

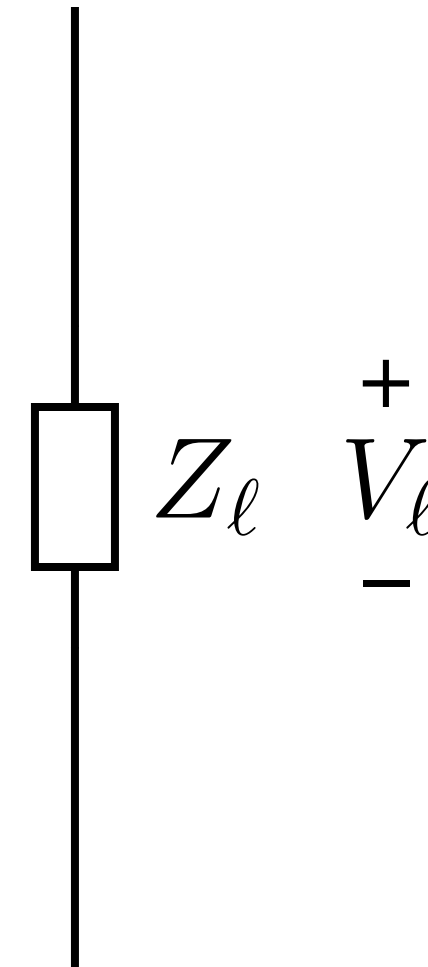
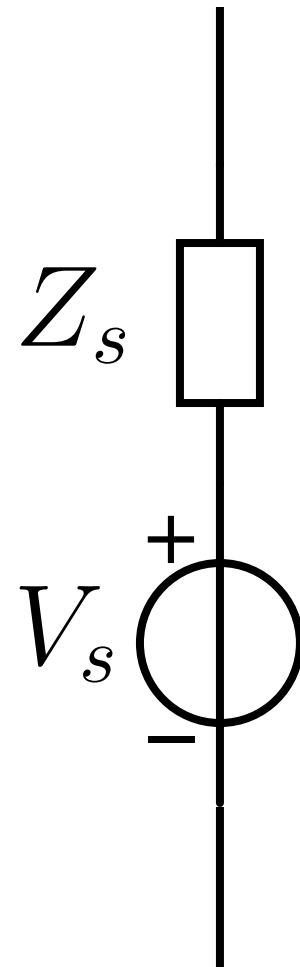
Structured Electronic Design
Design of Negative Feedback Amplifier Configurations
The Design Procedure

Negative Feedback Voltage Amplifier

Starting point

We would like to establish a transfer:

$$\frac{V_\ell}{V_s} = A_v$$



The Procedure

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1. Measure the load signal (V or I)

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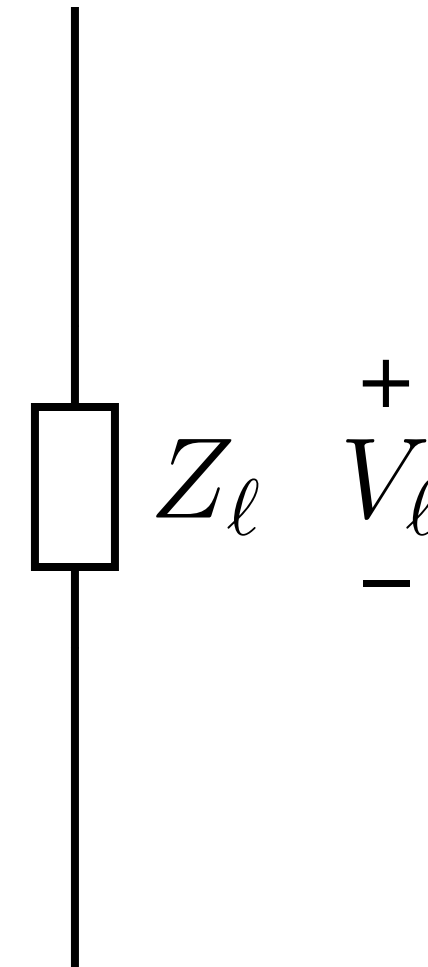
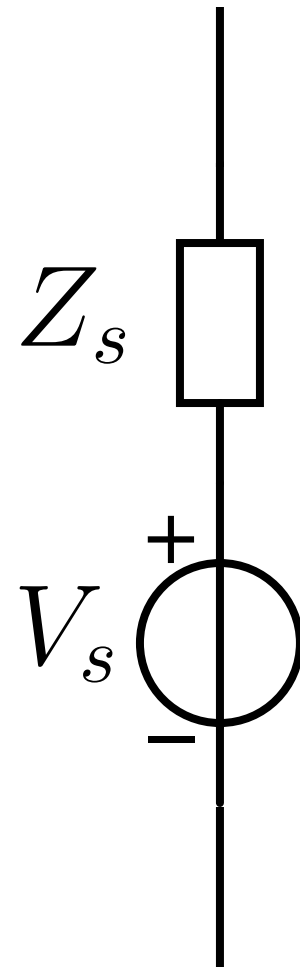
Negative Feedback Voltage Amplifier

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1. Measure the voltage across the load



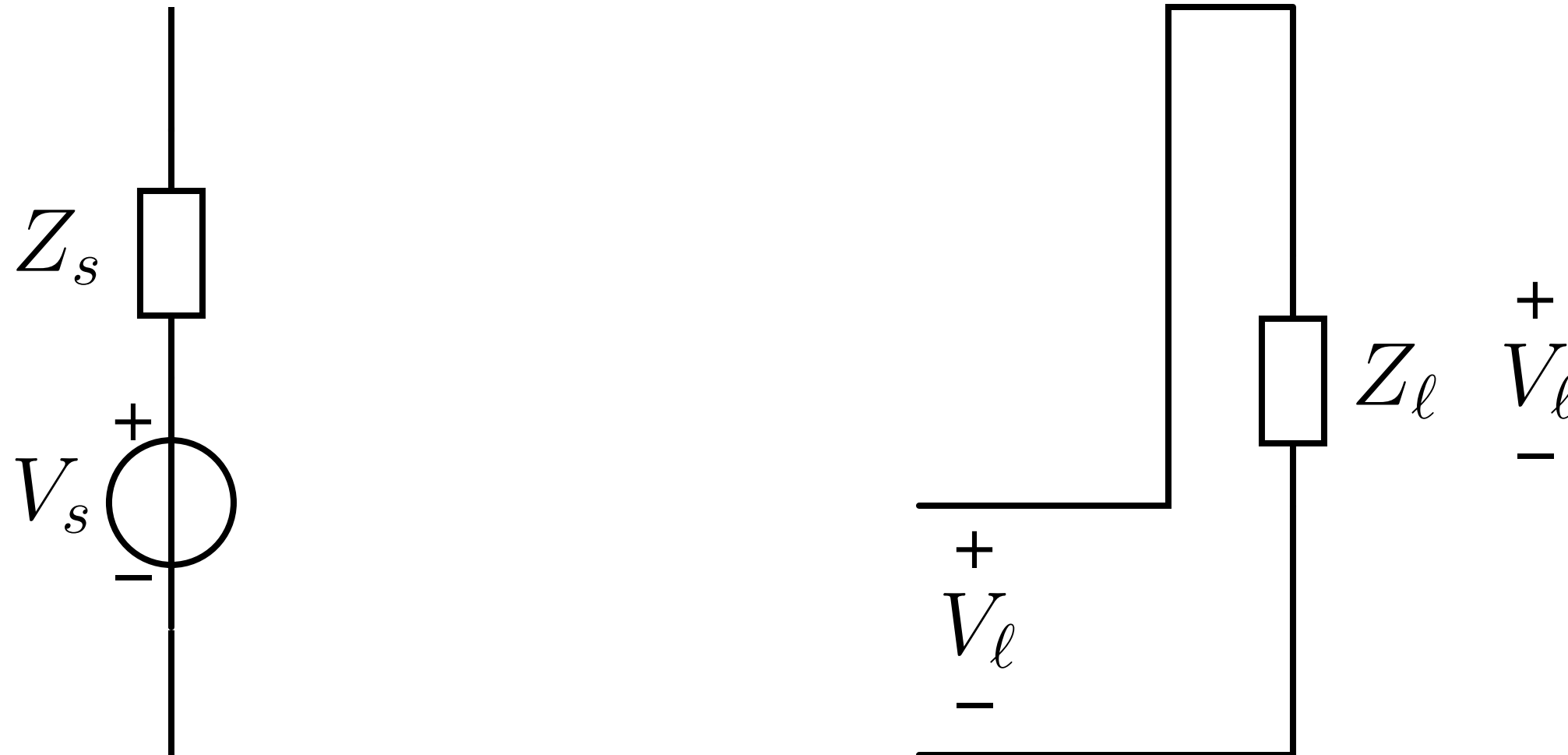
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Negative Feedback Voltage Amplifier

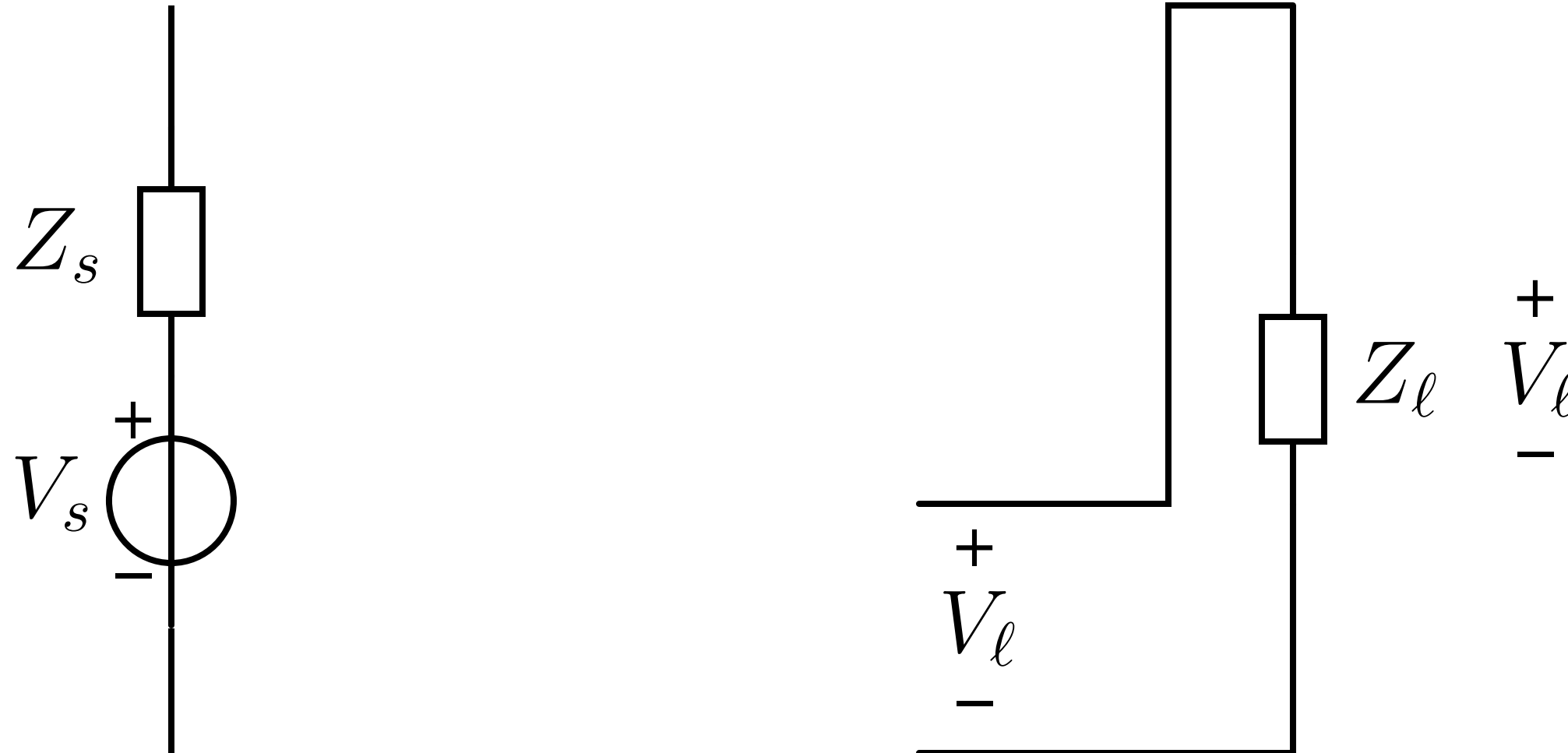
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1. Measure the voltage across the load

2. Generate a copy of the source voltage from V_ℓ



Negative Feedback Voltage Amplifier

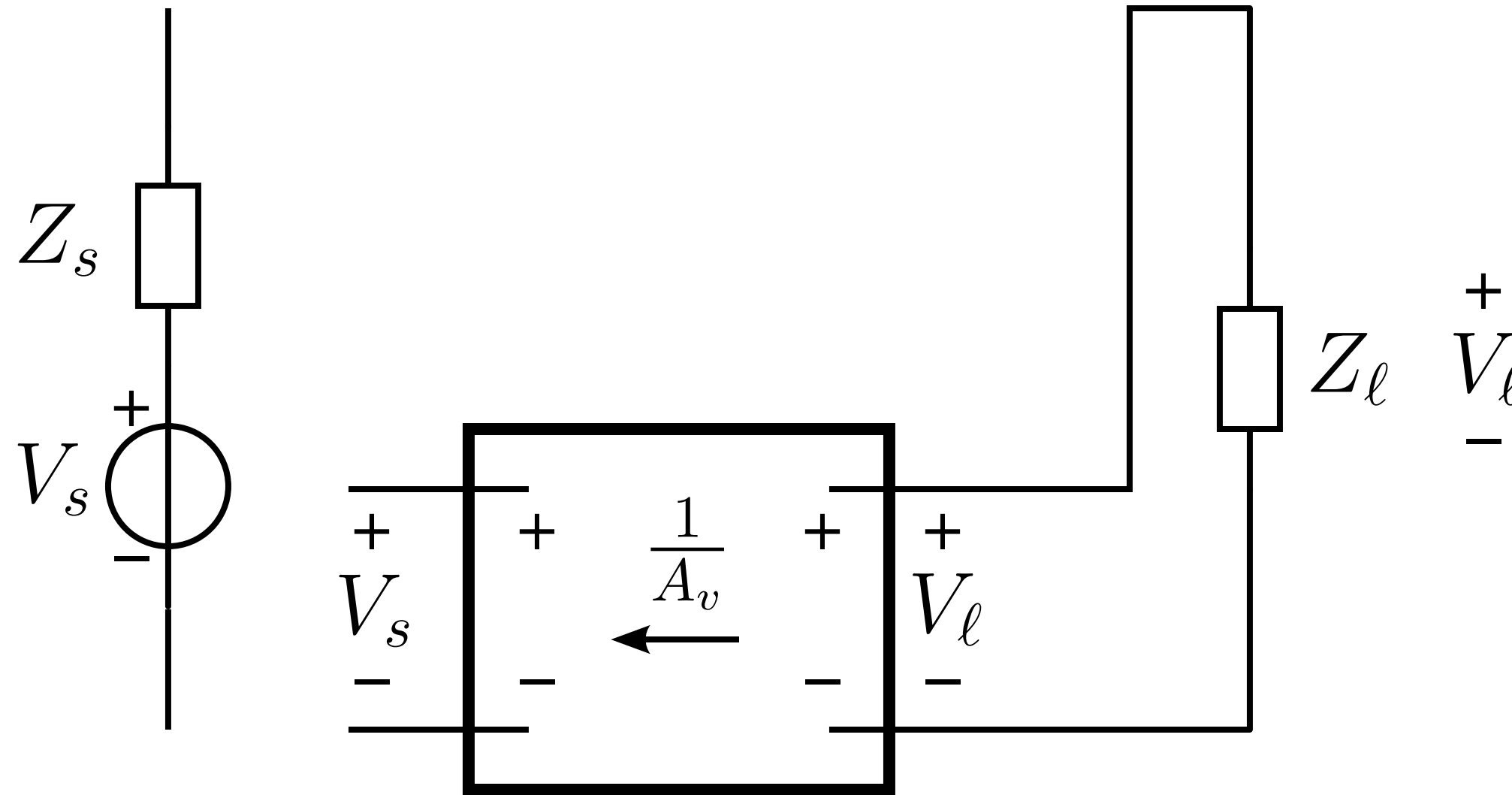
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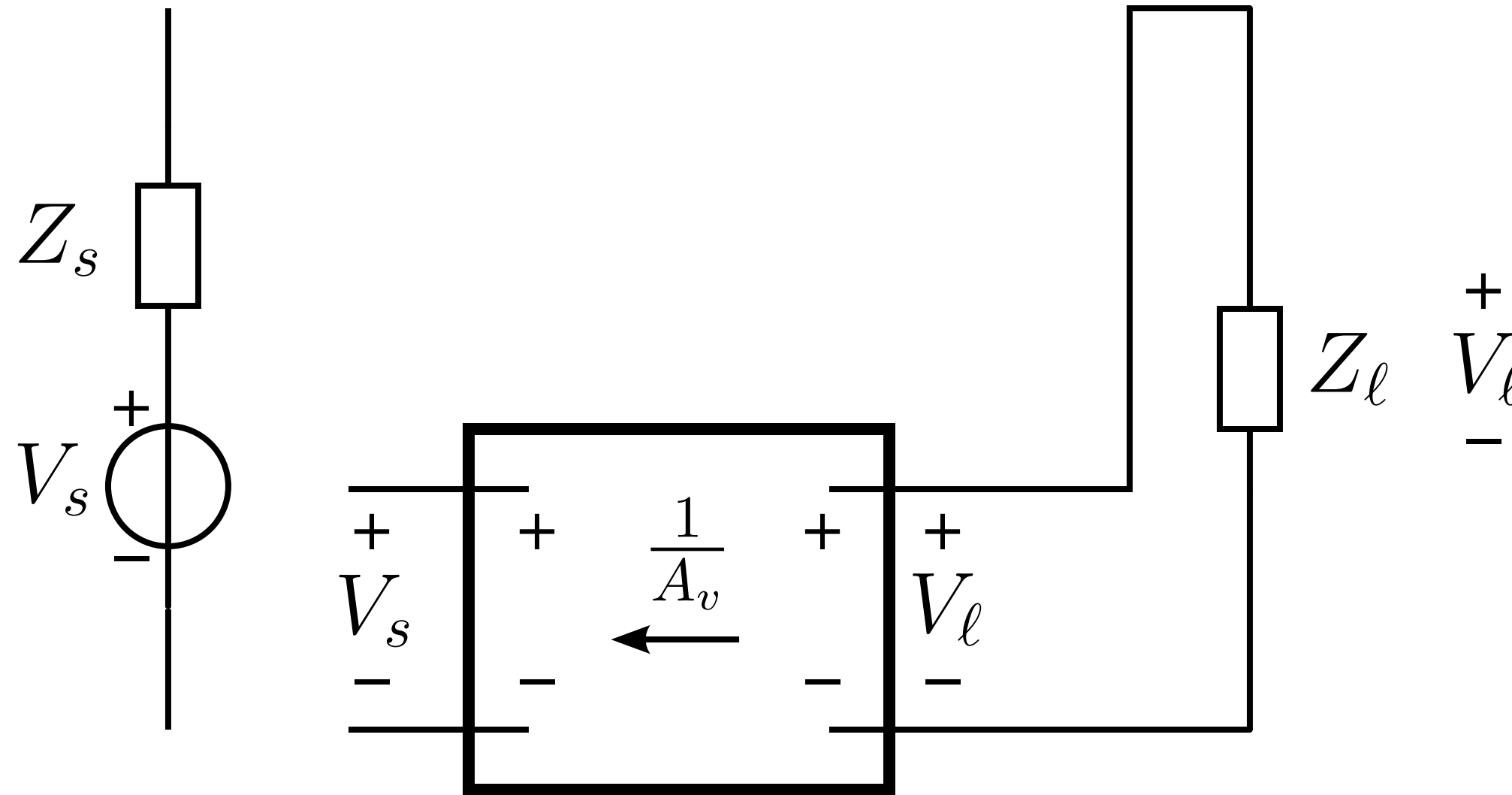
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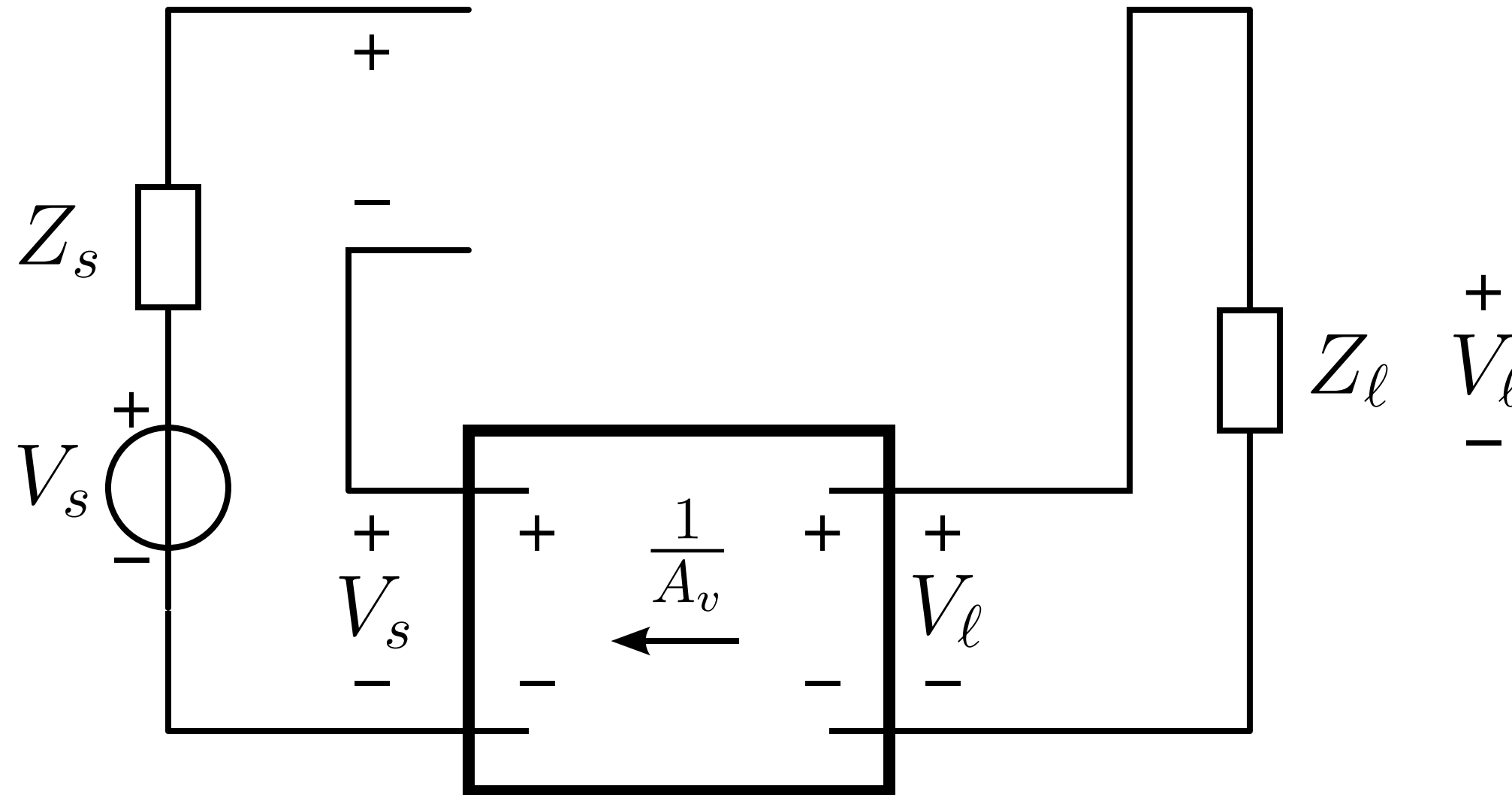
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 - a. In case of a voltage source signal, the signal source and the output of the feedback network should be connected anti-series
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4. Nullify the difference

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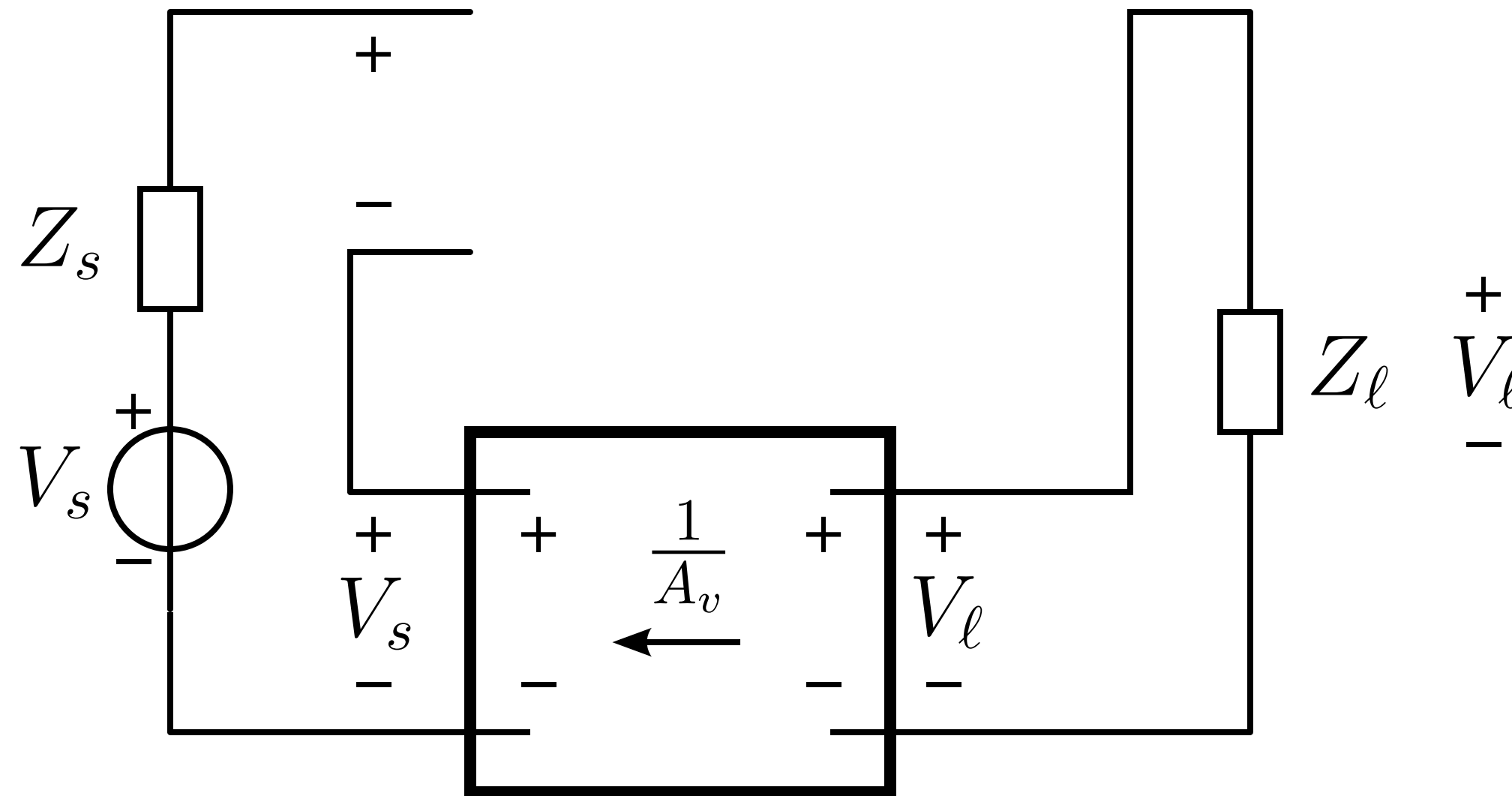
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4. Nullify the difference
 - a. In case of a voltage source signal, a nullator closes the loop of the above anti-series connection
 - b. In case of a current source signal, a nullator is placed in parallel with the above anti-parallel connection

Negative Feedback Voltage Amplifier

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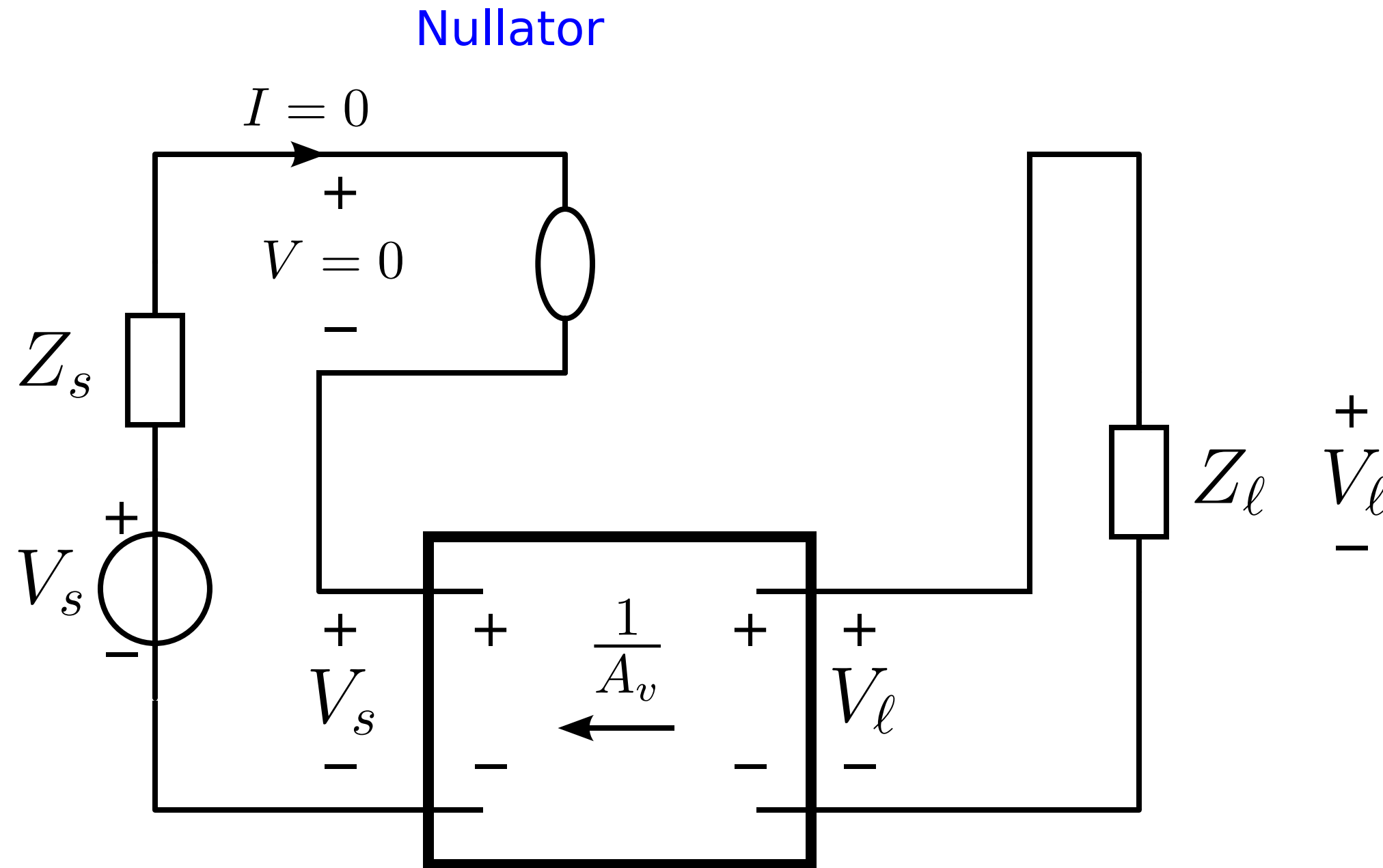
1. Measure the voltage across the load

2. Generate a copy of the source voltage from V_ℓ

3. Subtract the copy from the source voltage

4. Nullify the difference

Negative Feedback Voltage Amplifier



Starting point

We would like to establish a transfer:

$$\frac{V_l}{V_s} = A_v$$

1. Measure the voltage across the load
2. Generate a copy of the source voltage from V_l
3. Subtract the copy from the source voltage

4. Nullify the difference

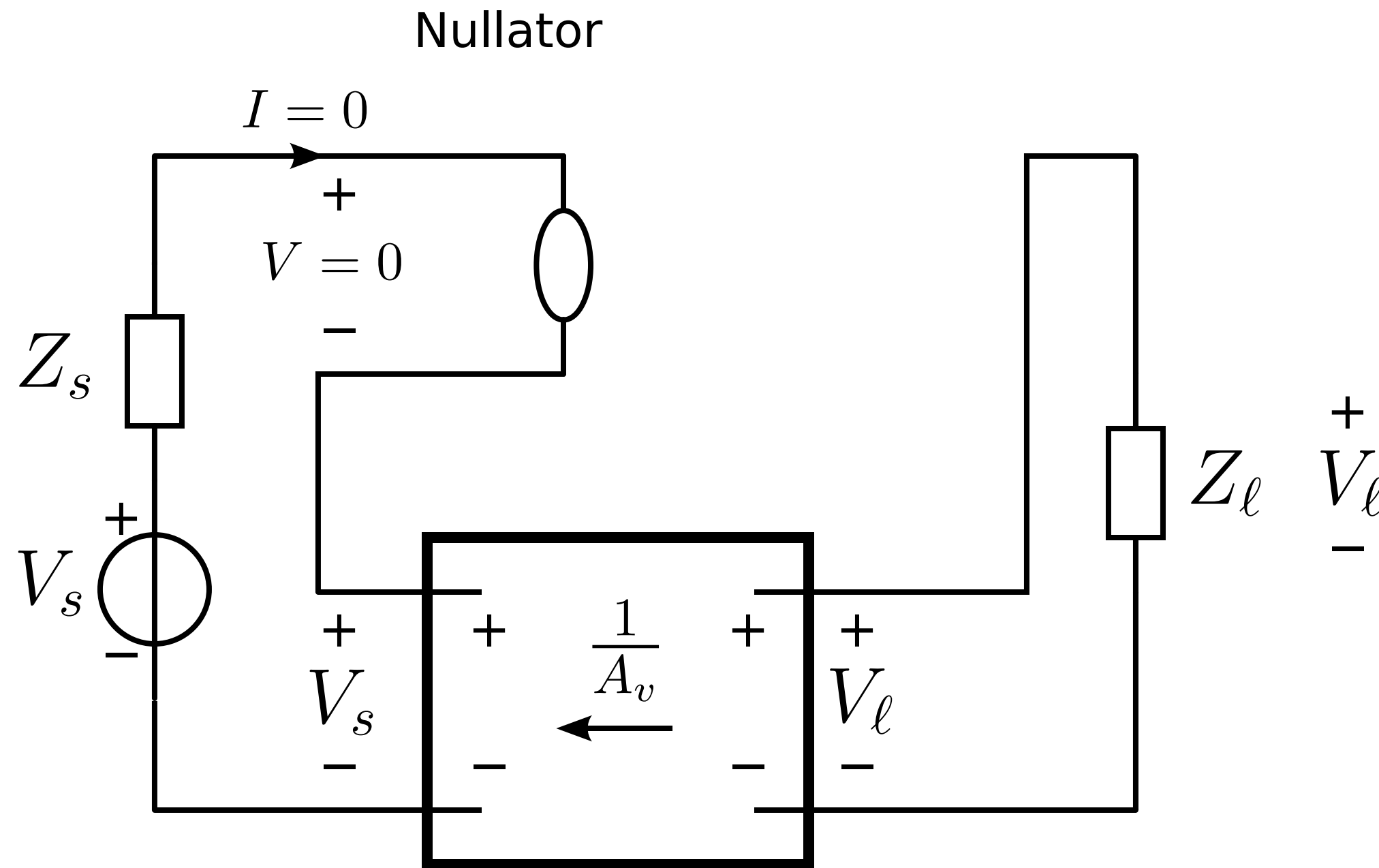
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 - a. In case of a voltage source signal, a nullator closes the loop of the above anti-series connection
 - b. In case of a current source signal, a nullator is placed in parallel with the above anti-parallel connection
 - c. In case of a voltage load signal, a norator is placed in parallel with the load

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 - c. In case of a voltage load signal, a norator is placed in parallel with the load
 - d. In case of a current load signal, a norator closes the loop of the series connection of the load and the input of the feedback network

Negative Feedback Voltage Amplifier



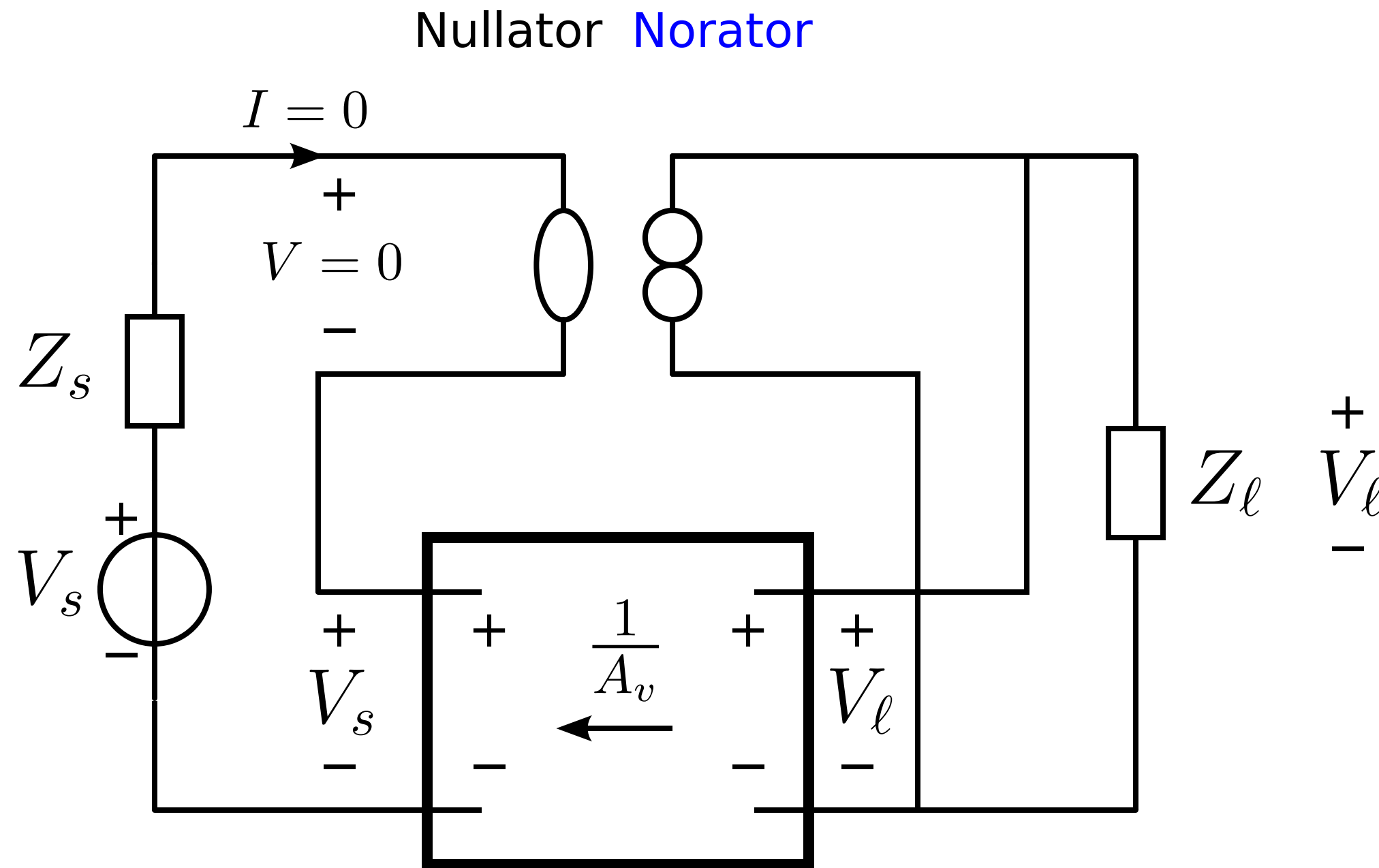
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1. Measure the voltage across the load
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4. Nullify the difference

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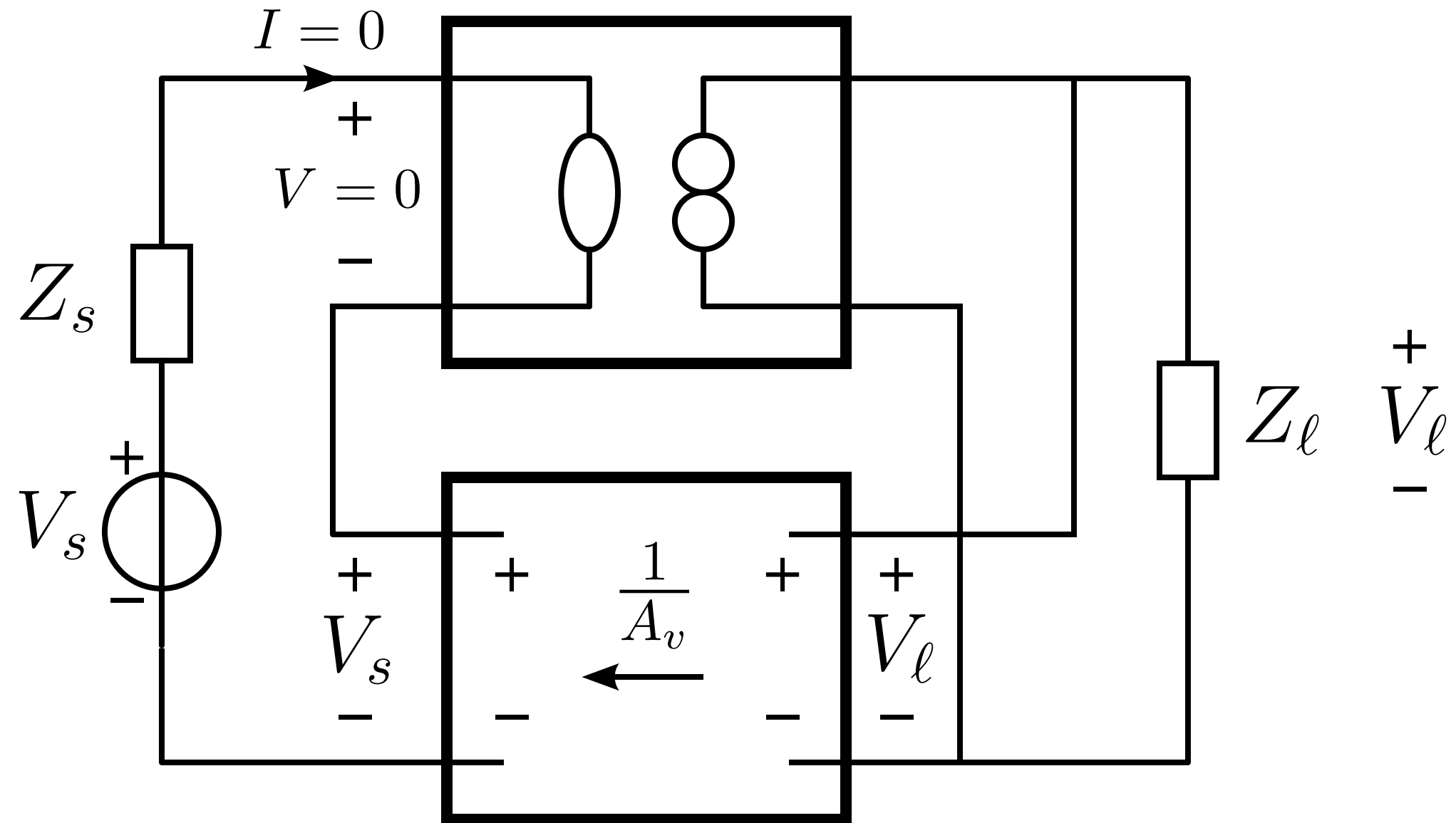
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Nullor is ideal controller

Nullator Norator



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