculation pumps, and valves to maintain proper pressure at the outlets. Costs to purchase and install this extra equipment, plus operation and maintenance costs to keep the recirculation pumps constantly running, is quite high.

Technology has provided an economical alternative to this old-fashioned system. The solution takes advantage of the unique ability of Serge-Baril Self-Regulating Heating Cable to adjust its own power output based on actual pipe temperatures. By simply fastening the heater cable to the hot water pipes before insulation,

you can eliminate:

- Return piping and insulation
- Recirculating pumps
- Flow-balancing valves
- Wasted electrical consumption
- Maintenance problems

Advantages of Serge Baril's Hot Water Heating System

- Reduced Design Time
- Reduced Installation Cost
- Reduced Installation Time
- Lower Operating Costs
- Proven and Approved Products

DESIGNING SERGE BARIL HOT WATER HEATING SYSTEMS

Serge Baril's Hot Water Heating Systems are designed to maintain nominal hot water temperatures of 105°F, 115°F, 125°F or 140°F* (40, 46, 52 or 60°C*).

When designing systems:

1. Determine the total pipe length for each system.

2. Select specific cables needed.

Serge Baril offers two methods of selecting proper cable for hot water heating.

METHOD A

Different cables are used for different sizes of pipe, matching the cable power output to the heat loss of the pipe. This method uses less heating cable and has a lower installed cost than Method B.

METHOD B

Method B uses the same cable type to heat an entire system that is being maintained at the same temperature. Although it requires slightly more heater cable, the advantage is in not having to deal with several cable types on the same system.

3. Determine cable requirements for the entire system.

Multiply the total pipe length for each size pipe by the number of traces. Then, add the total length of all of the cables to arrive at system length.

4. Determine cable connection kit requirements.

Divide the "system total length" figure by the maximum circuit length of the cable used in the system. A few kits may be added for specific piping requirements of the system.

5. Determine the amount of installation tape needed.

Pipe size in inches (mm)	< 2(50)	3(75)	4(100)	6(150)	8(200)	10(250)
Ft(m) of pipe per roll of GT-60	60(20)	50(15)	40(12)	25(7)	20(6)	15(5)

6. Determine number of caution signs needed

$$\frac{\text{Pipe System Length}}{10 \text{ ft. (3m)}} = \text{Number of Signs}$$

7. Determine number of cable splice kits needed.

It is recommended that you order one box of five cable splices per installation, in the event a cable must be spliced.

8. Determine transformer requirements.

Multiply the following transformer factors by the total length of each type cable to size the transformer.

Cable	105°F (40°C)	115°F (46°C)	125°F (52°C)	140°F (60°C)*
	Factor ft/m	Factor ft/m	Factor ft/m	Factor ft/m
A	2.1/6.9			
B	3.7/12.1	3.2/10.5	2.7/8.9	2.0/6.6
C		4.7/15.4	4.0/13.1	3.4/11.2

These values contain a utilization safety factor for the transformers.

*** GENERAL NOTE :** For applications at 140°F (60°C) due to potential excursions in temperature above the maximum exposure temperature of the heating cable, temperature limiting line-sensing thermostats are required.

For applications at 125°F (52°C) and below, it is still possible to have boiler temperature excursions beyond the product limit of 150°F (65°C). Under such situations, a line sensing thermostat is required to de-energize the product and thus allow a higher exposure temperature of 185°F (85°C).

CATALOG NUMBERS

Cable	or	
A	3CCA-2B	3CCA-2BA
B	6CCA-2B	6CCA-2BA
C	8CCA-2B	8CCA-2BA

NOTE: 120V cables are available for this application, please consult factory.

SELECTION GUIDE

METHOD A :

The following table shows the proper cable (A,B or C) and the correct number of traces to be applied to a line for a given pipe size and insulation thickness.

Pipe Size in / mm	insulation thickness in / mm	Minimum Temperature Maintain			
		105°F 40°C	115°F 46°C	125°F 52°C	140°F* 60°C*
.50 / 12	1.0 / 25	A	B	B	C
.75 / 18	1.0 / 25	A	B	B	C
1.00 / 25	1.5 / 37	A	B	B	C
1.25 / 30	1.5 / 37	A	B	B	C
1.50 / 37	1.5 / 37	A	B	B	C
2.00 / 50	1.5 / 37	B	B	B	2B
2.50 / 62	1.5 / 37	B	B	C	2B
3.00 / 75	2.0 / 50	B	B	C	2B
4.00 / 100	2.0 / 50	B	B	C	2C
5.00 / 125	2.0 / 50	B	C	2B	2C
6.00 / 150	2.0 / 50	B	C	2B	2C

* For applications at 140°F (60°C) see general note on page 14.

Notes :

1. These selection tables are based on fiberglass insulation. Insulation is oversized for pipes 1/2" (12mm) to 1 1/2" (37 mm).
2. It is often advantageous to add insulation thus reducing the energy requirements and the heat tracing needs.
3. Selection table is based on a minimum ambient of 70° F (21° C)
4. When the heat losses exceed a cable's ability to meet them, two or more traces are required to provide the needed heat. When shown, the number in the selection guide is the number of traces. ie: 2C would indicate cable C with two traces of cable per foot of pipe. When only one trace is required, only the letter representing the heat tracer appears.

SYSTEM COMPONENTS :

PST-PJ	Power connection kit with standoff bracket, molded silicone rubber cable termination and end seal kit and grommet.
PST-PJJ-Y	Same as above with junction box, terminal block and pipe straps.
MSES-5	Molded silicone end seal (5 per bag)
MSES-1	Molded silicone end seal (1 per bag)
ETL-E	Electric trace label

METHOD B :

The following table uses a single type of heating cable for each temperature system and the correct number of traces to be applied to a line for a given pipe size and insulation thickness.

Pipe Size in / mm	insulation thickness in / mm	Minimum Temperature Maintain			
		105°F 40°C	115°F 46°C	125°F 52°C	140°F* 60°C*
.50 / 12	1.0 / 25	A	B	B	C
.75 / 18	1.0 / 25	A	B	B	C
1.00 / 25	1.5 / 37	A	B	B	C
1.25 / 30	1.5 / 37	A	B	B	C
1.50 / 37	1.5 / 37	A	B	B	C
2.00 / 50	1.5 / 37	2A	B	B	2C
2.50 / 62	1.5 / 37	2A	B	2B	2C
3.00 / 75	2.0 / 50	2A	B	2B	2C
4.00 / 100	2.0 / 50	2A	B	2B	2C
5.00 / 125	2.0 / 50	2A	2B	2B	2C
6.00 / 150	2.0 / 50	2A	2B	2B	3C

For braided product : (-B)

HSS-5	Cable splice (5 per bag)
HSS-1	Cable splice (1 per bag)

For braided and overjacketed product : (-BA)

GRK-S-5	Cable splice (5 per bag)
GRK-S-1	Cable splice (1 per bag)

GT-60	Glass tape - 60 ft. (18 m)
GT-180	Glass tape - 180 ft. (55 m)

TLE 4X120-2P	Line sensing thermostat, 32- 245°F (0-120°C) in a NEMA 4X enclosure with 10 ft. capillary and bulb, DPST.
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PRODUCT DATA : CERTIFIED: UL; C-UL and CSA

Circuit breaker selection:

The circuit breaker is selected on the basis of the maximum length (ft or meters) that can be connected at a specific start-up temperature. The maximum heater segment is the longest length of heater allowable between the power connection point and the end seal. More than one segment can be connected to a single breaker as long as the maximum heater length per breaker size is not exceeded.

CABLE	A	B	C
Supply Voltage	208	208	208
Maximum Length	675	590	562
CIRCUIT BREAKER SIZING (Based on 50°F start-up)			
30 amp-max length	1500	840	560
20 amp-max length	1000	540	420
15 amp-max length	750	405	315

CAUTION: To minimize the danger of a wet wire fire (arcing fault) if the heating cable is damaged or improperly installed, both the Canadian and the National Electrical Code (NEC 1996) require the use of a ground fault protection device (GFPD) at all times in conjunction with the installation of heat tracers.