

The second test, which simulates a 50-watt exothermic reaction (with a small cartridge heater) at a setpoint of 20°C, can be seen in Figure 2.

The highest temperature seen in the reactor due to the exothermic reaction is approximately 21.2°C. The time required for the LH 45 to recover from the reaction is approximately 15 to 20 minutes. It should be noted that this time could almost definitely be reduced by changing the control parameters in the LH 45, but some temperature overshoot may be the penalty.

The third and final test was very similar to the second test. A setpoint of 100°C was reached in the reactor, at which time the 50-watt exothermic reaction was simulated with the cartridge heater. As can be seen in Figure 3, the maximum temperature seen in the reactor was about 101.8°C, with a recovery time of about 20 minutes.

Test Conclusions:

- Lowest achievable temperature with LH 45 and 2 liter double jacketed reactor: -25°C

- Highest temperature deviation from 50 watt exothermic reaction at 20°C: 1.2°C
- Recovery time for 50 watt exothermic reaction at 20°C: 20 minutes
- Highest temperature deviation from 50 watt exothermic reaction at 100°C: 1.8°C
- Recovery time for 50 watt exothermic reaction at 100°C: 20 minute

Figure 1: Presto LH 45 with 2L Double Jacketed Reactor

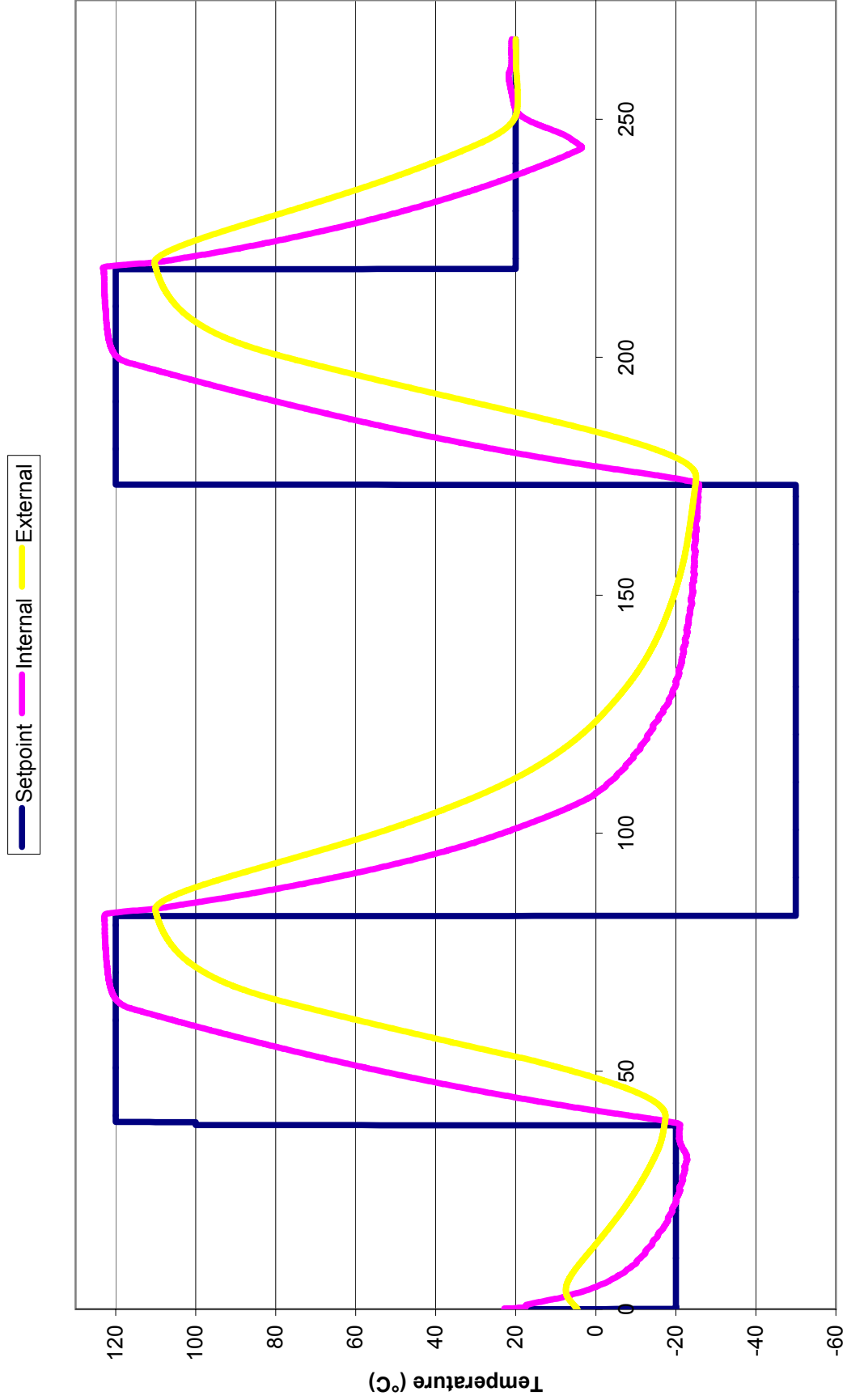


Figure 2: LH 45 with 2L Ace Double Jacketed Reactor

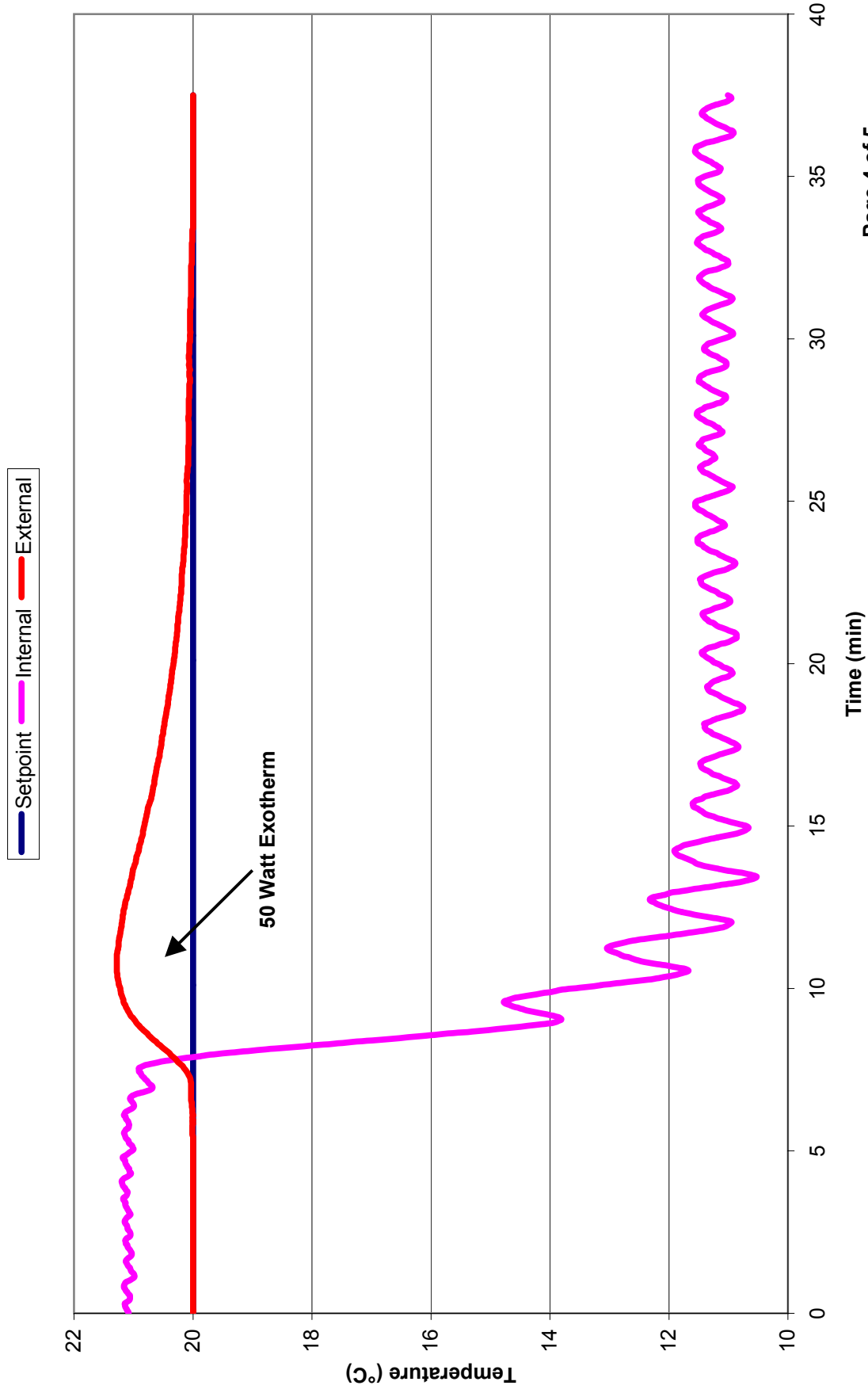


Figure 3: LH 45 with 2L Ace Double Jacketed Reactor

