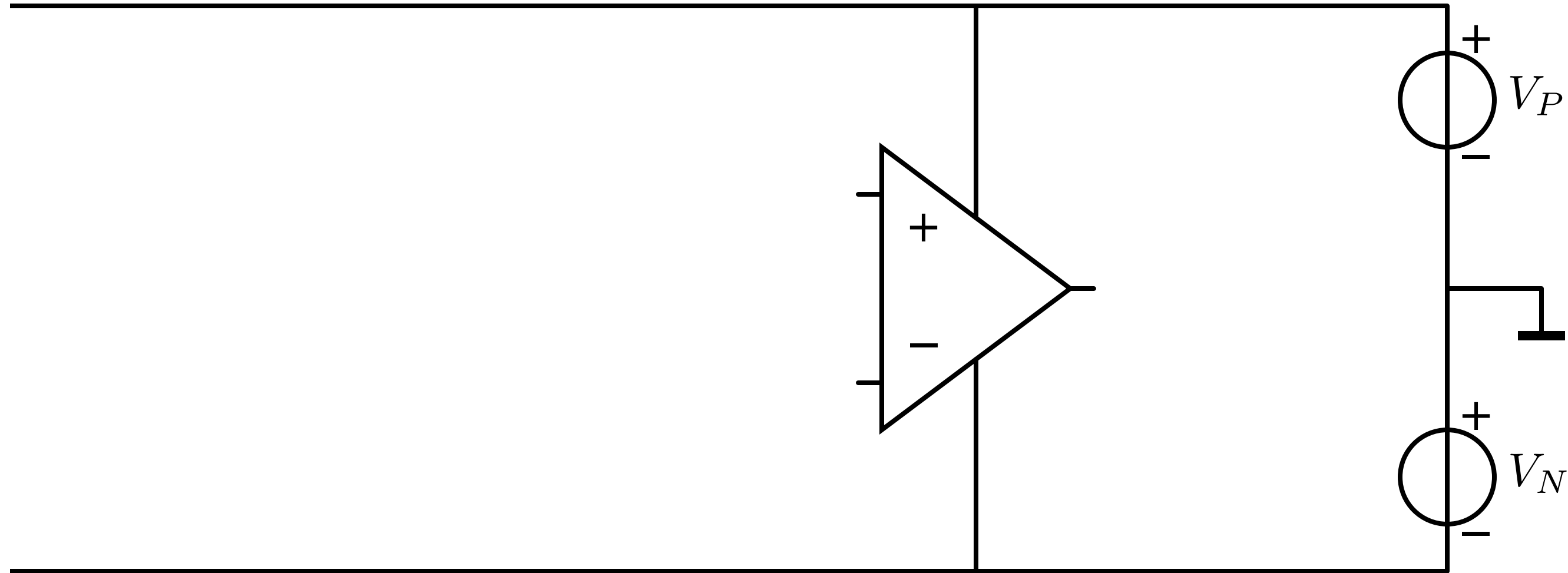


Structured Electronic Design

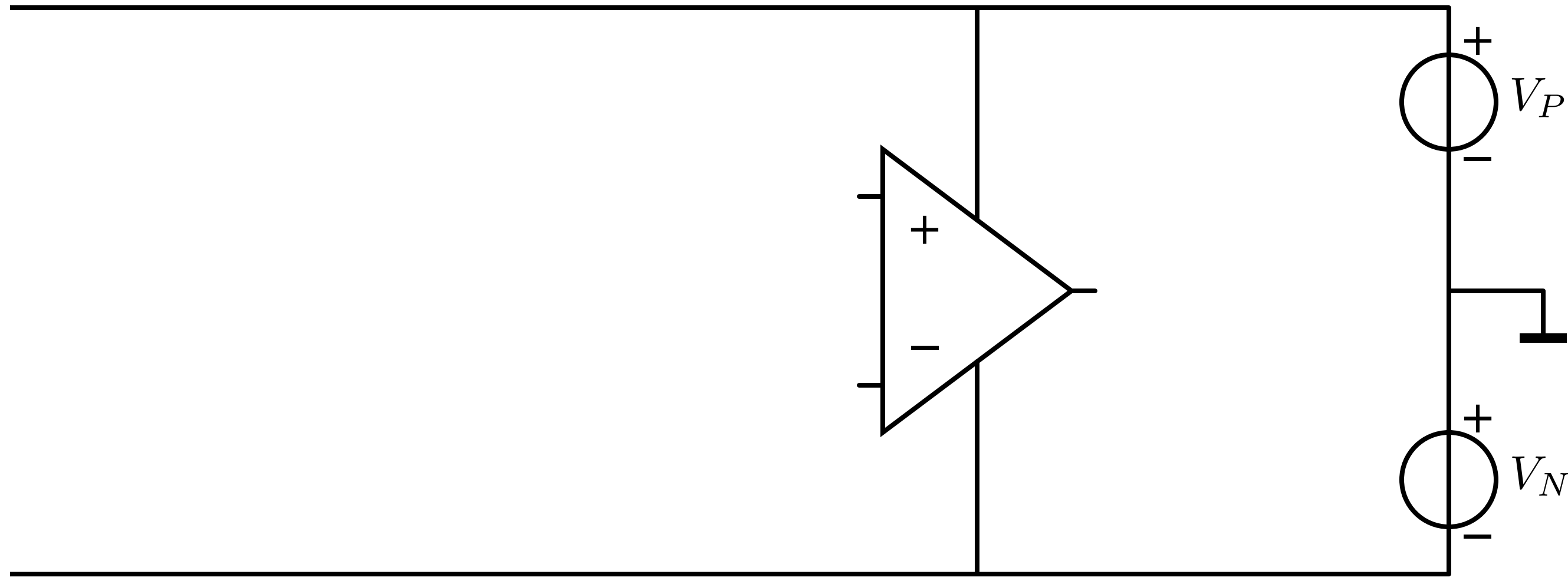
Biasing of operational amplifiers

Biasing of Operational Amplifiers

Biasing of Operational Amplifiers

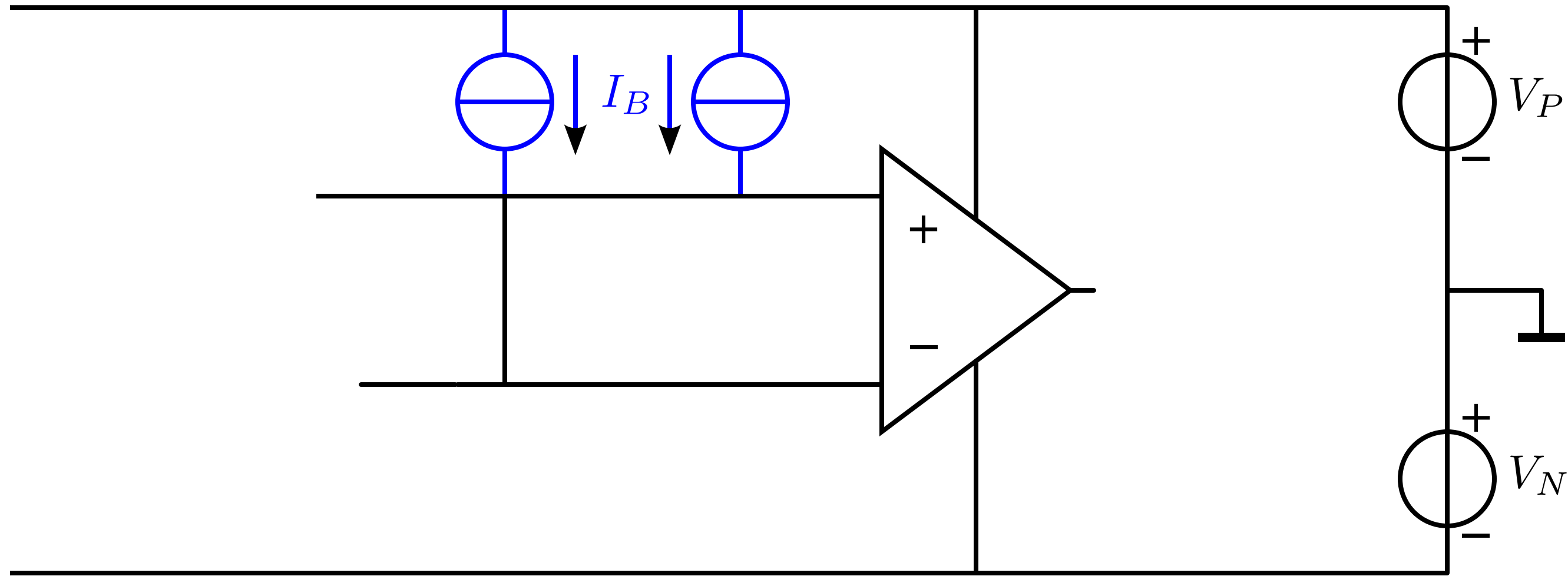


Biasing of Operational Amplifiers



Input port:

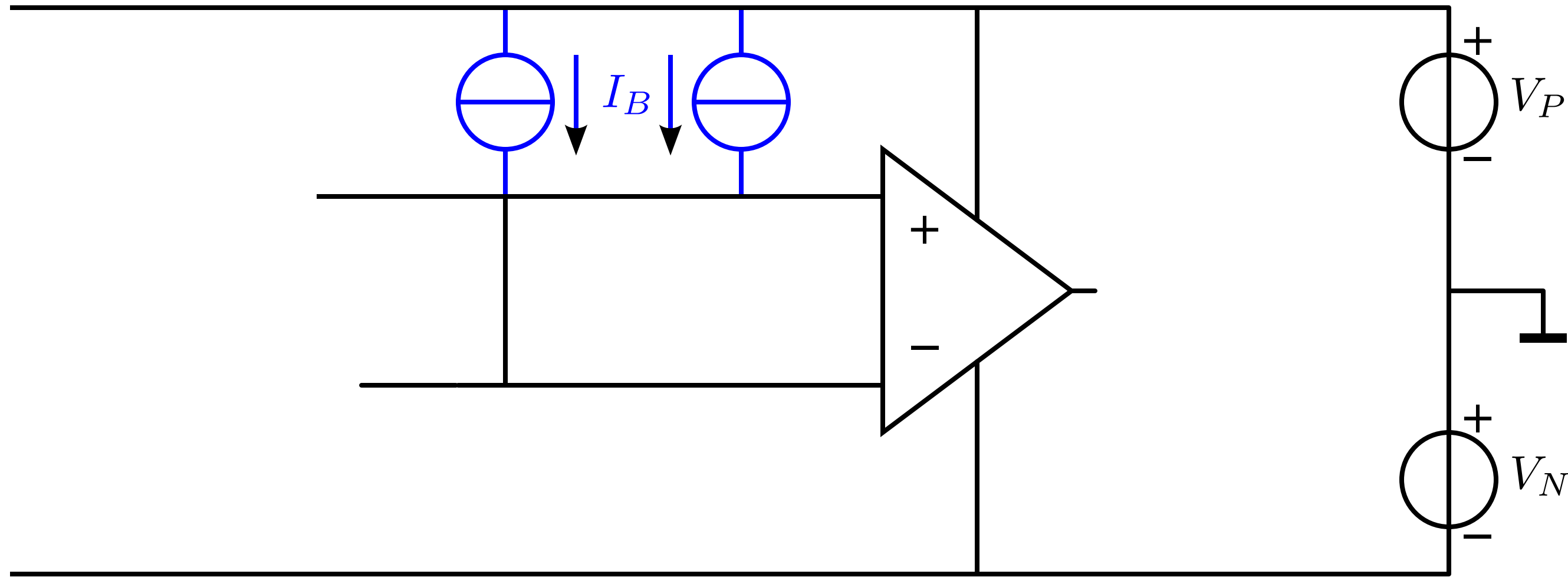
Biasing of Operational Amplifiers



Input port:

- Bias currents cannot be tuned to zero

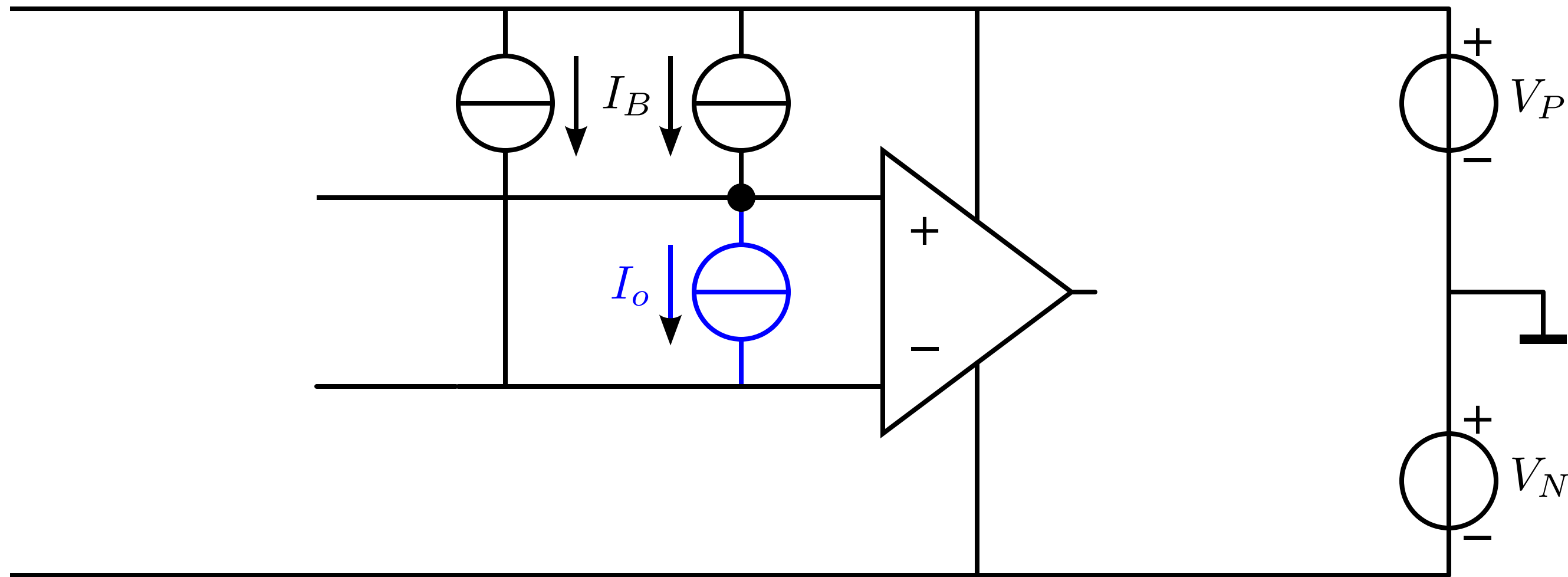
Biassing of Operational Amplifiers



Input port:

- Bias currents cannot be tuned to zero
 - Mean value can be positive or negative and may depend on input CM voltage

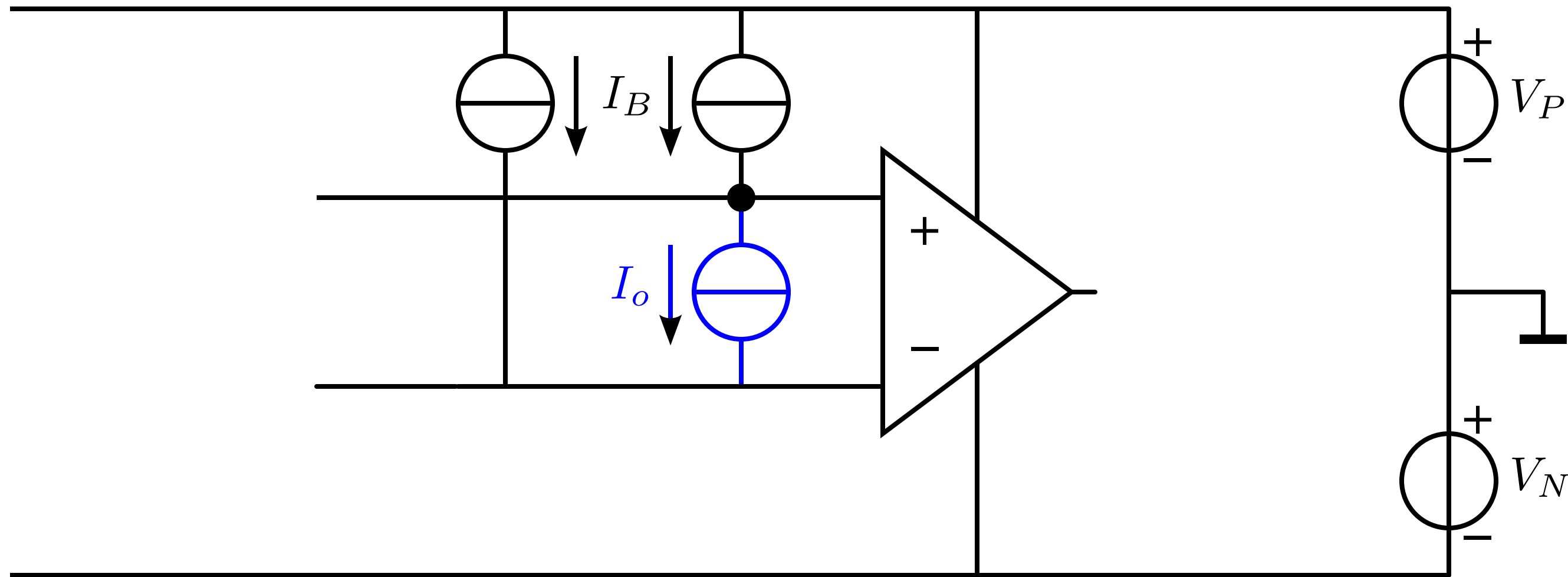
Biassing of Operational Amplifiers



Input port:

- Bias currents cannot be tuned to zero
- Offset current cannot be tuned to zero

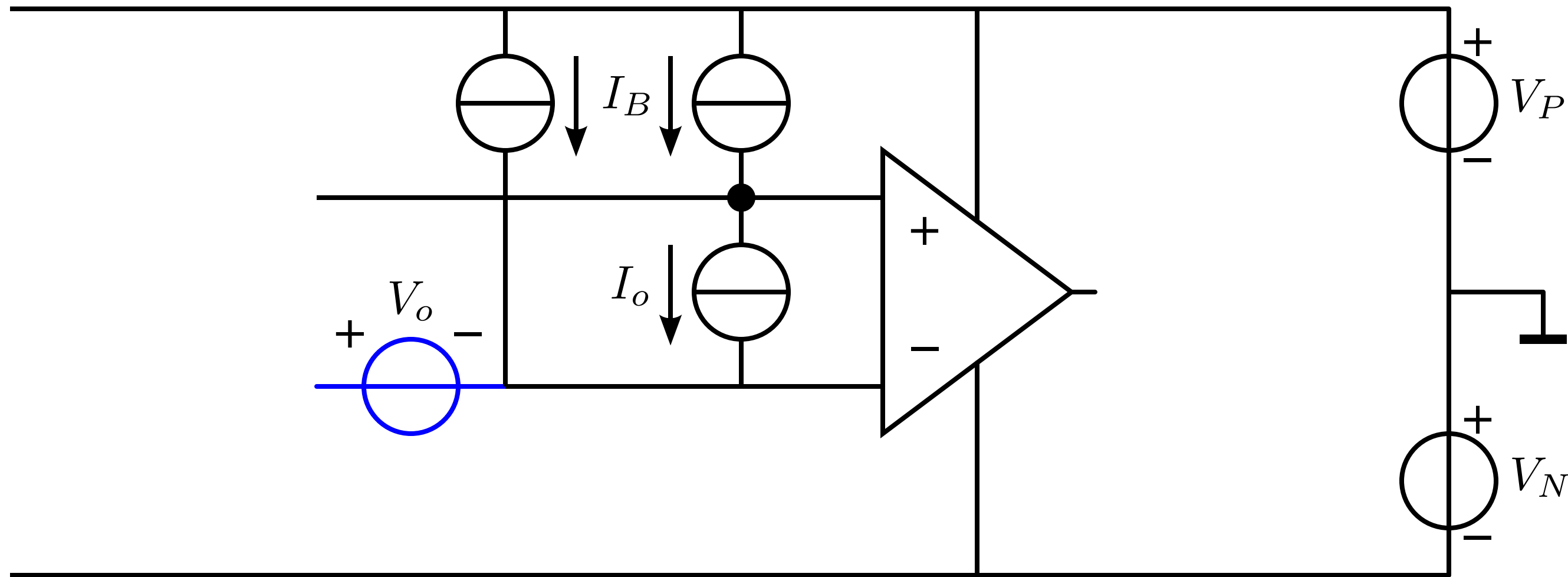
Biasing of Operational Amplifiers



Input port:

- Bias currents cannot be tuned to zero
- Offset current cannot be tuned to zero
 - Mean value tuned to zero

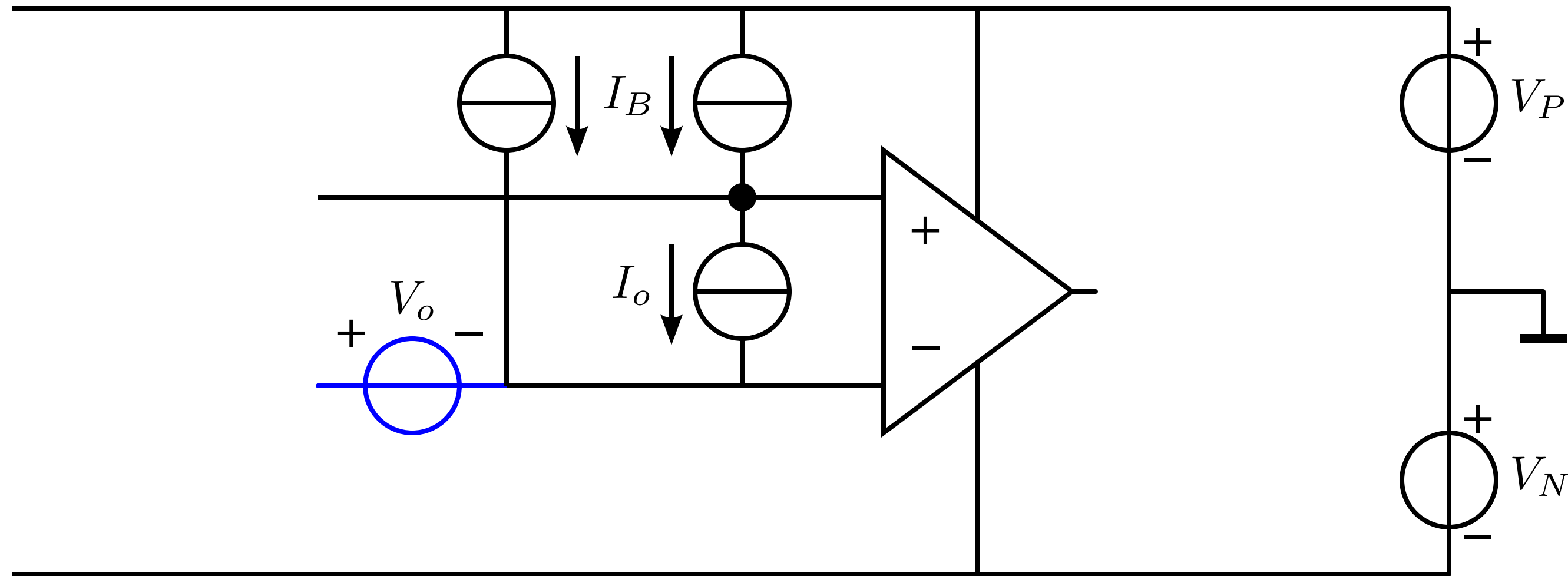
Biasing of Operational Amplifiers



Input port:

- Bias currents cannot be tuned to zero
- Offset current cannot be tuned to zero
- Offset voltage cannot be tuned to zero

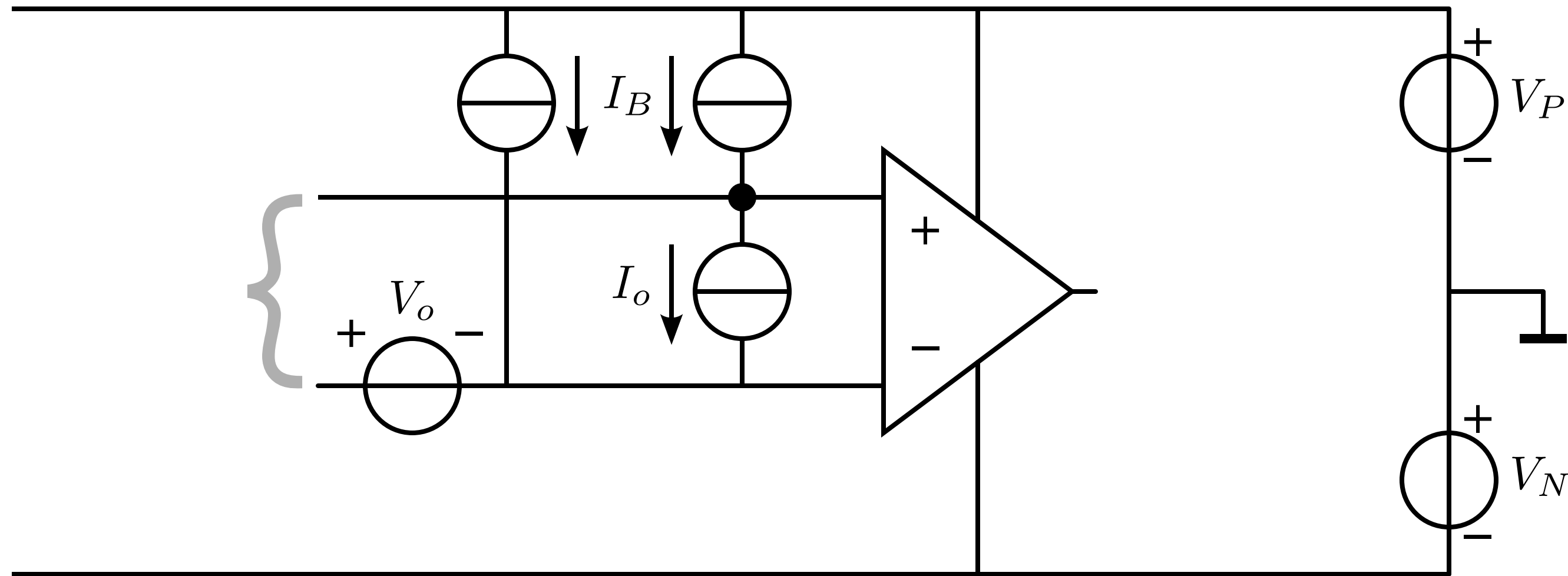
Biassing of Operational Amplifiers



Input port:

- Bias currents cannot be tuned to zero
- Offset current cannot be tuned to zero
- Offset voltage cannot be tuned to zero
 - Mean value tuned to zero

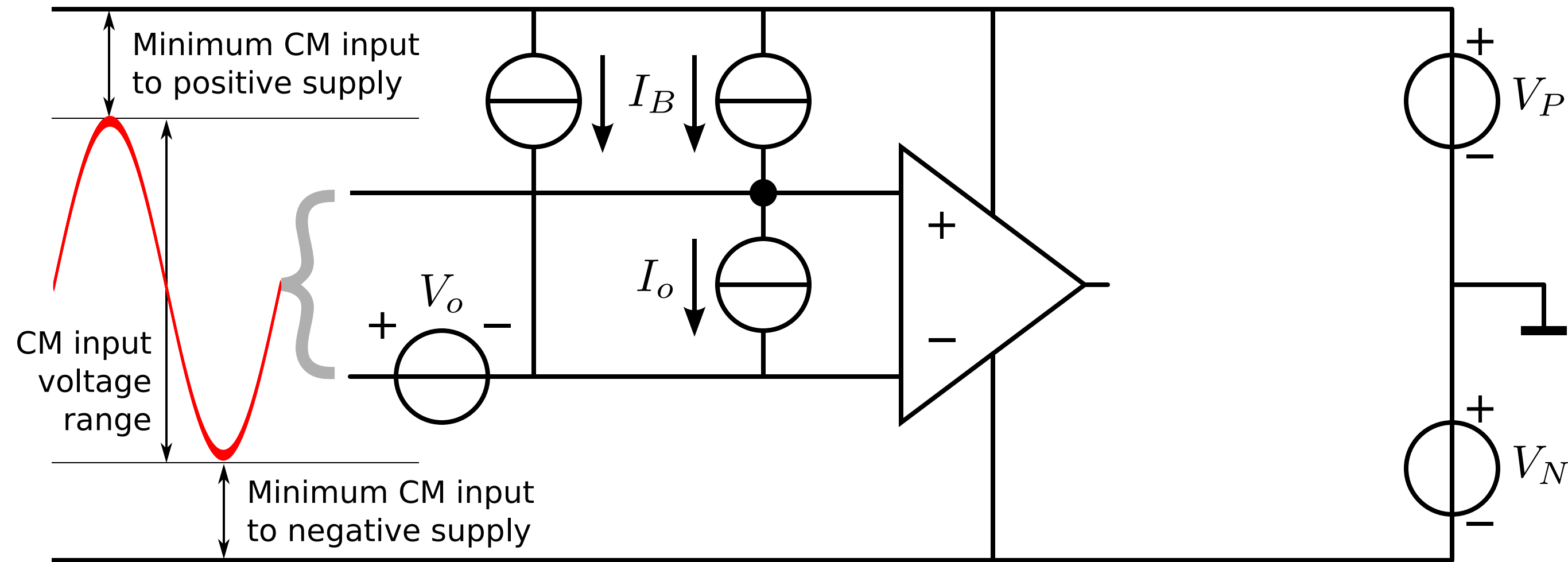
Biasing of Operational Amplifiers



Input port:

- Bias currents cannot be tuned to zero
- Offset current cannot be tuned to zero
- Offset voltage cannot be tuned to zero
- Input common-mode voltage operating range:

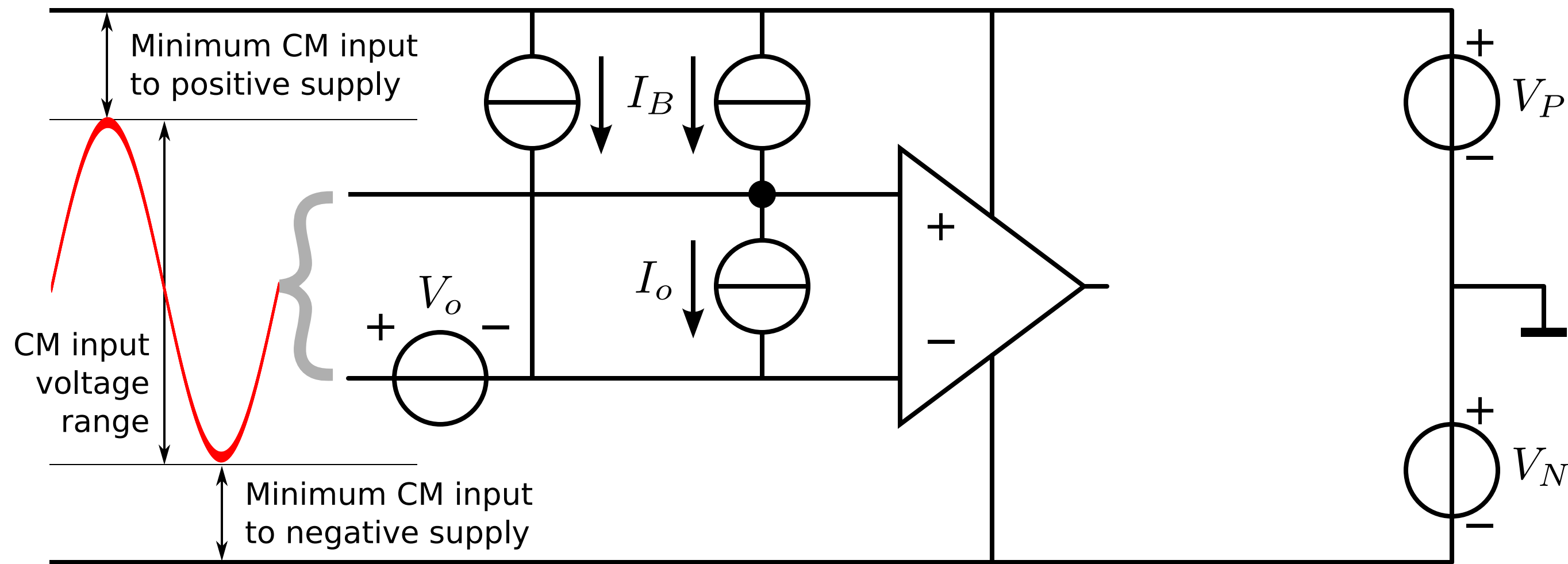
Biasing of Operational Amplifiers



Input port:

- Bias currents cannot be tuned to zero
- Offset current cannot be tuned to zero
- Offset voltage cannot be tuned to zero
- Input common-mode voltage operating range:
 - Limited by saturation or breakdown mechanisms in input devices

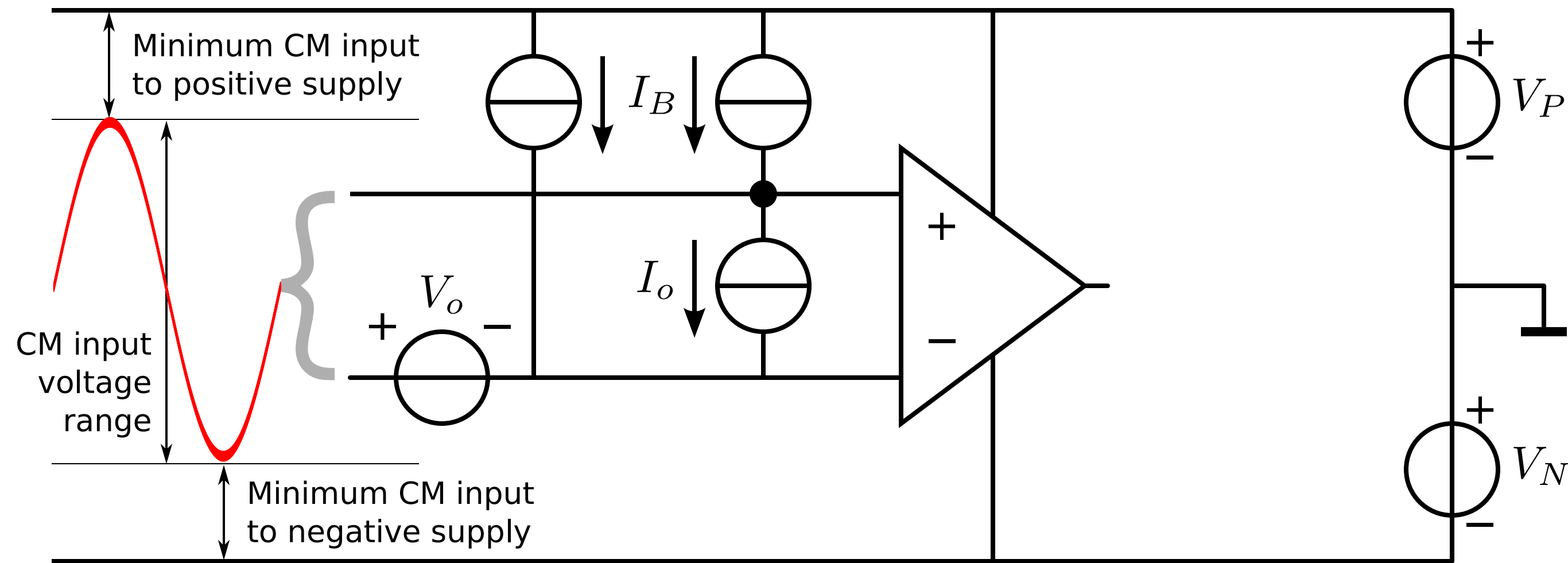
Biasing of Operational Amplifiers



Input port:

- Bias currents cannot be tuned to zero
- Offset current cannot be tuned to zero
- Offset voltage cannot be tuned to zero
- Input common-mode voltage operating range:
 - Limited by saturation or breakdown mechanisms in input devices
 - May exceed supply voltage (R2R input devices)

Biasing of Operational Amplifiers

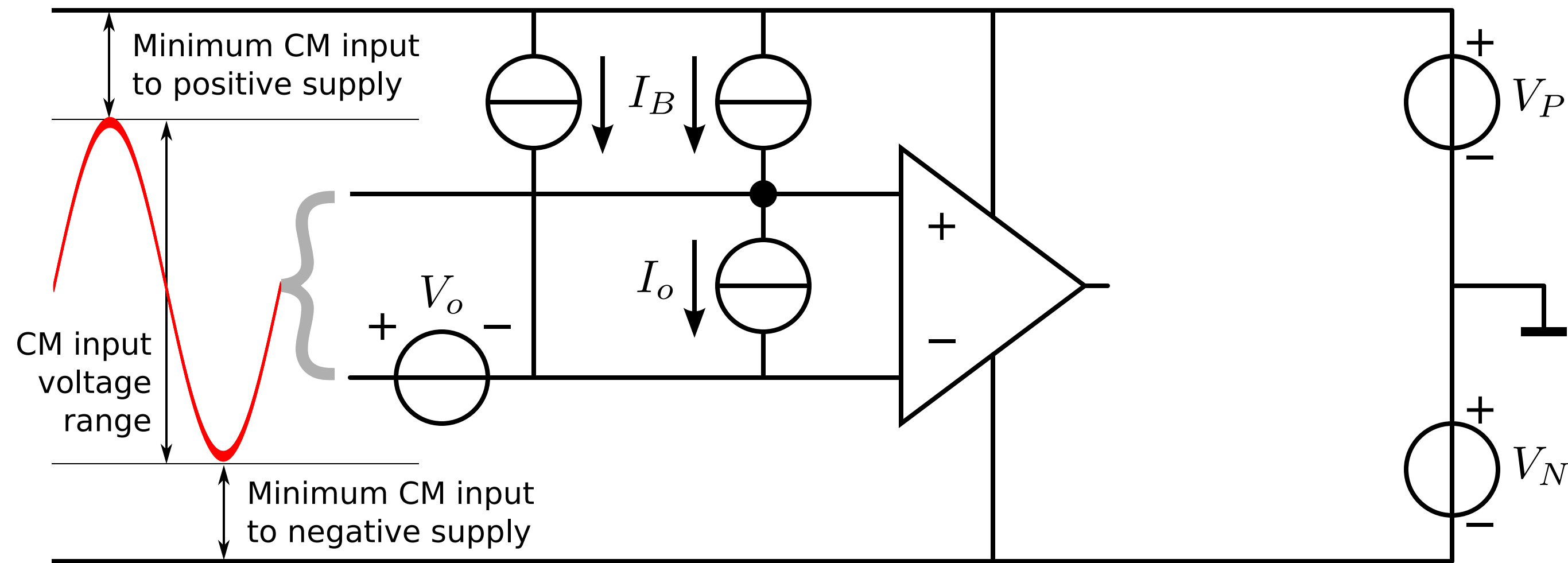


Input port:

- Bias currents cannot be tuned to zero
- Offset current cannot be tuned to zero
- Offset voltage cannot be tuned to zero
- Input common-mode voltage operating range:
 - Limited by saturation or breakdown mechanisms in input devices
 - May exceed supply voltage (R2R input devices)

Output port:

Biasing of Operational Amplifiers



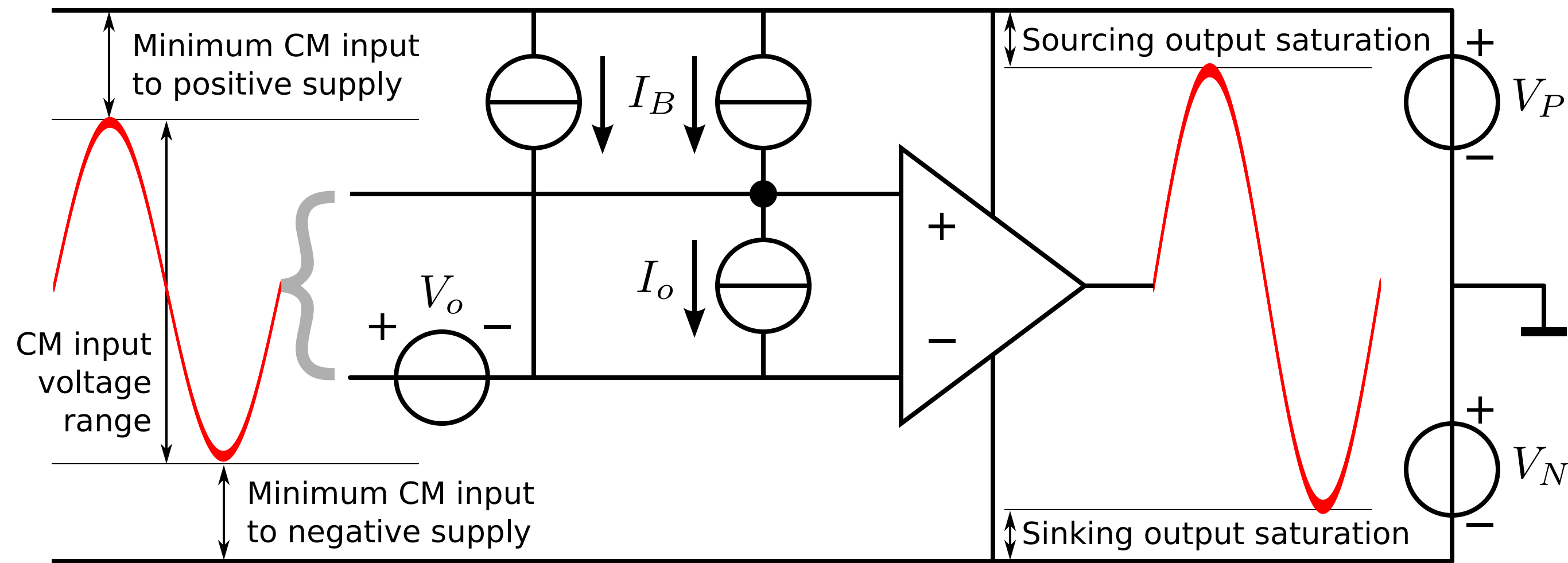
Input port:

- Bias currents cannot be tuned to zero
- Offset current cannot be tuned to zero
- Offset voltage cannot be tuned to zero
- Input common-mode voltage operating range:
 - Limited by saturation or breakdown mechanisms in input devices
 - May exceed supply voltage (R2R input devices)

Output port:

- Output voltage swing less than peak-to-peak supply voltage:

Biasing of Operational Amplifiers



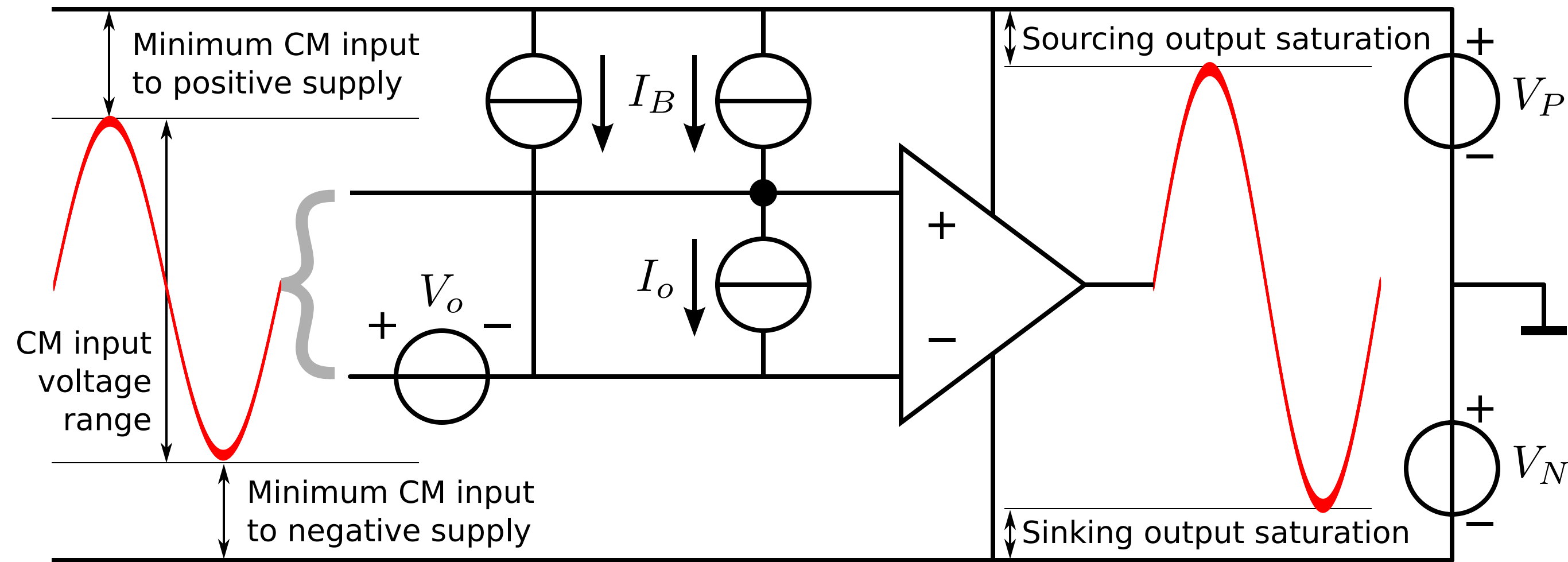
Input port:

- Bias currents cannot be tuned to zero
- Offset current cannot be tuned to zero
- Offset voltage cannot be tuned to zero
- Input common-mode voltage operating range:
 - Limited by saturation or breakdown mechanisms in input devices
 - May exceed supply voltage (R2R input devices)

Output port:

- Output voltage swing less than peak-to-peak supply voltage:
 - Depends on output current

Biasing of Operational Amplifiers



Input port:

- Bias currents cannot be tuned to zero
- Offset current cannot be tuned to zero
- Offset voltage cannot be tuned to zero
- Input common-mode voltage operating range:
 - Limited by saturation or breakdown mechanisms in input devices
 - May exceed supply voltage (R2R input devices)

Output port:

- Output voltage swing less than peak-to-peak supply voltage:
 - Depends on output current