

Kernenergie als Heizung?



Der Anteil am Energieverbrauch

Der Primärenergieverbrauch in Deutschland – und ähnlichen Regionen auf der Nord- und Südhalbkugel – läßt sich grob in die Bereiche Stromerzeugung, Verkehr und Heizung (Niedertemperaturwärme) unterteilen. Diese Aufteilung ist ein Kompromiß zwischen einer rein energetischen Gruppierung (Kohle, Öl, etc.) und üblichen volkswirtschaftlichen Betrachtungen (Privat, Industrie etc.). Ganz grob kann man sagen, daß in Ländern wie Deutschland jeweils ein Drittel des Primärenergieeinsatzes auf diese drei Sektoren entfallen. Der hohe Anteil der Raumwärme mag auf den ersten Blick manchen verblüffen. Besonders bemerkenswert ist dabei, daß

sich dieser Anteil keinesfalls verringert, sondern eher noch zunimmt – trotz aller technischer Fortschritte bei den Gebäuden (Heizungssysteme, Wärmedämmung etc.). Eine wachsende Bevölkerung mit steigenden Komfortansprüchen (Wohnungsgröße und Ausstattung) verbraucht auch immer mehr “Raumwärme”. Hinzu kommt die ständig wachsende Infrastruktur in der Form von Krankenhäusern, Hallenbädern, Sporthallen, Einkaufszentren, Verwaltungsgebäuden usw.

Bemerkenswert ist auch, wie sich auf diesem Gebiet die allgemeine Entwicklung der Energietechnik widerspiegelt: Alles begann mit dem Holz am Lagerfeuer und dieser Brennstoff blieb für Jahrtausende bestimmend. Auch die “Energieeffizienz” ist keine Erfindung heutiger Tage. Die Entwicklung ging von der offenen Feuerstelle bis zum Kachelofen – immer aus den gleichen

Gründen: "Komfort" und "Kosteneinsparung". Nachdem man die Wälder fast abgeholzt hatte und die "Bedarfsdichte" in der Form von großen Städten immer weiter anstieg, ging man zur Kohle über. Nachdem die Luftverschmutzung bedrohliche Ausmaße angenommen hatte, begann das Zeitalter der "Zentralheizung" und der Brennstoffe Öl und Gas. Das ist – auch in Deutschland – nicht einmal eine Generation her!

Das Problem von Leistung und Energie

Wir Menschen streben in unseren

**Behausungen
ganzjährig
möglichst
gleichmäßige
Temperaturen, um
die 20 °C an. Das
Wetter spielt uns
aber einen Streich.
Die
Außentemperaturen
schwanken in
unseren Breiten von**

**rund -20 °C bis
rund $+35$ °C. Wir
müssen also heizen
oder kühlen, um
unsere Ansprüche zu
erfüllen. Extreme
Temperaturen sind
aber selten, sodaß
wir überwiegend nur
wenig heizen oder
kühlen müssen. Dies
stellt unsere**

Anlagentechnik vor große technische und wirtschaftliche Probleme. Ist beispielsweise eine Zentralheizung für eine Außentemperatur von $-10\text{ }^{\circ}\text{C}$ ausgelegt, so muß sie an Tagen mit $0\text{ }^{\circ}\text{C}$ nur noch $2/3$ ihrer Leistung

**und an Tagen mit
+10 °C gar nur noch
1/3 ihrer Leistung
bereitstellen.
Einzig die
Warmwasserbereitung
fällt das ganze
Jahr über an. Sie
kann je nach
Geräteausstattung
(Geschirrspüler,
Waschmaschine) und**

**“Wärmedämmstandard”
des Gebäudes, einen
beträchtlichen
Anteil an den
Heizkosten haben.
Anders verhält es
sich mit der
Energie – das ist
das Öl oder Gas auf
unserer
Heizkostenabrechnun
g – von dem mehr an**

**den häufigen milden
Tagen, als an den
wenigen Extremen
verbraucht wird.
Inzwischen setzt
sich auch die
Erkenntnis durch,
daß alle
“Energiesparmaßnahm
en” (Wärmedämmung,
Zwangslüftung etc.)
erhebliche**

**Investitionskosten
erforderlich
machen.**

**Letztendlich nur
eine Frage von
“Kaltmiete” und
“Heizkosten”.**

**Darüberhinaus
stellen sich noch
Fragen der
Architektur
(Bestand,**

**Denkmalschutz etc.)
und vor allem der
Gesundheit
(Schimmelpilz
etc.). Die
“Nullenergiehäuser”
sind nichts weiter,
als eine
ideologische
Kopfgeburt.**

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Gesinnung**

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**Kraft-
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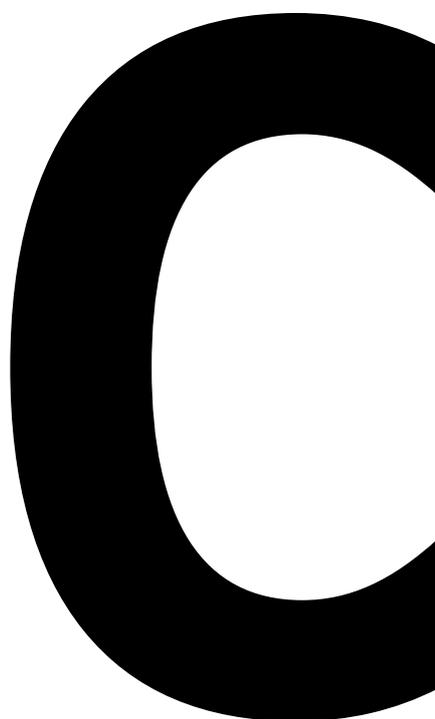
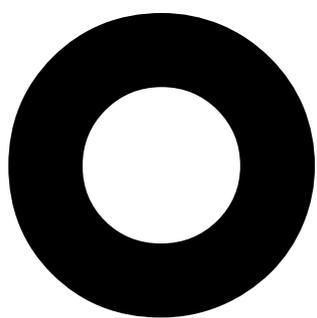
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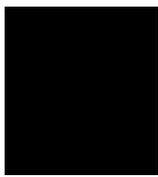
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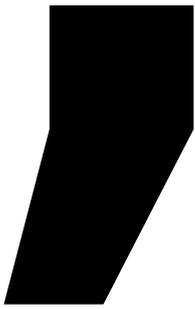
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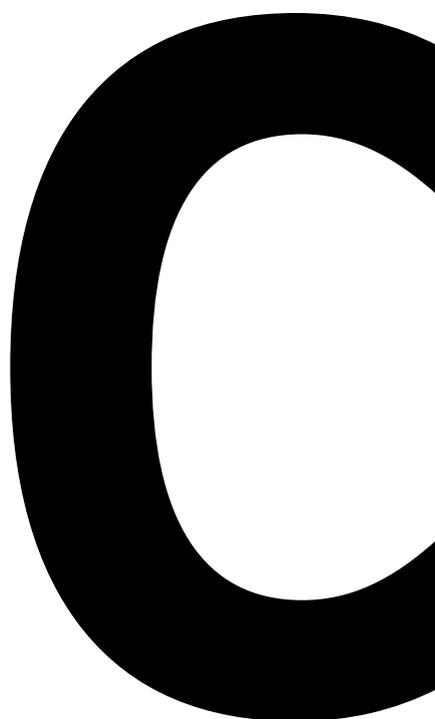
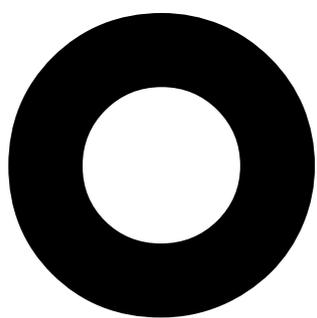
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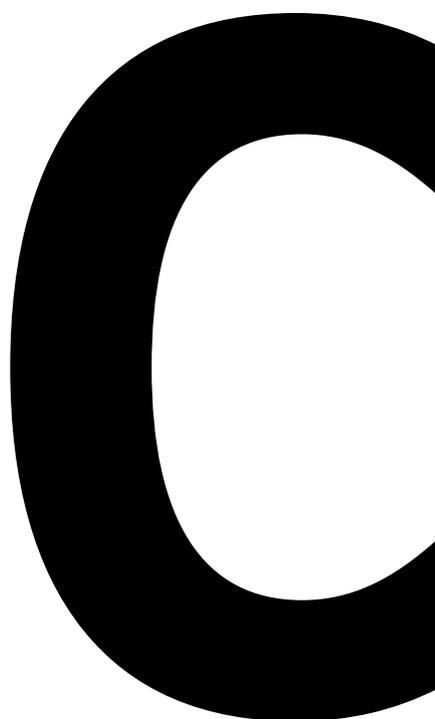
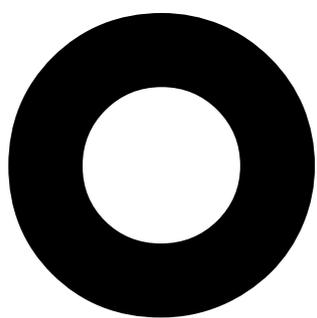


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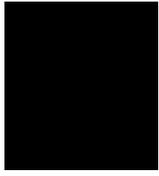
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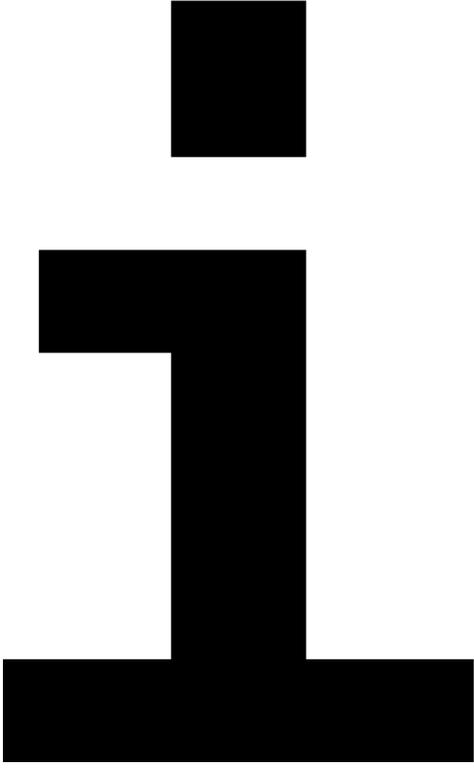
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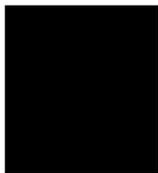
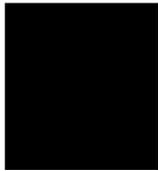


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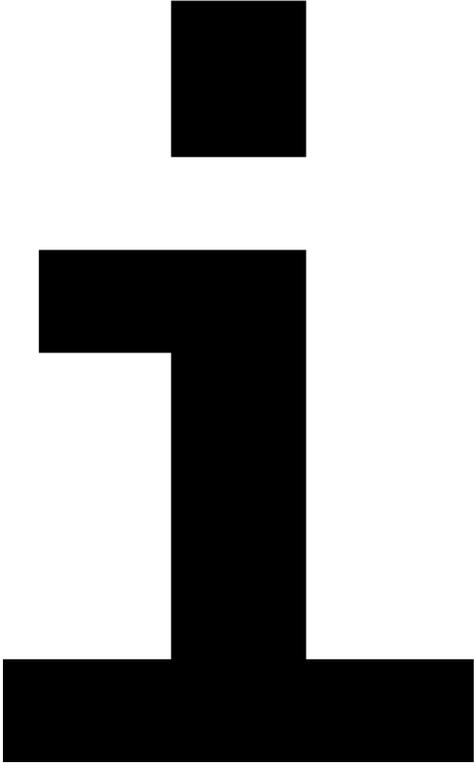
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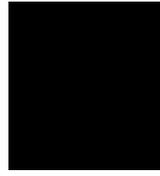
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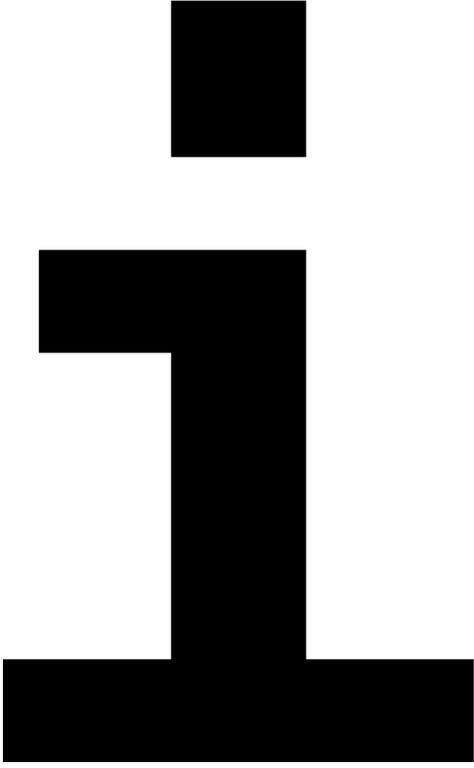
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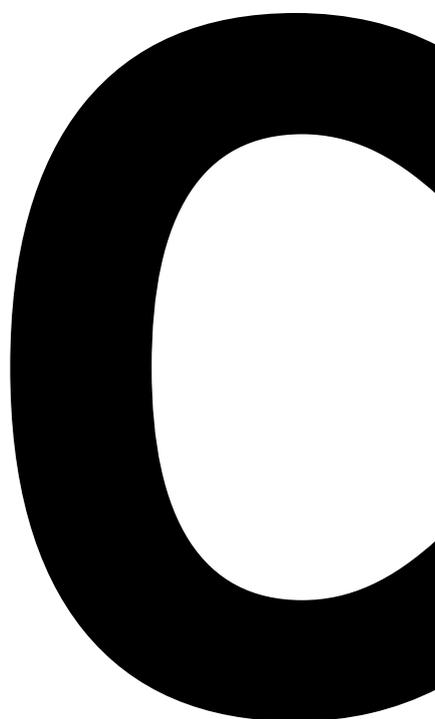
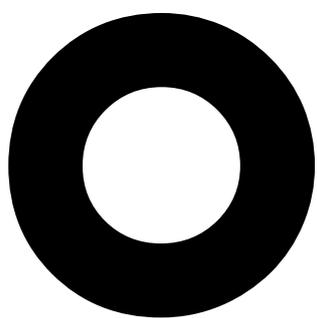
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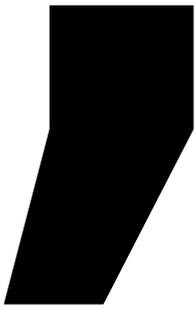
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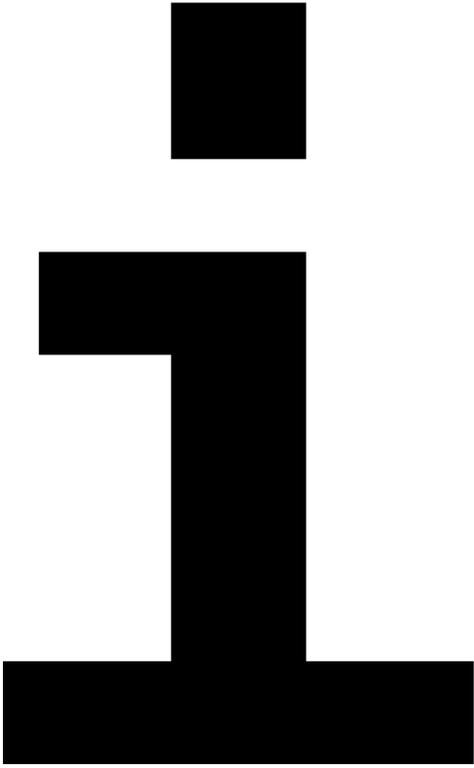
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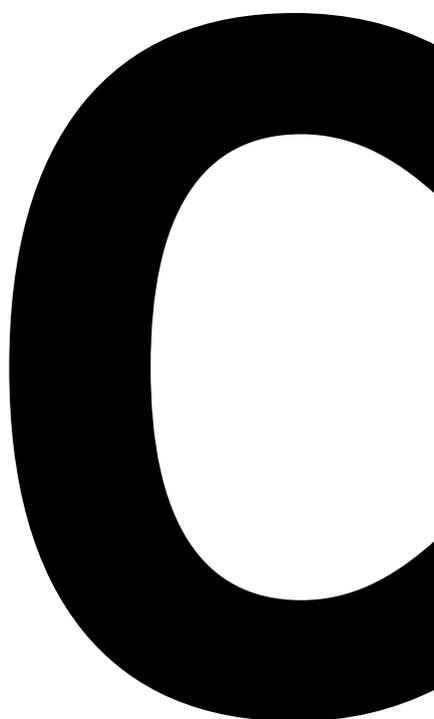
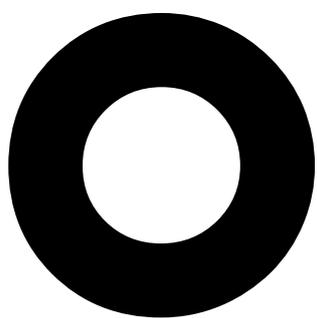
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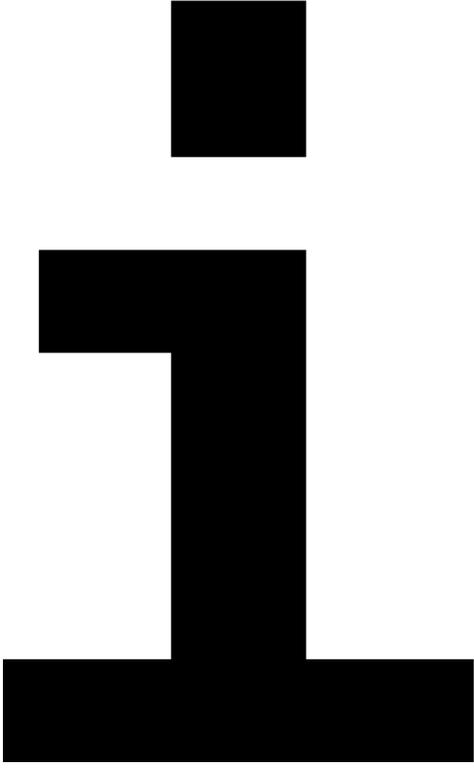
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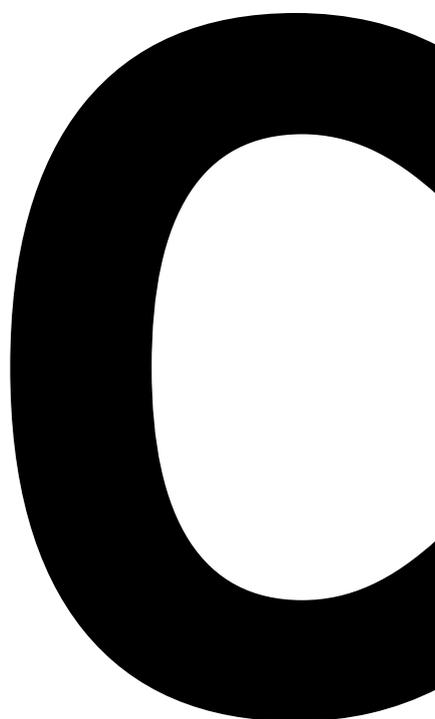
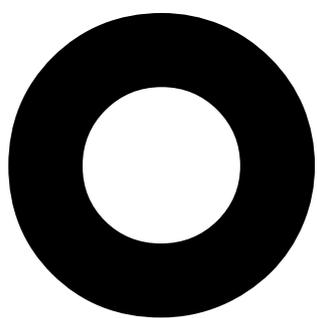
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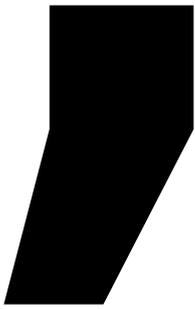
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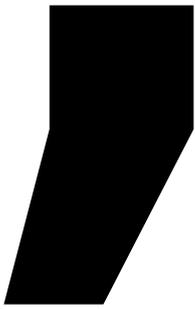
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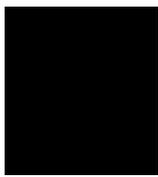
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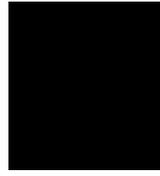
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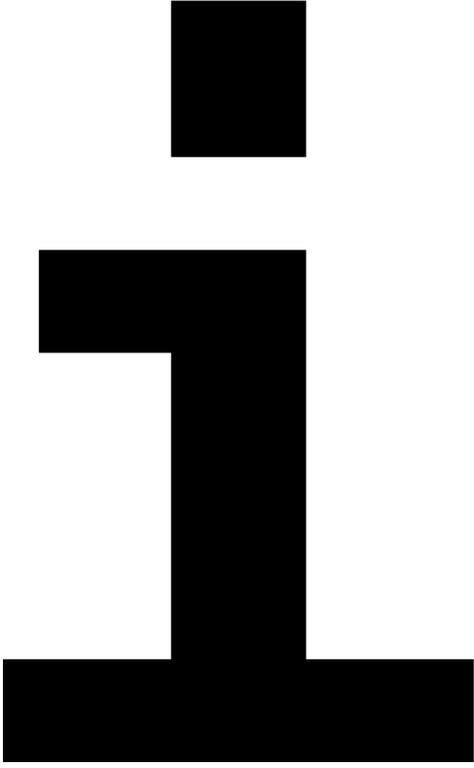
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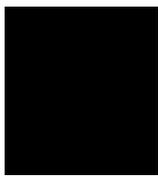
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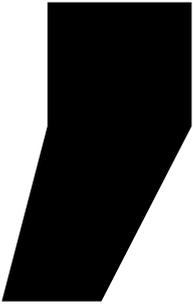
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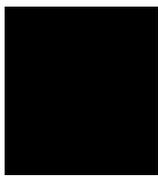
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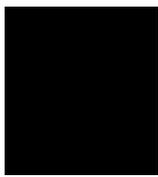
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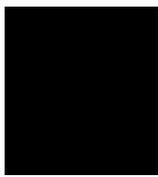
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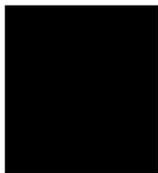
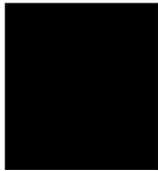
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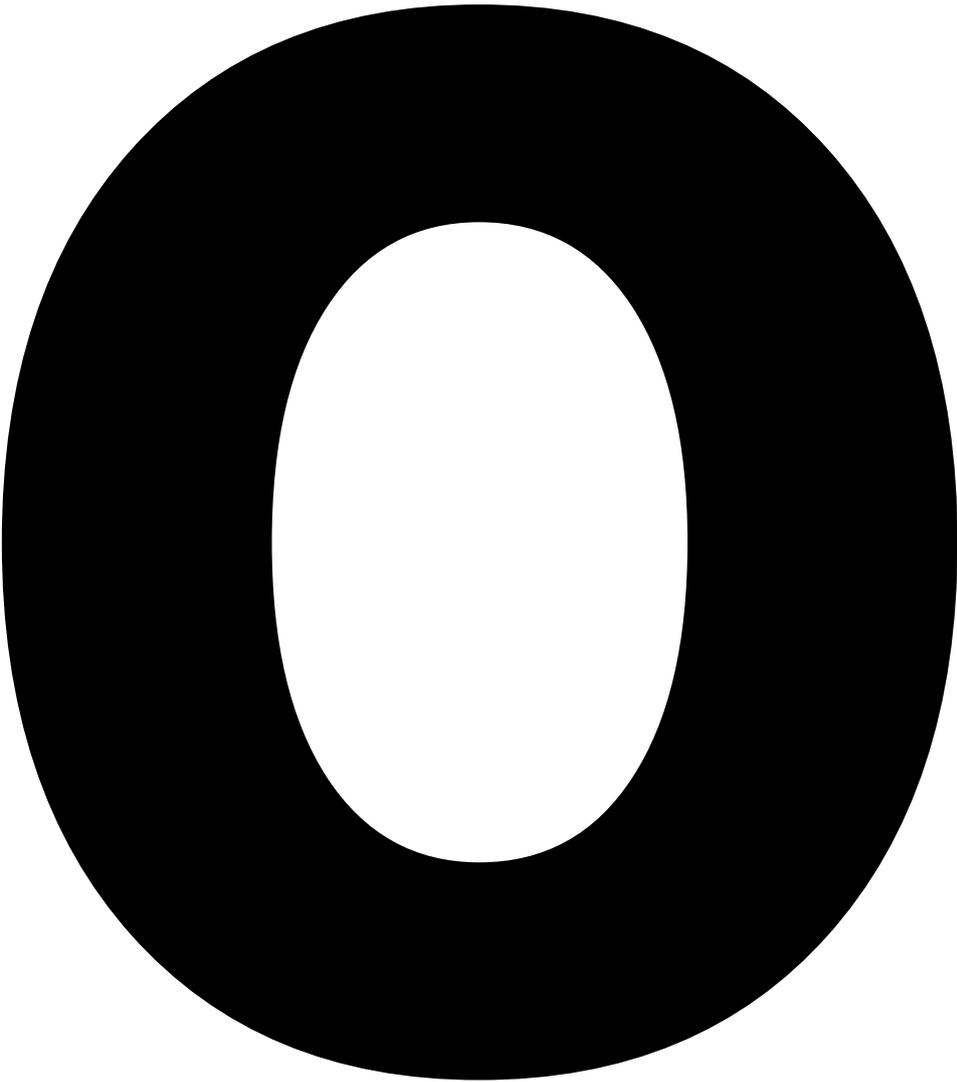
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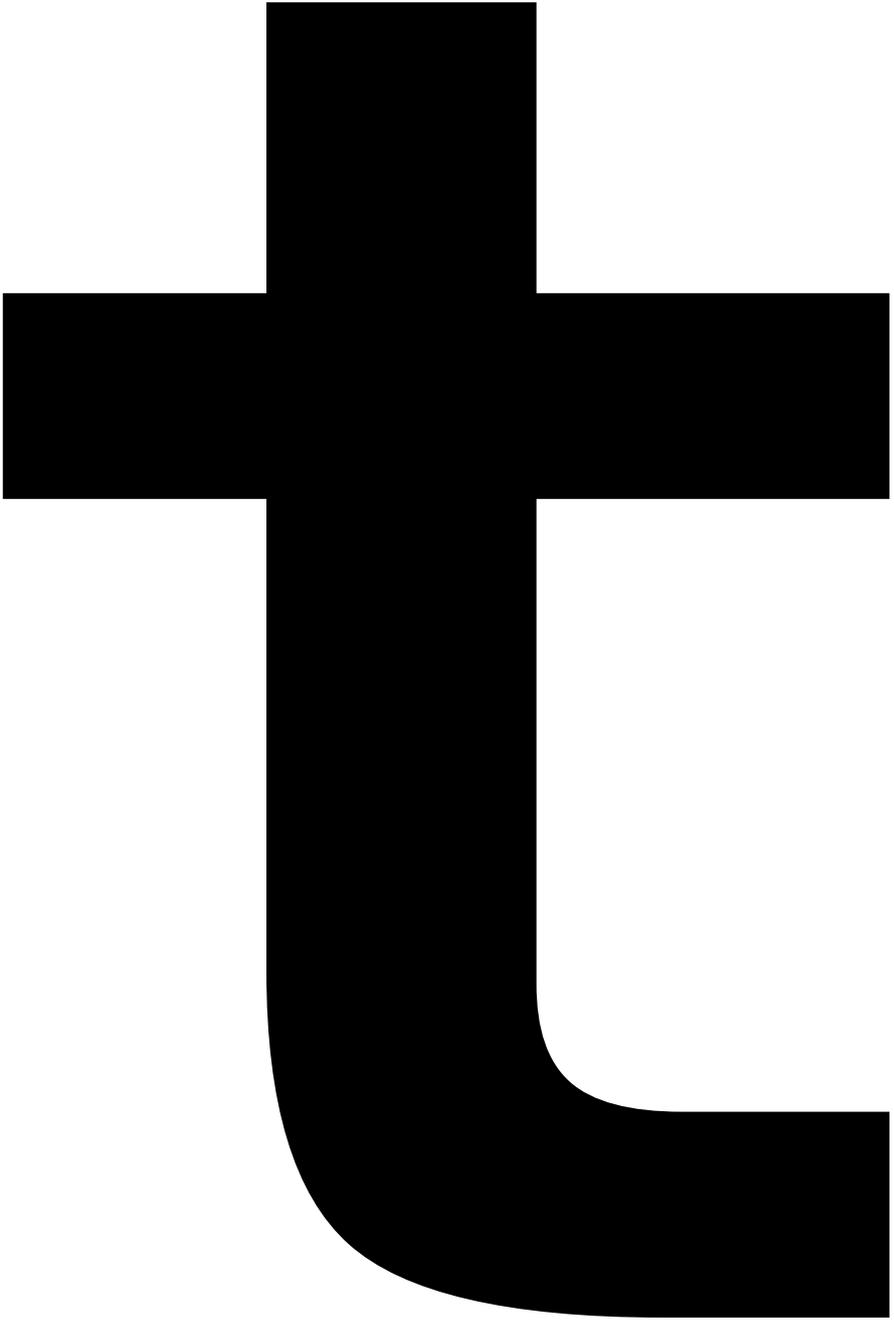
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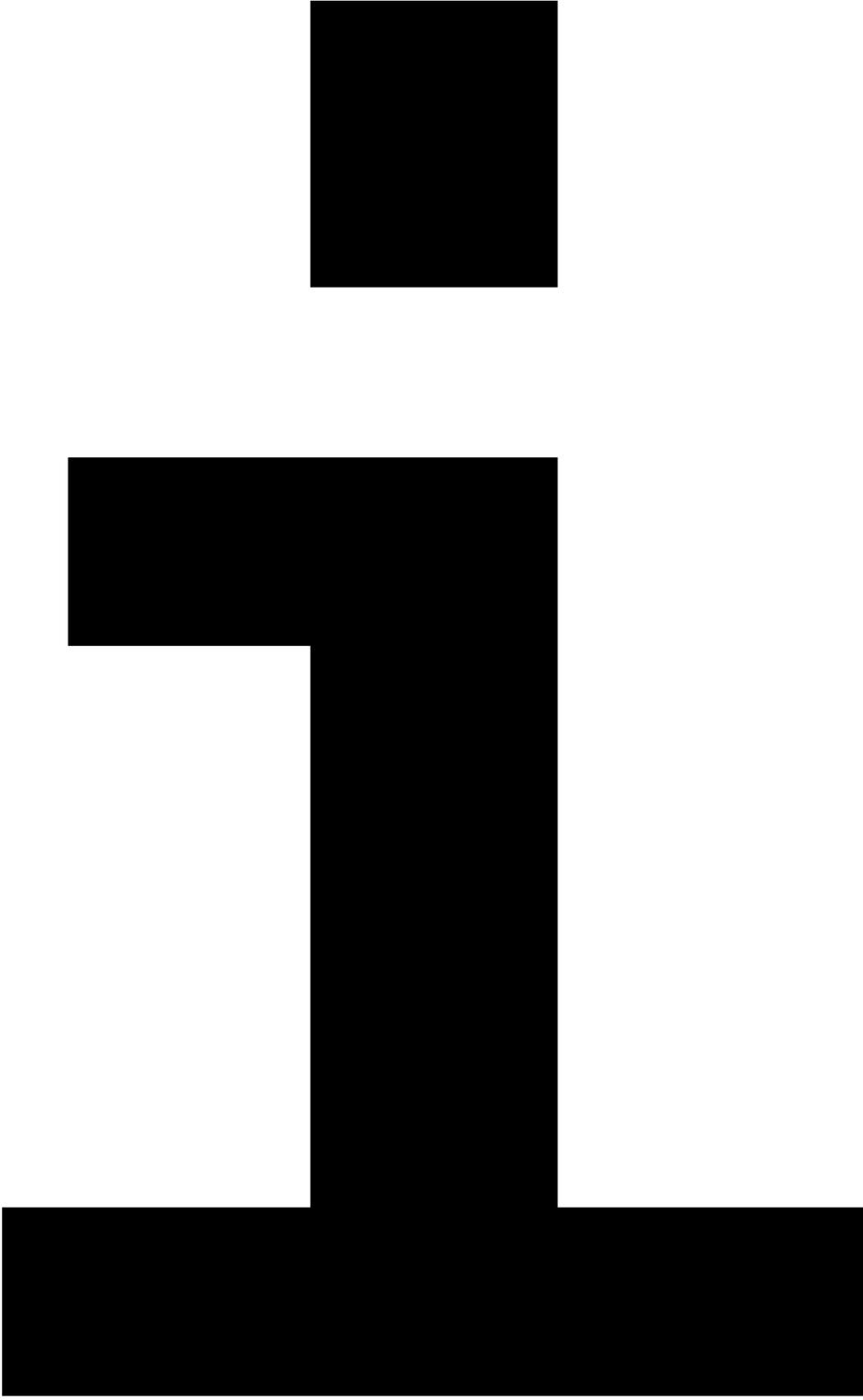


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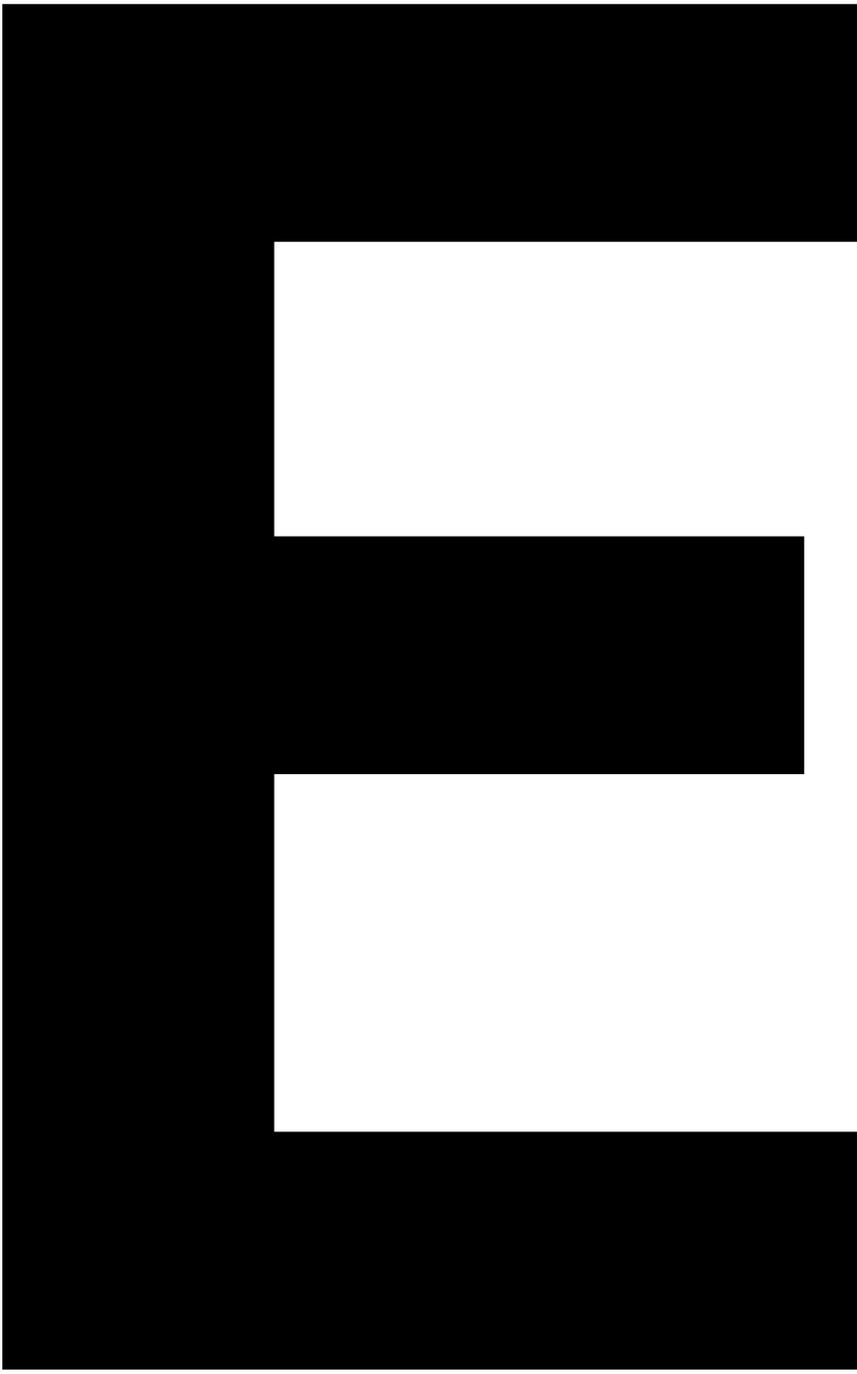
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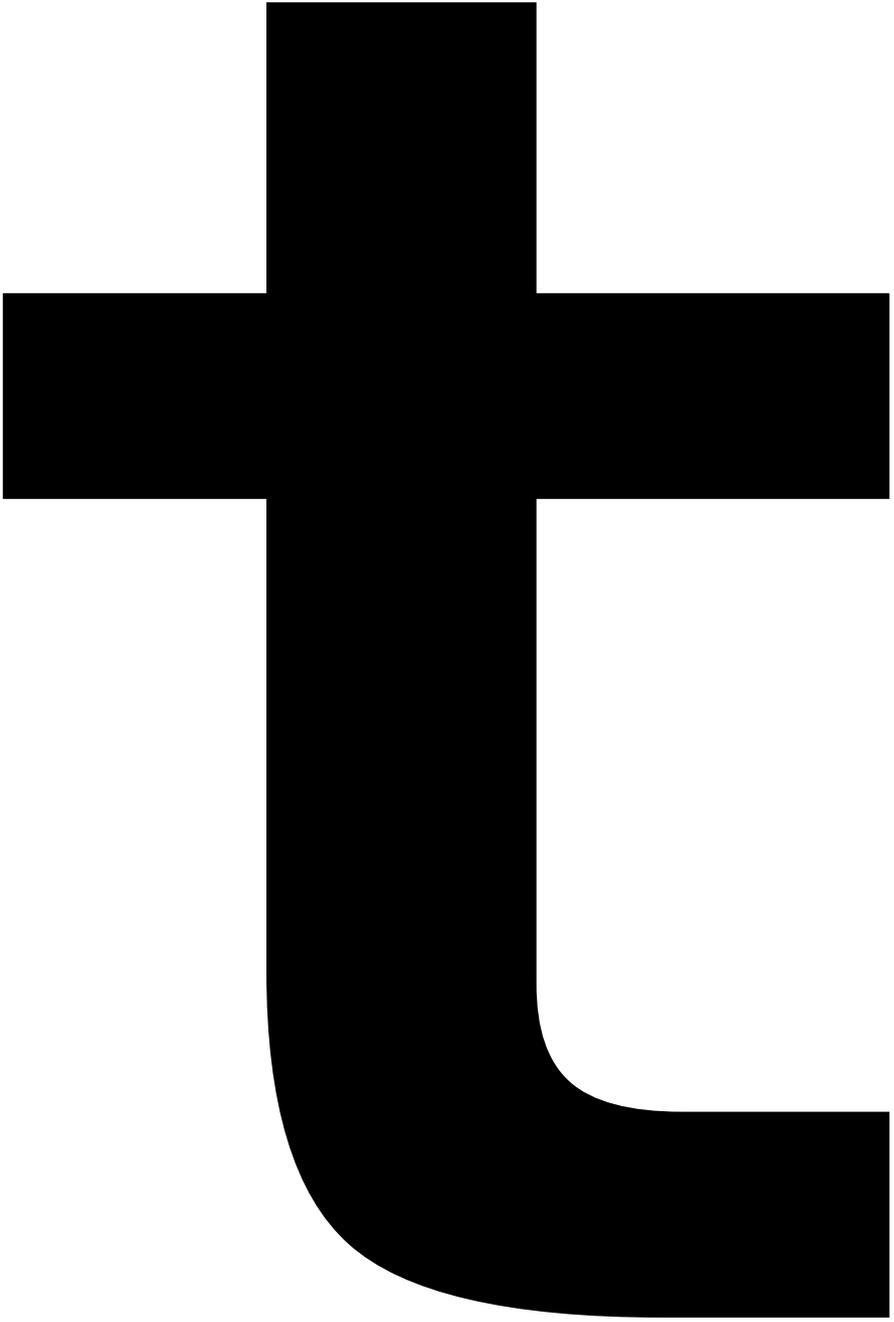


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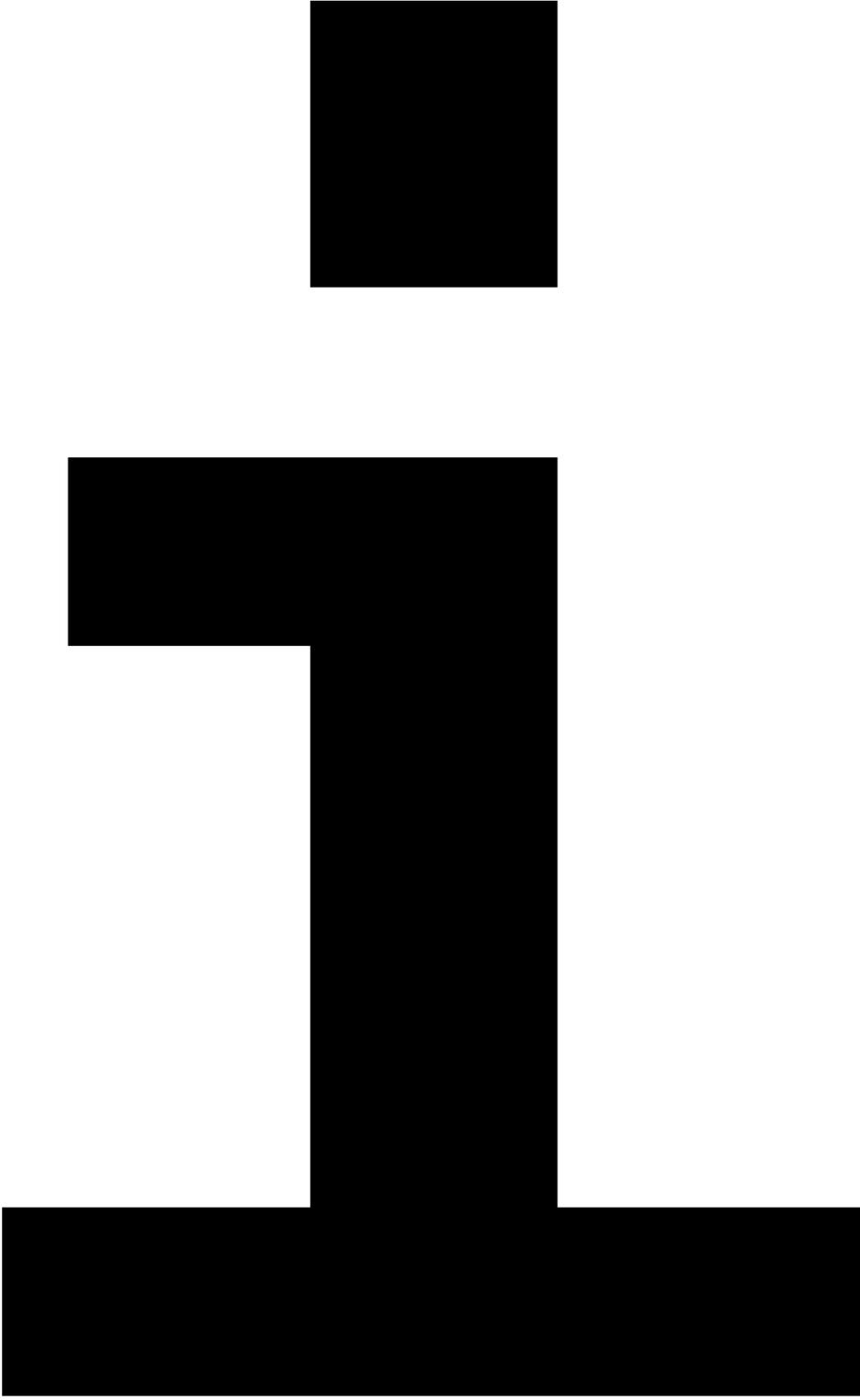
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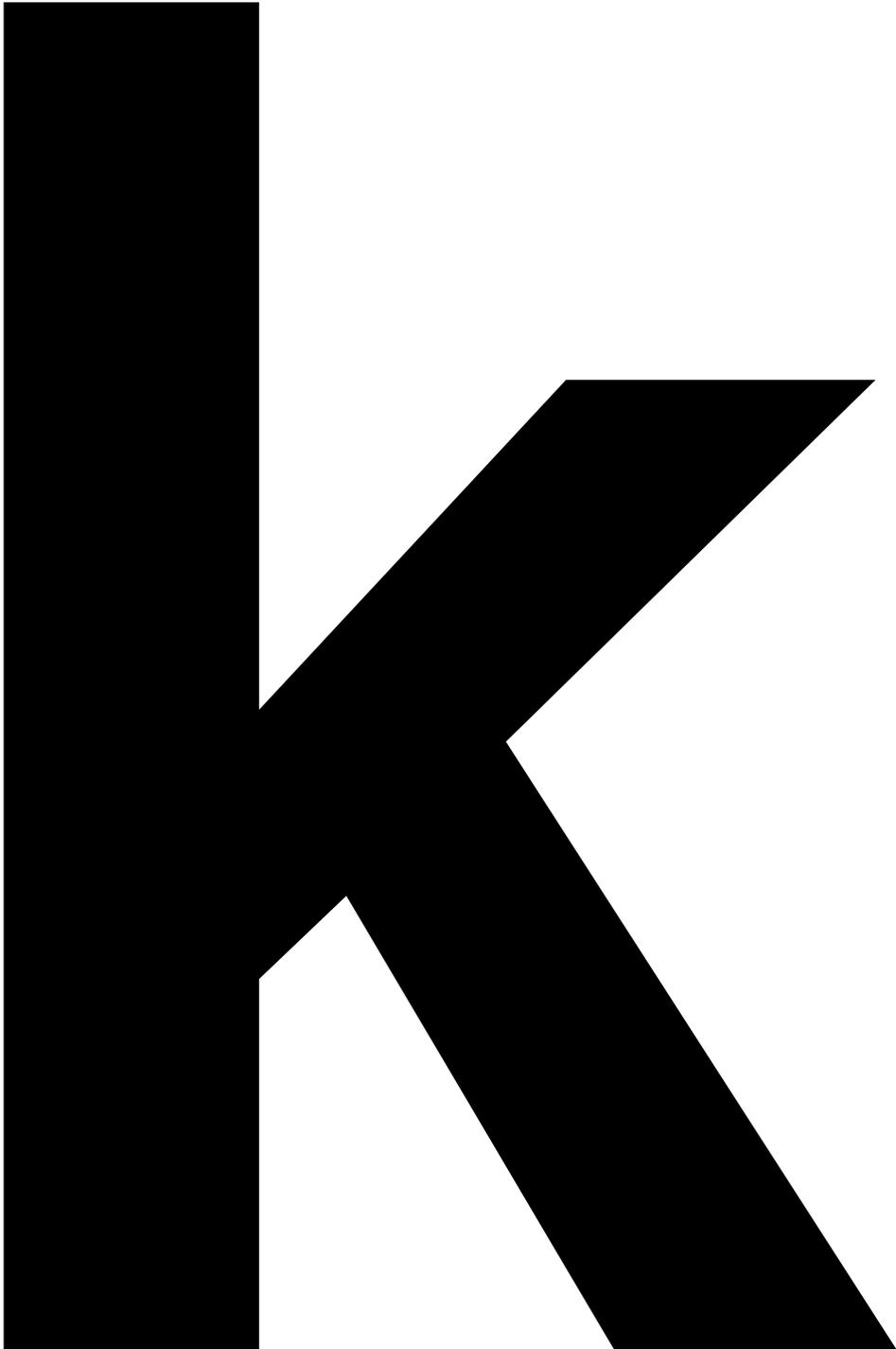
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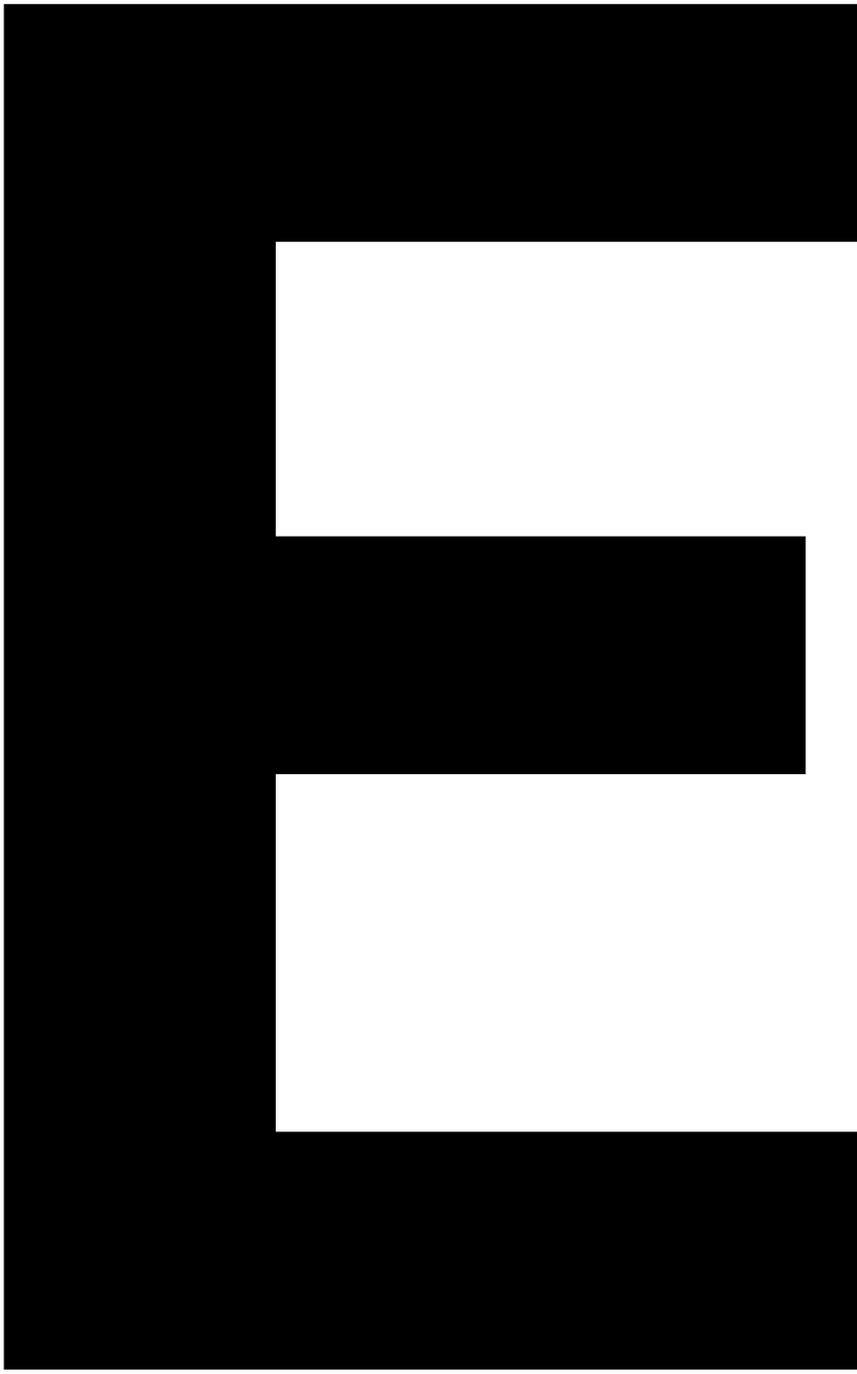
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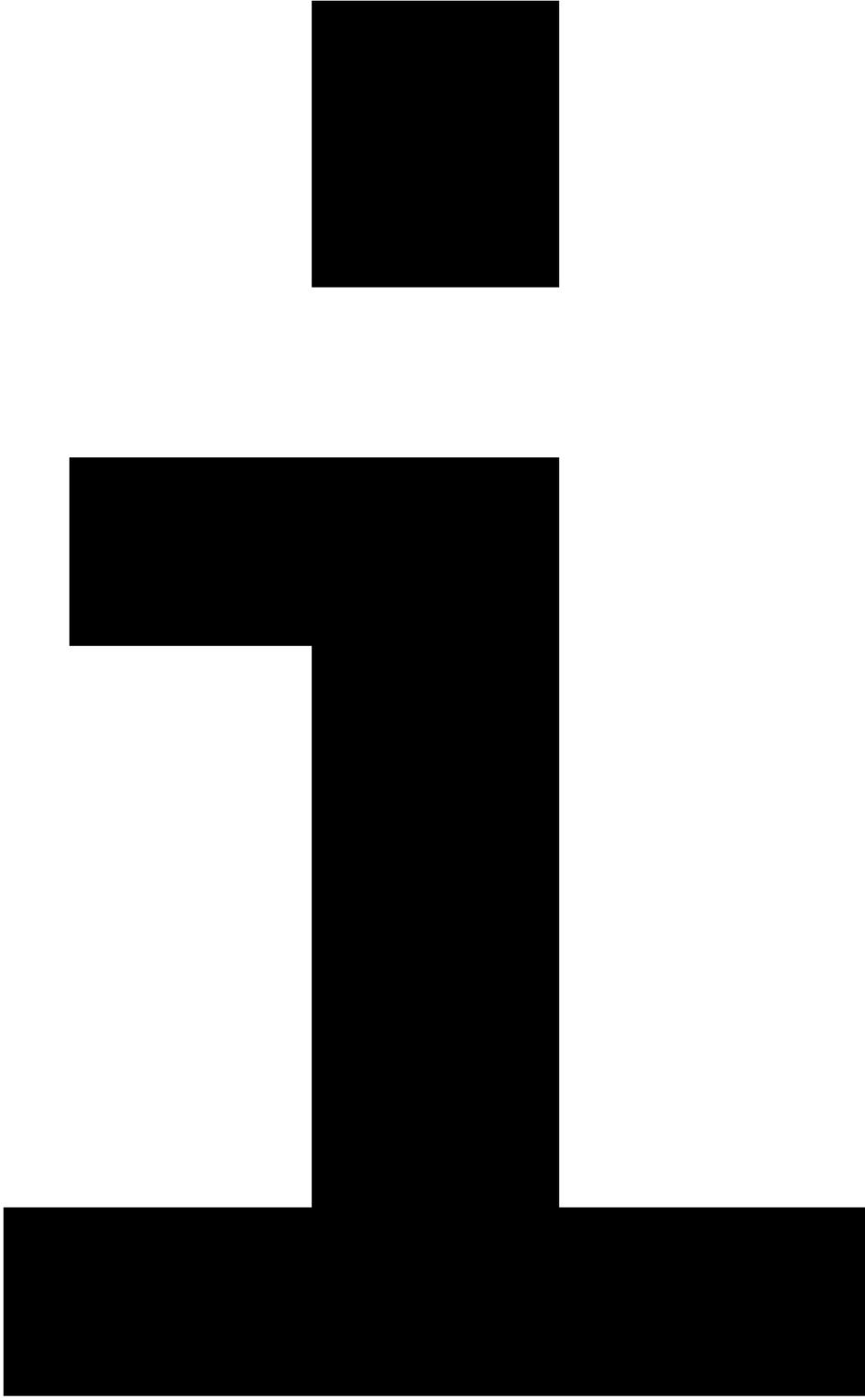
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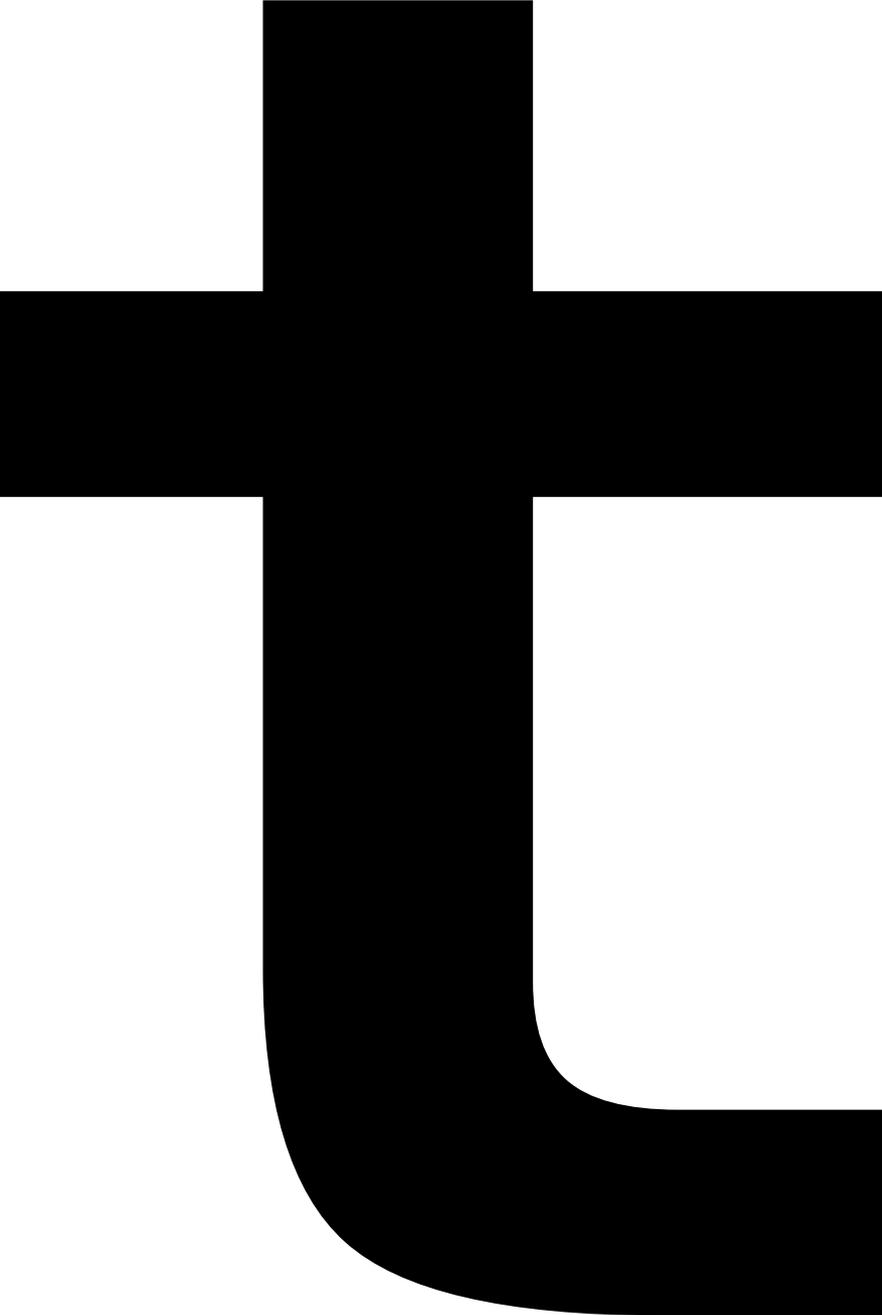




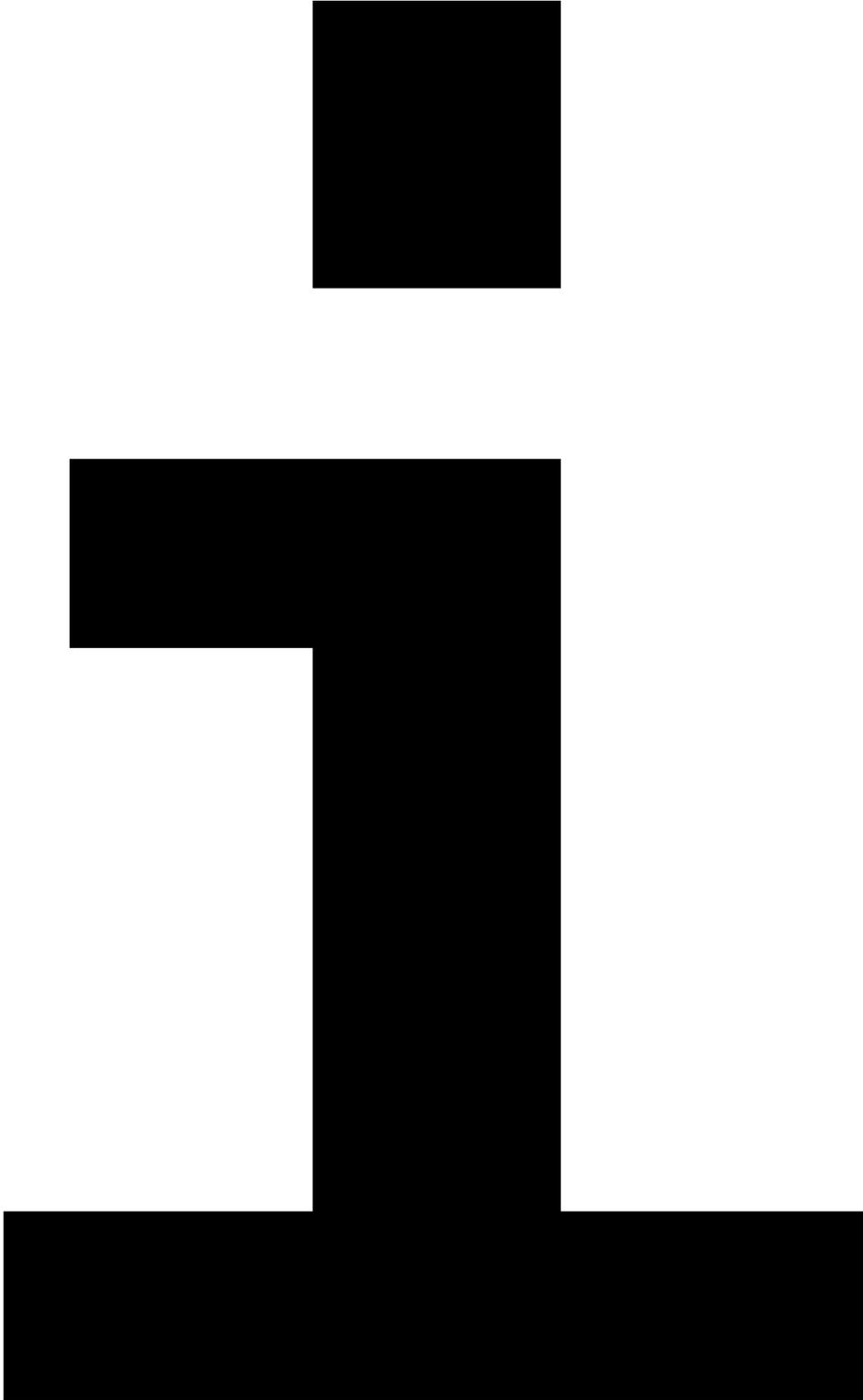
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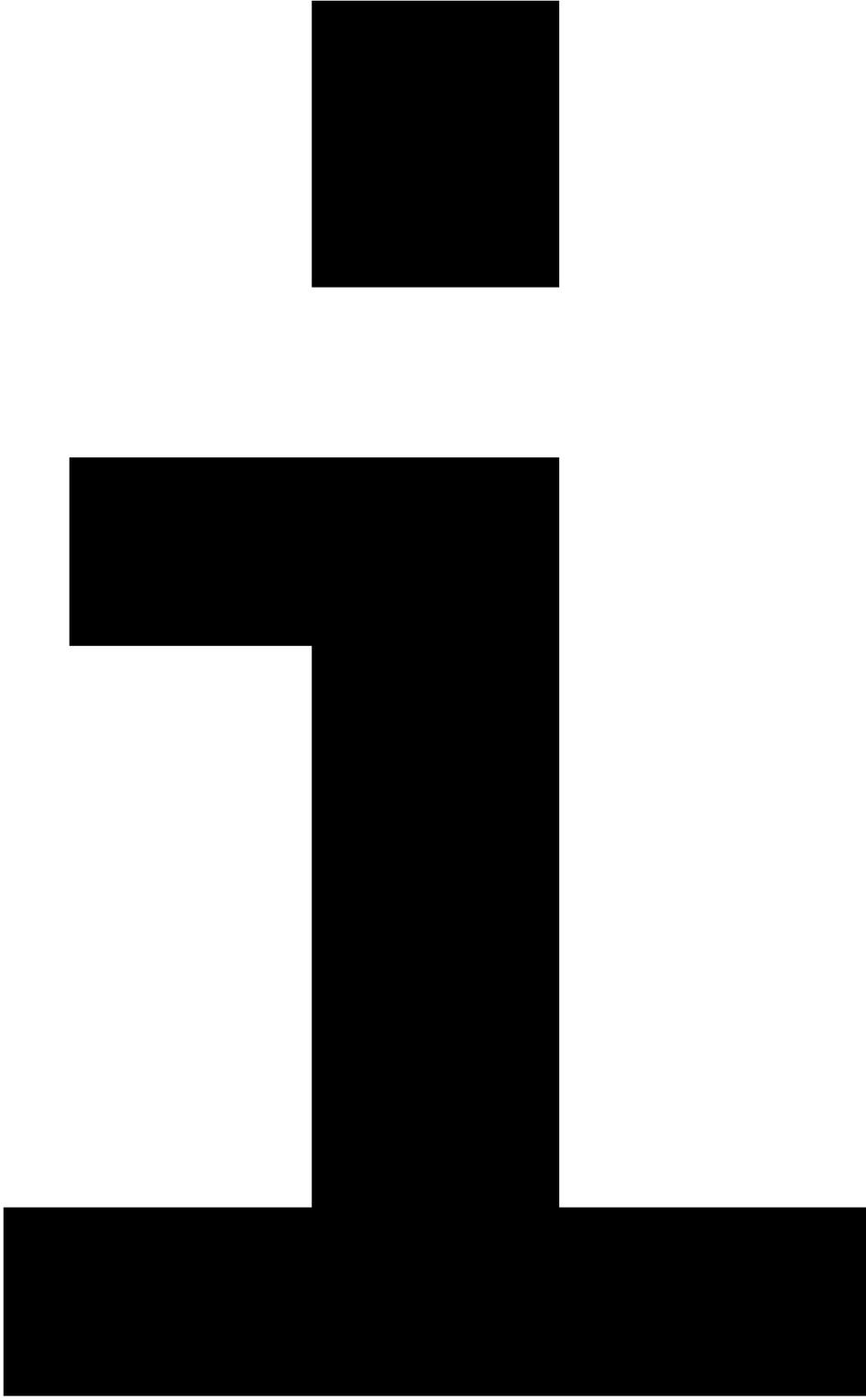
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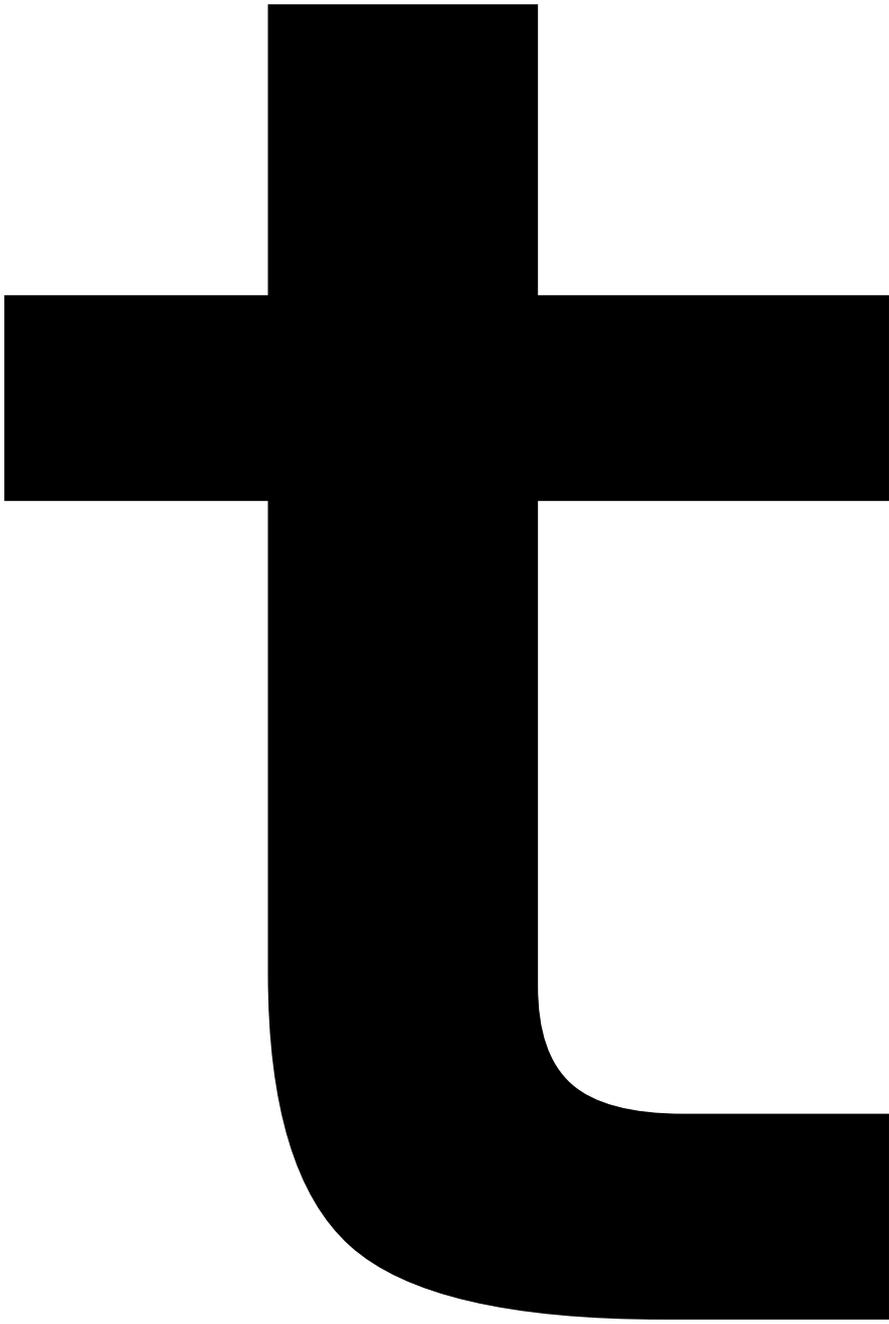
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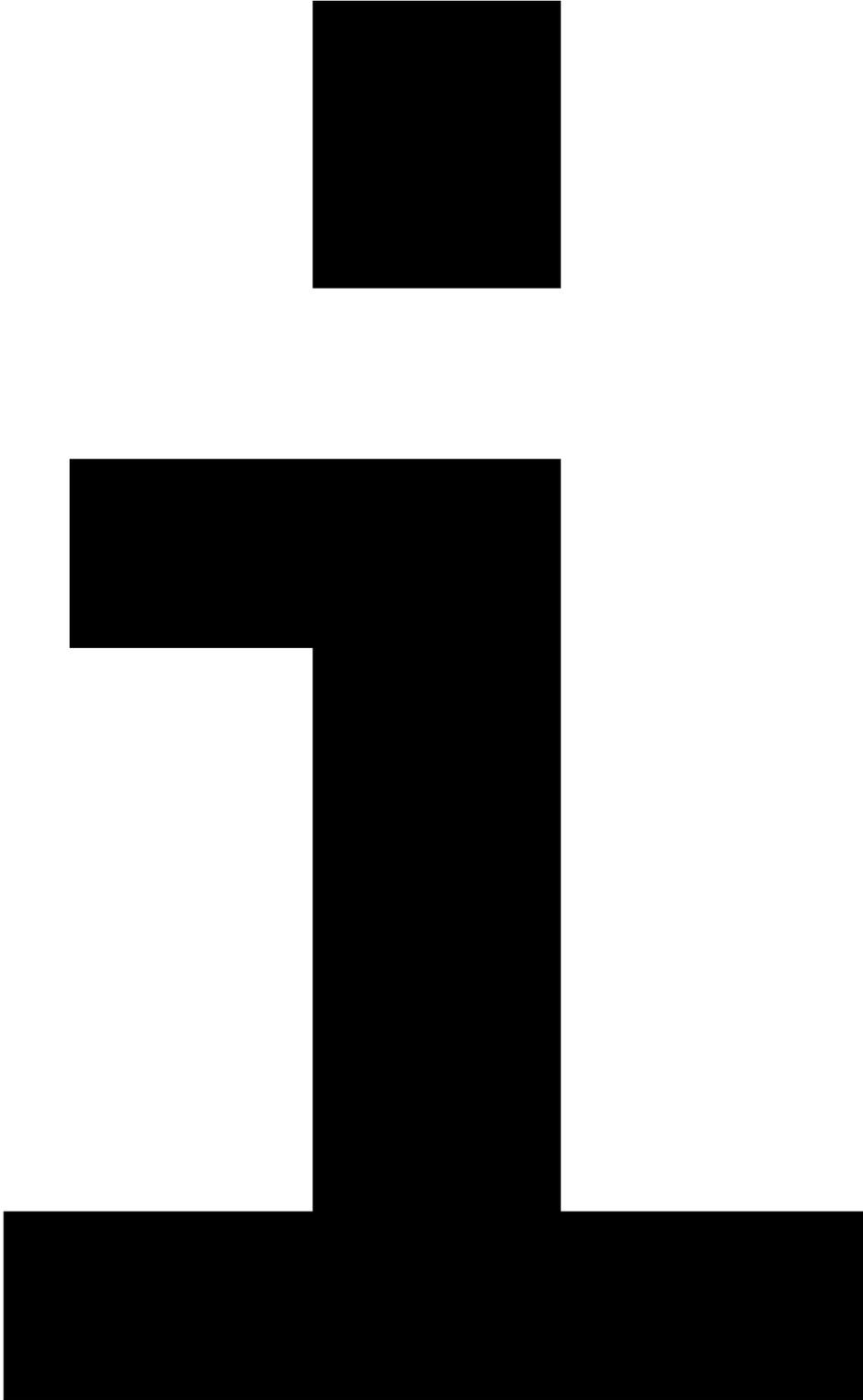


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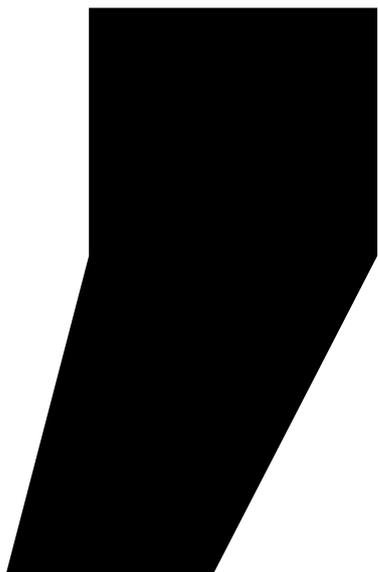


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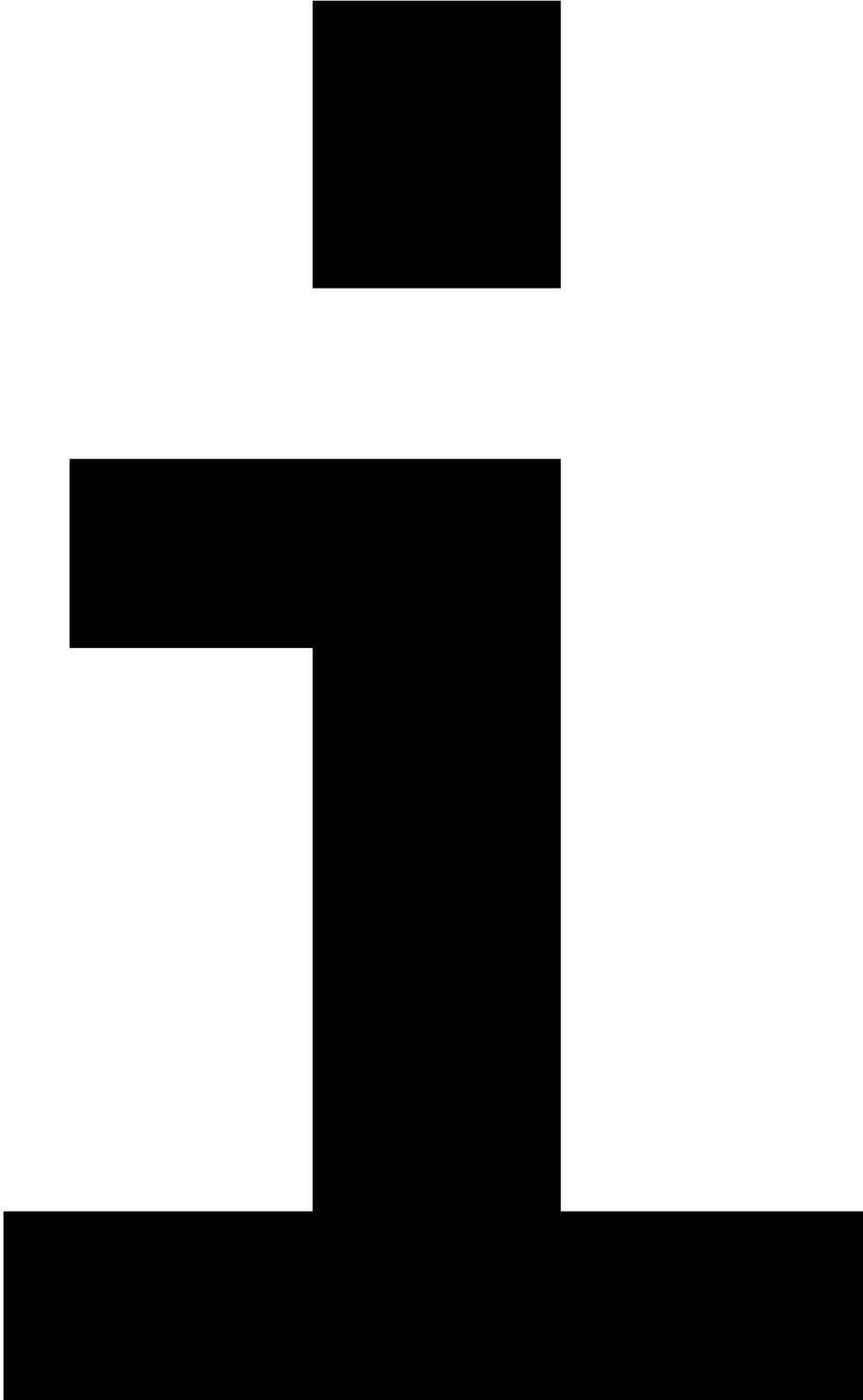


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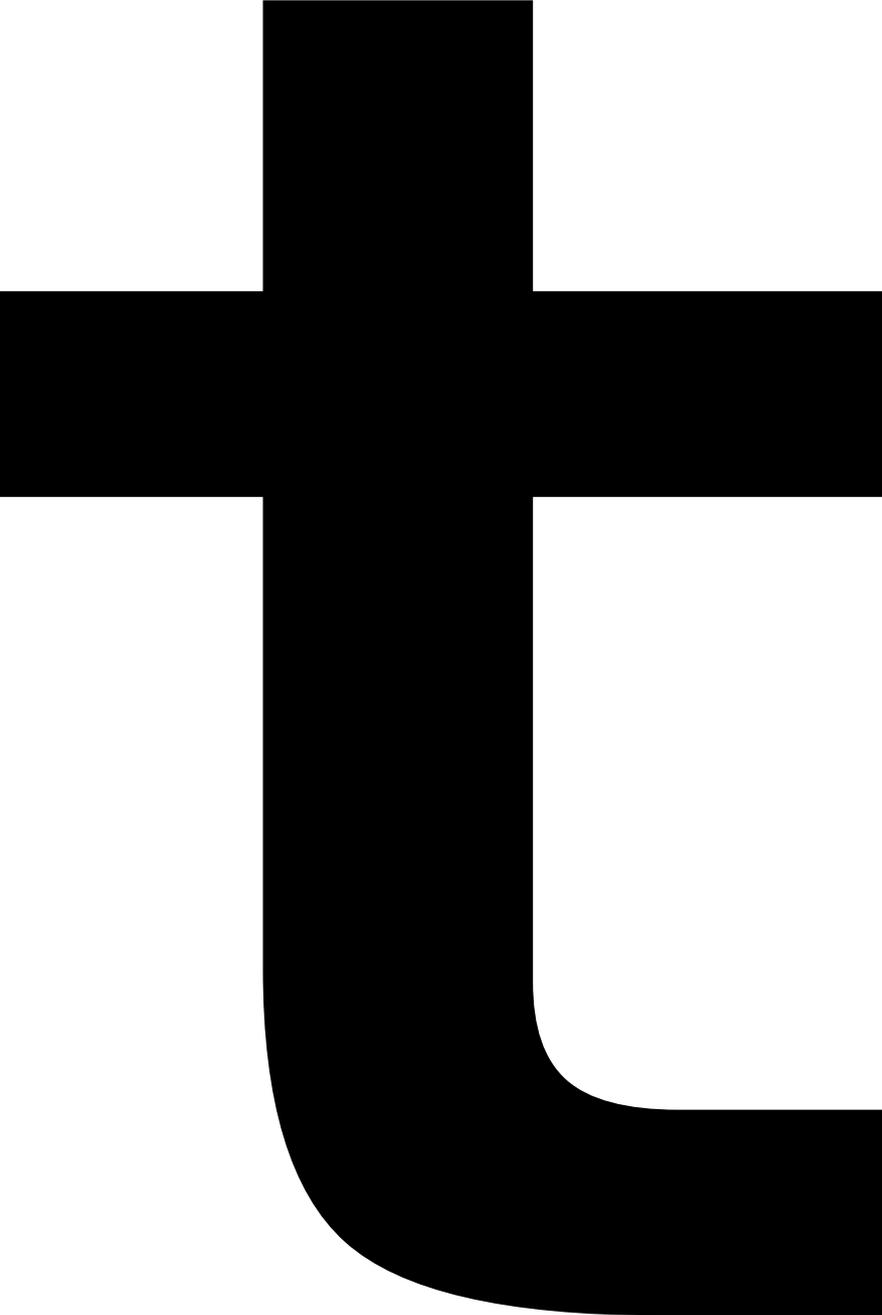


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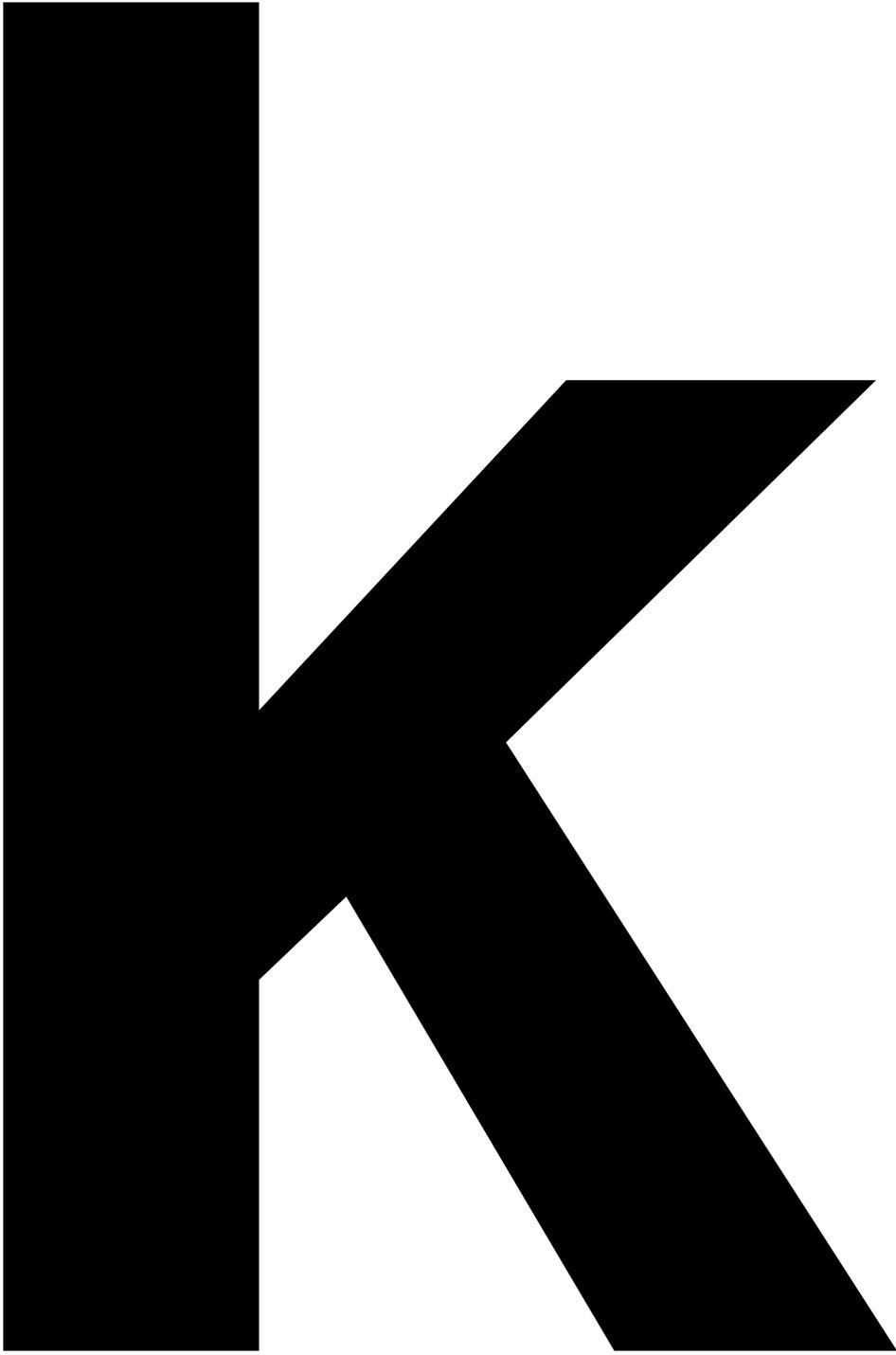
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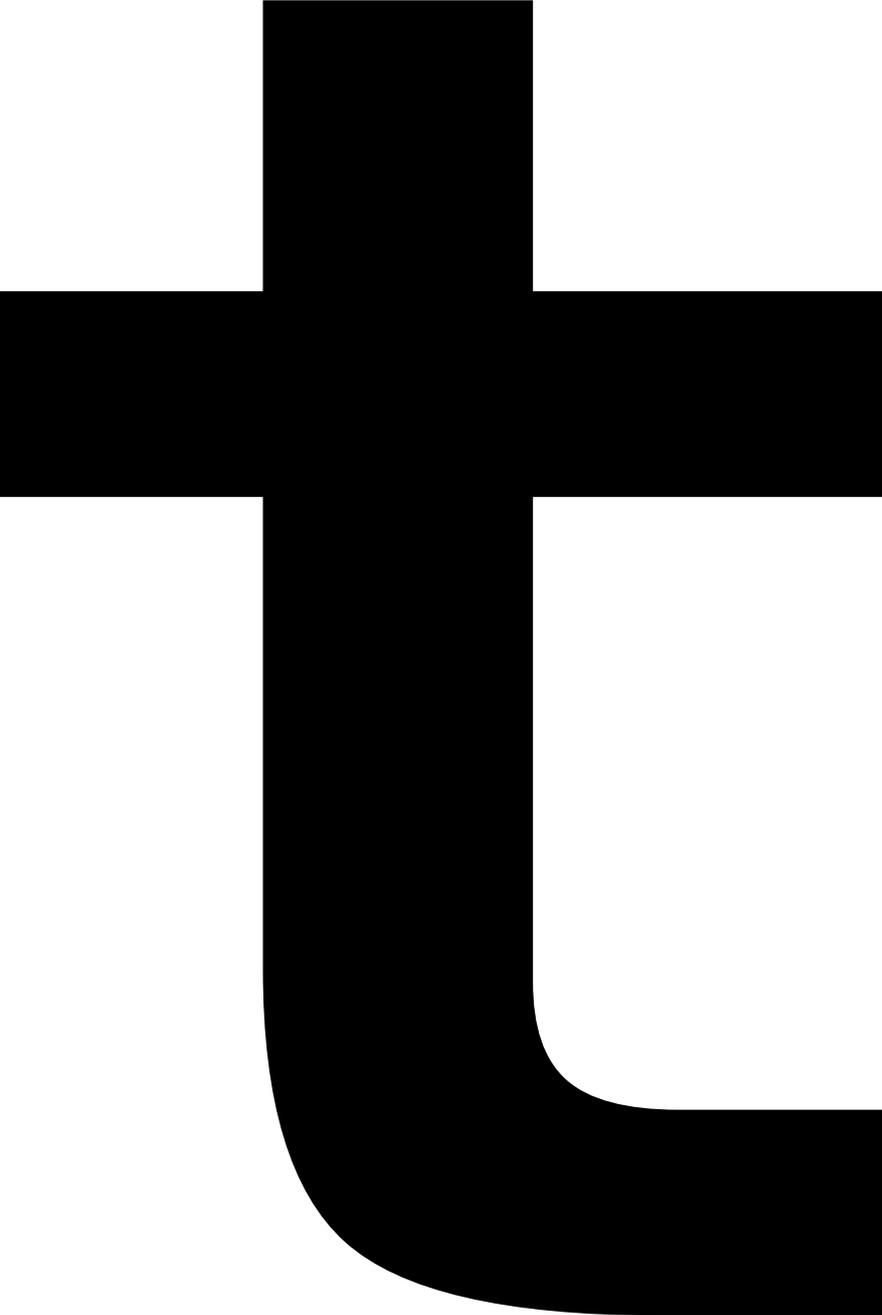
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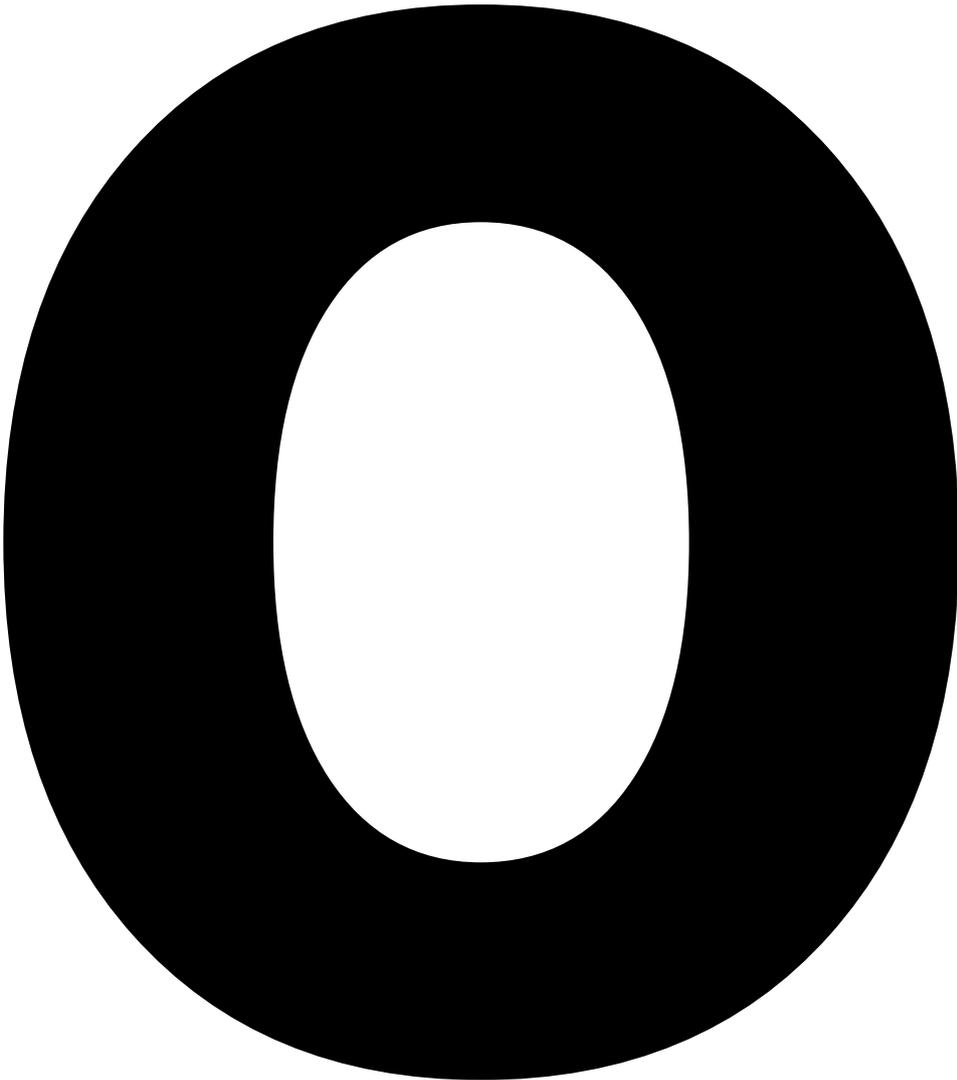
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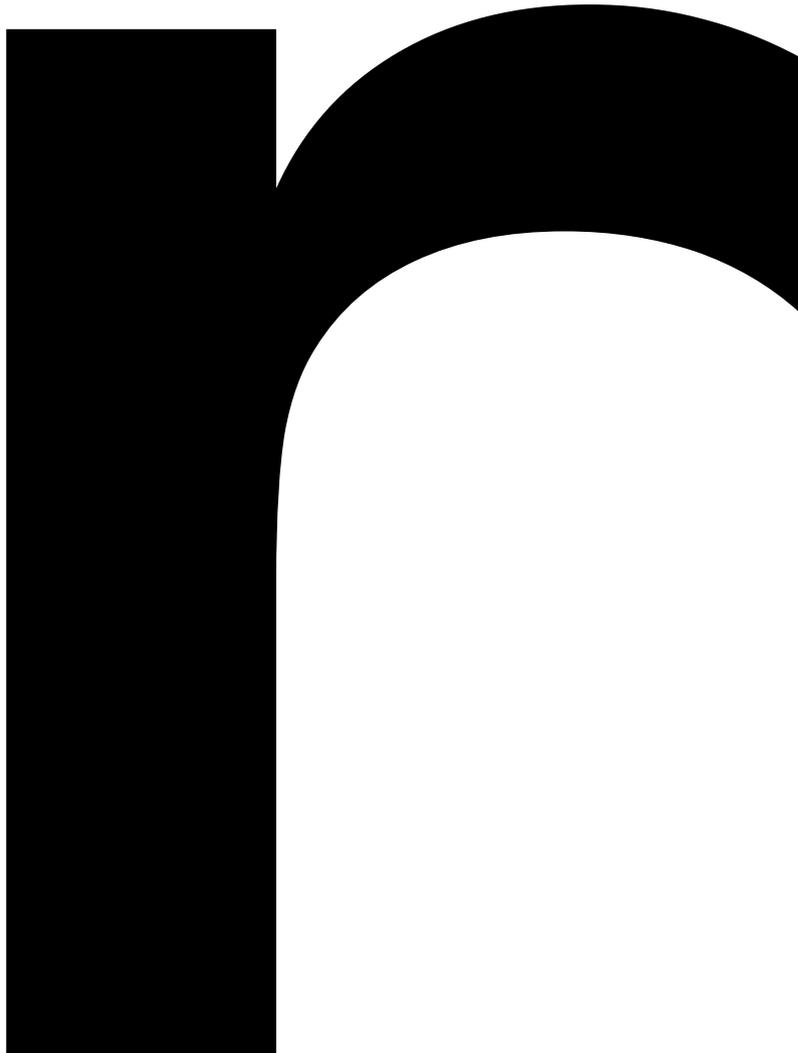
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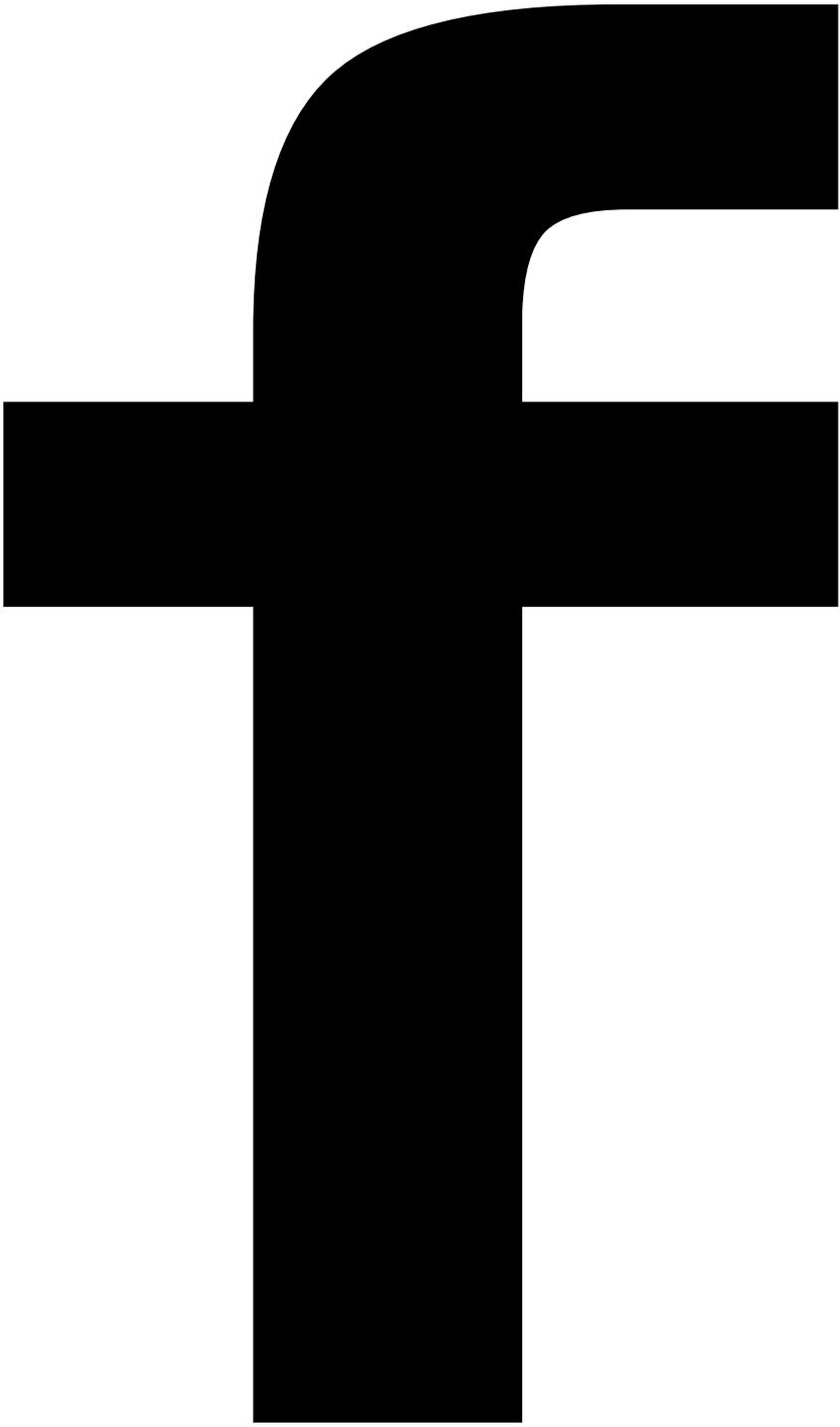


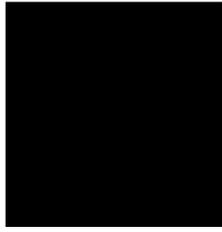
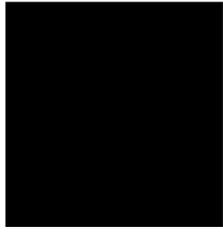




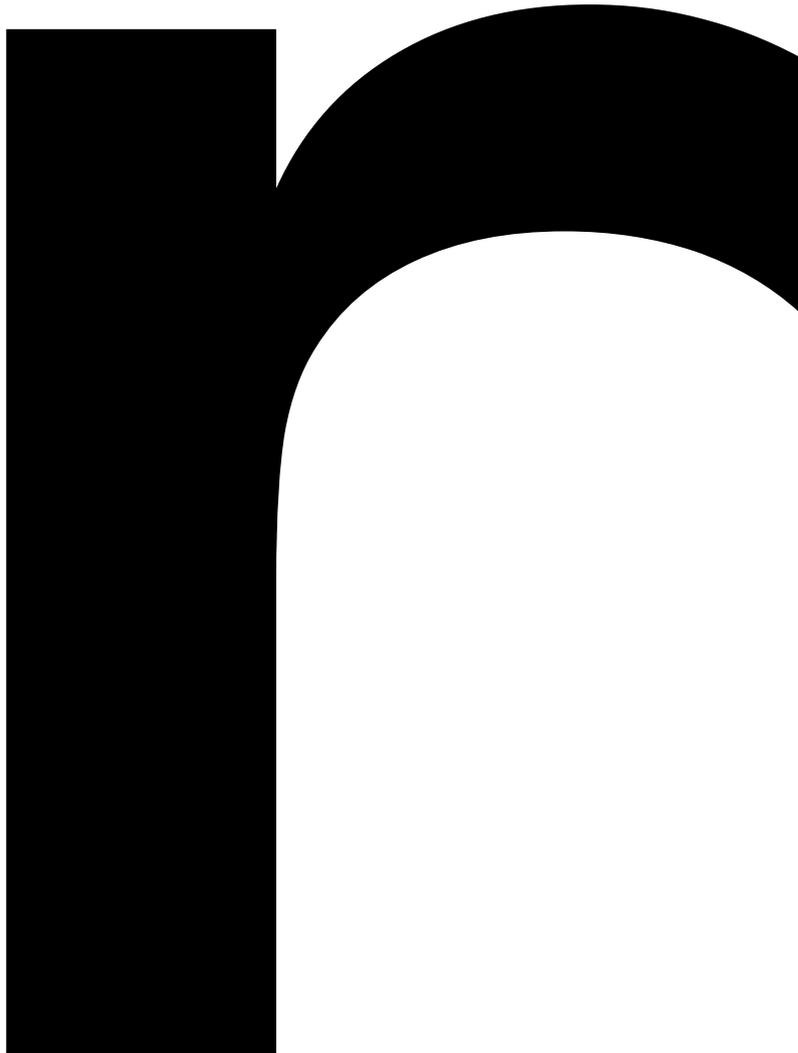
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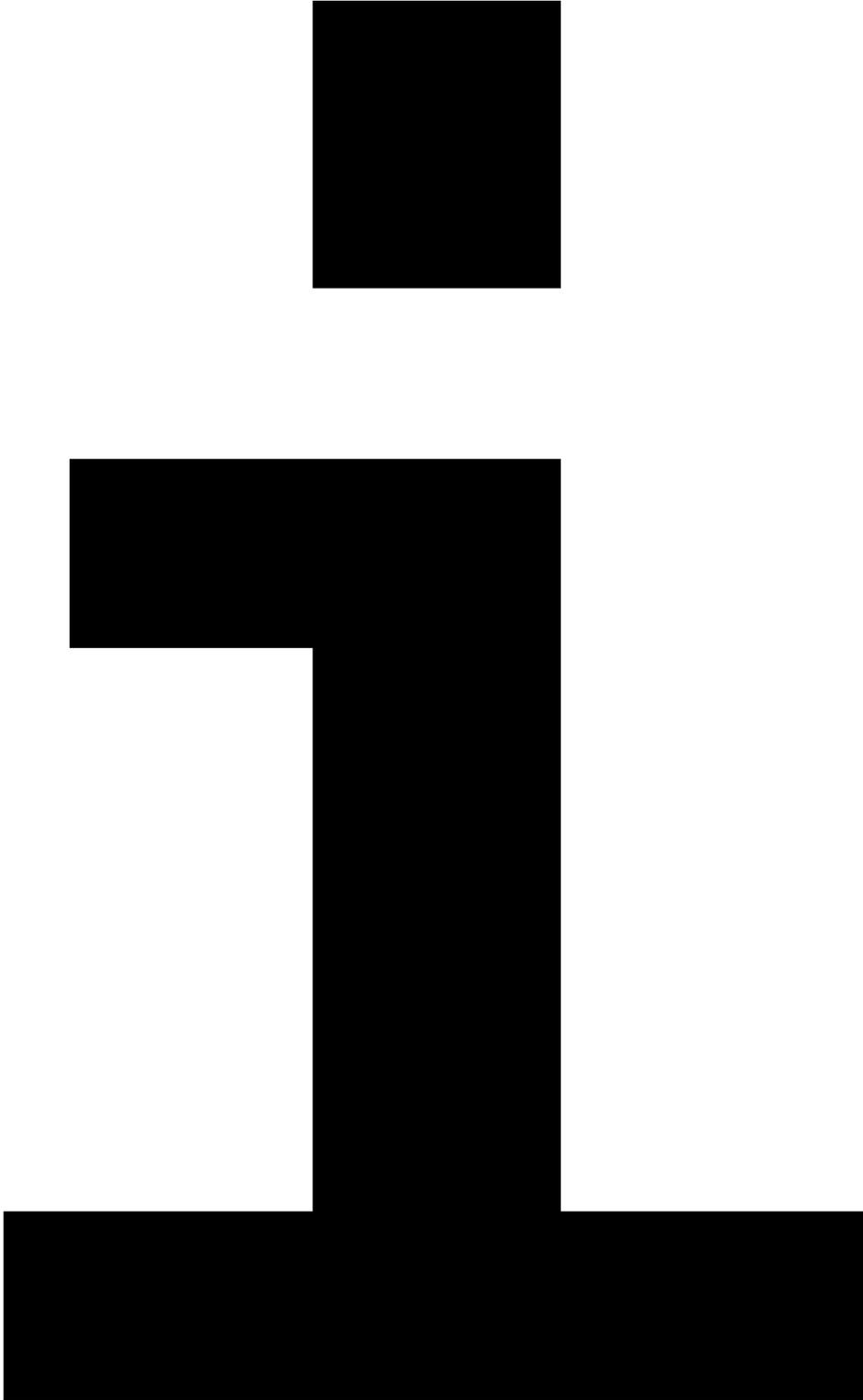
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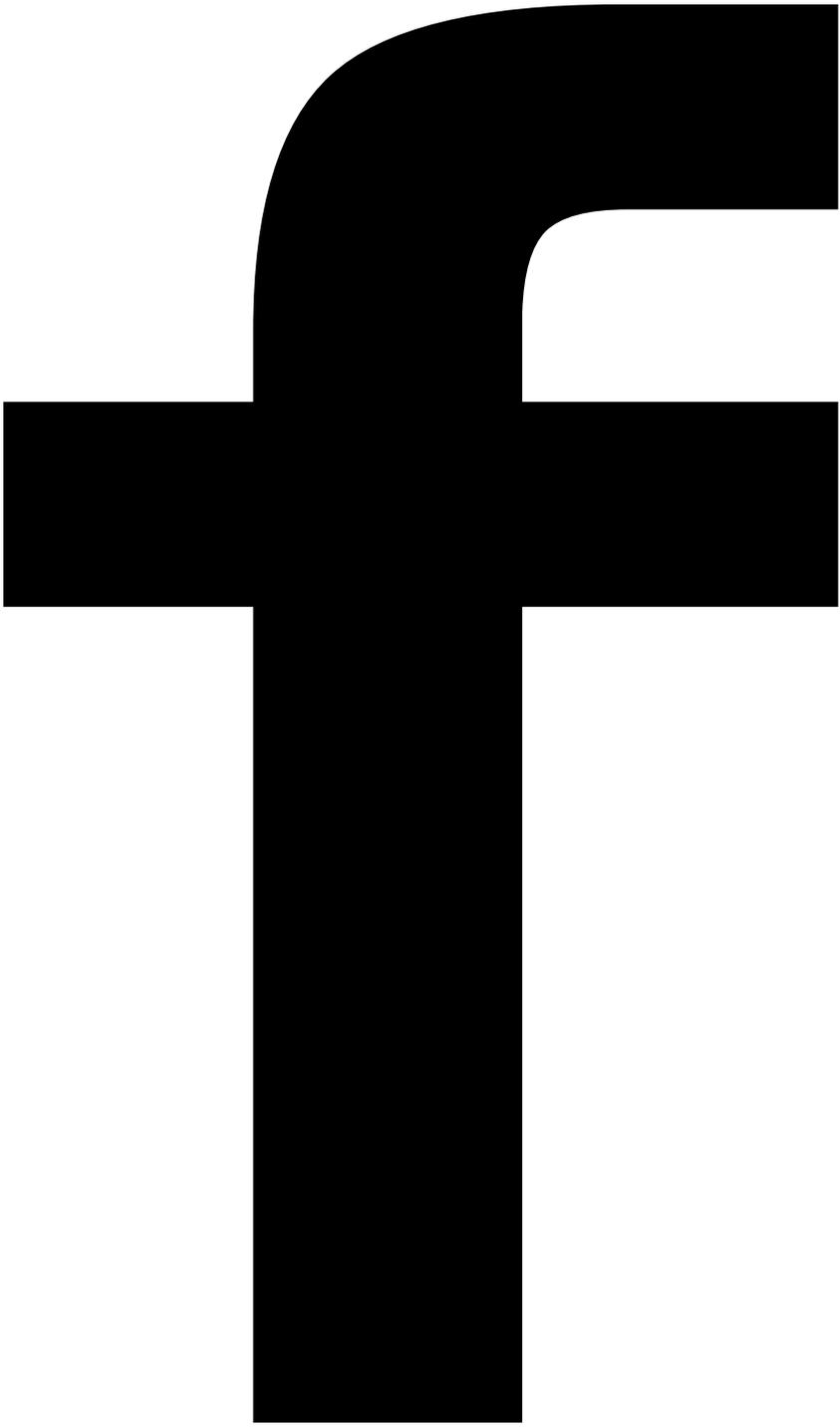


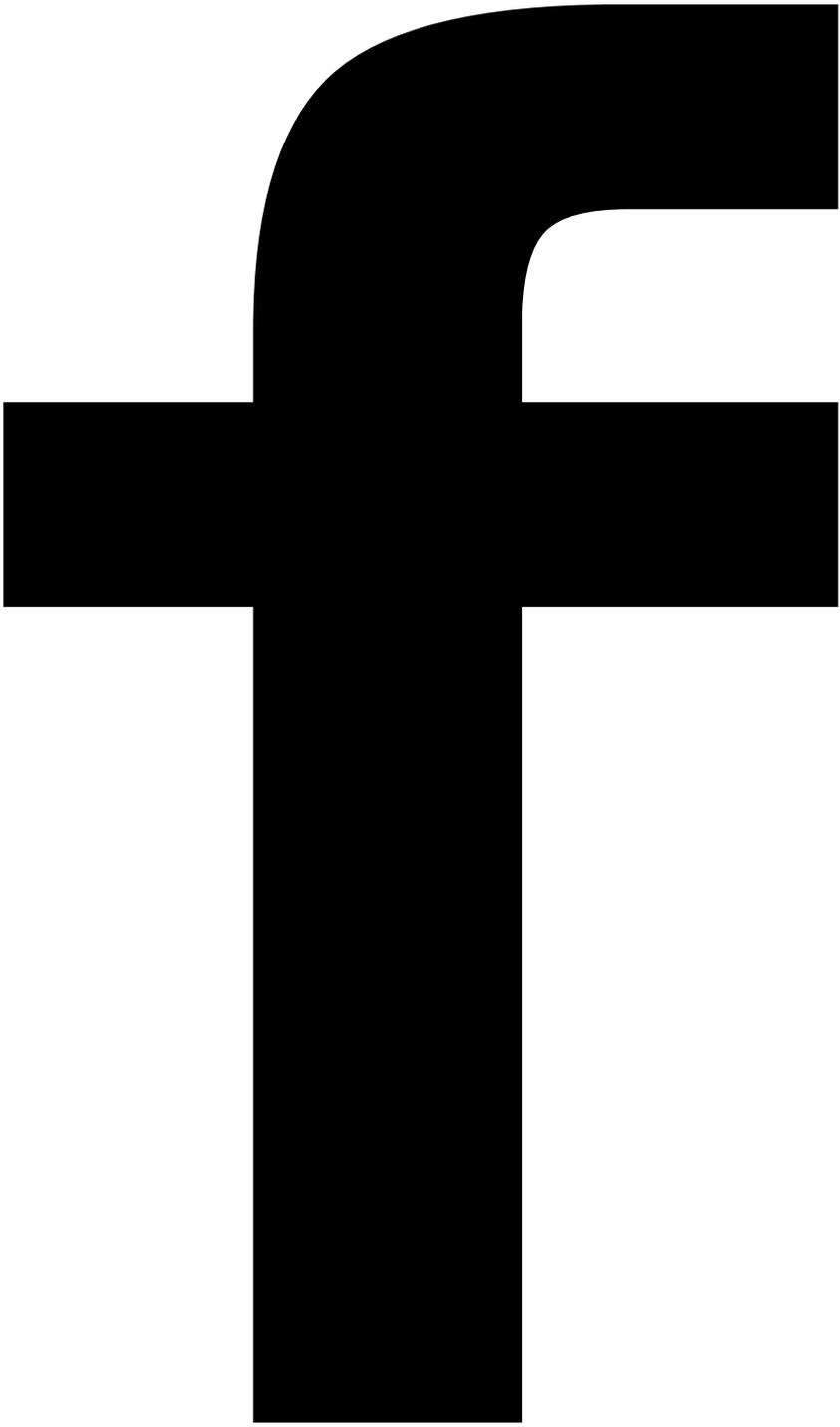
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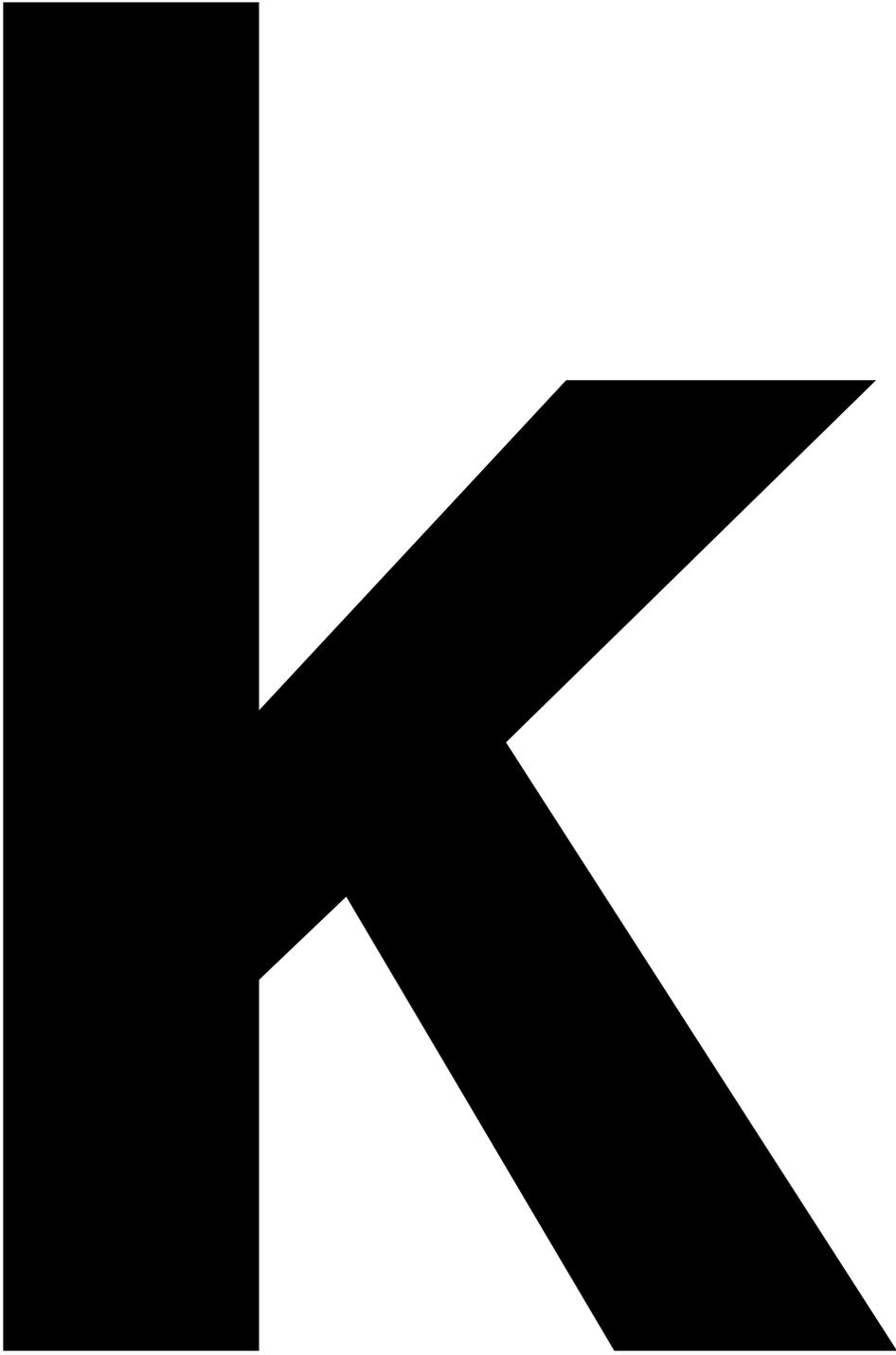
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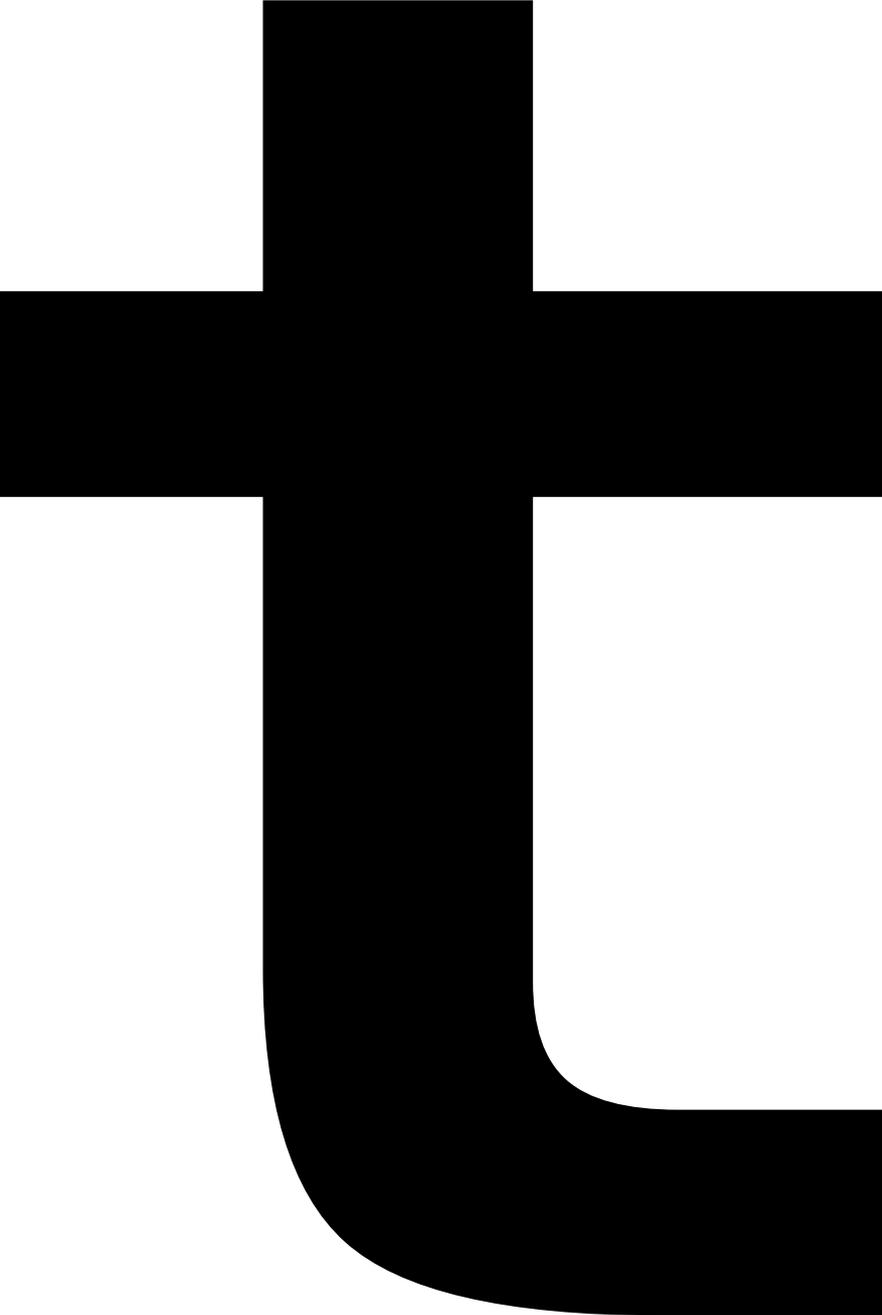
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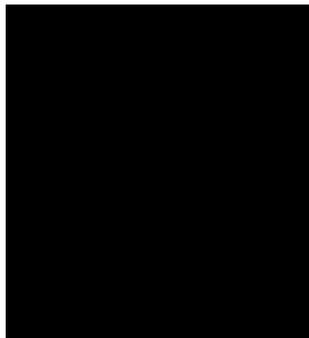
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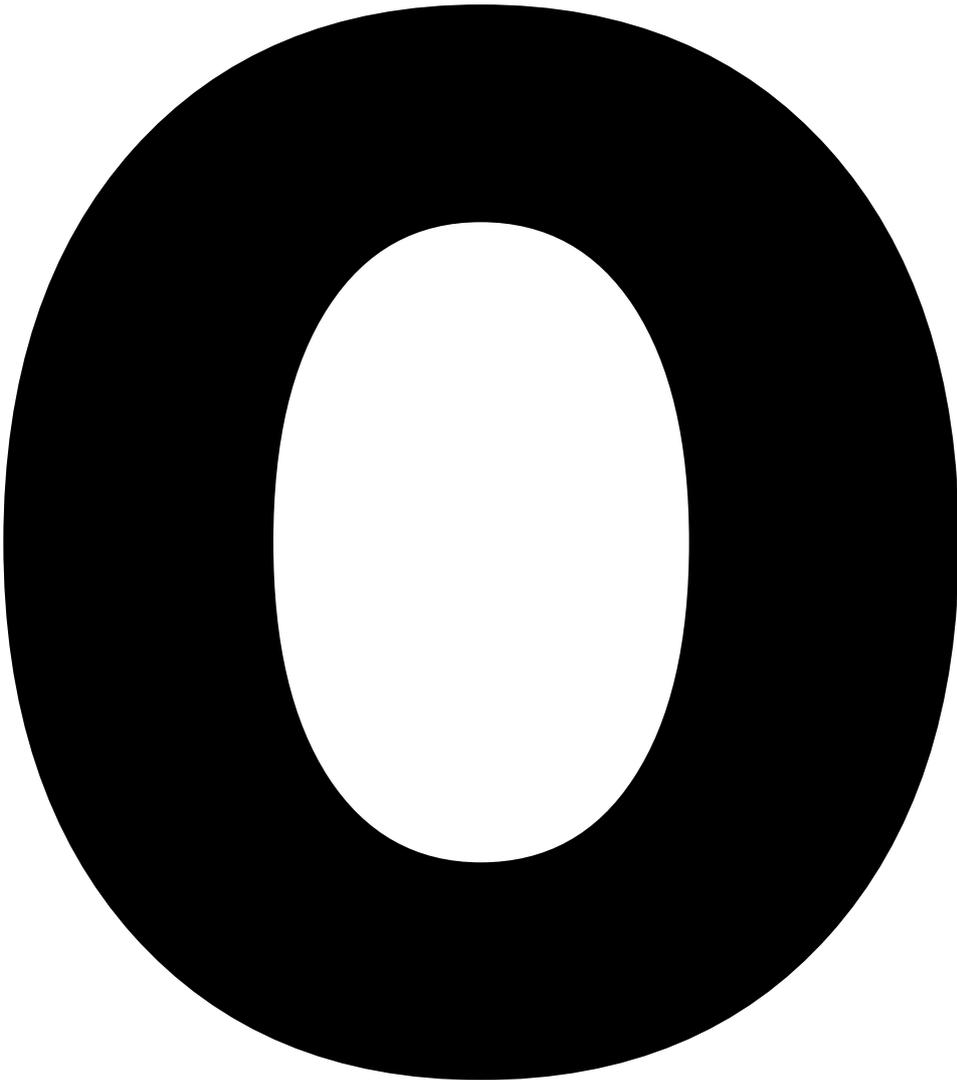
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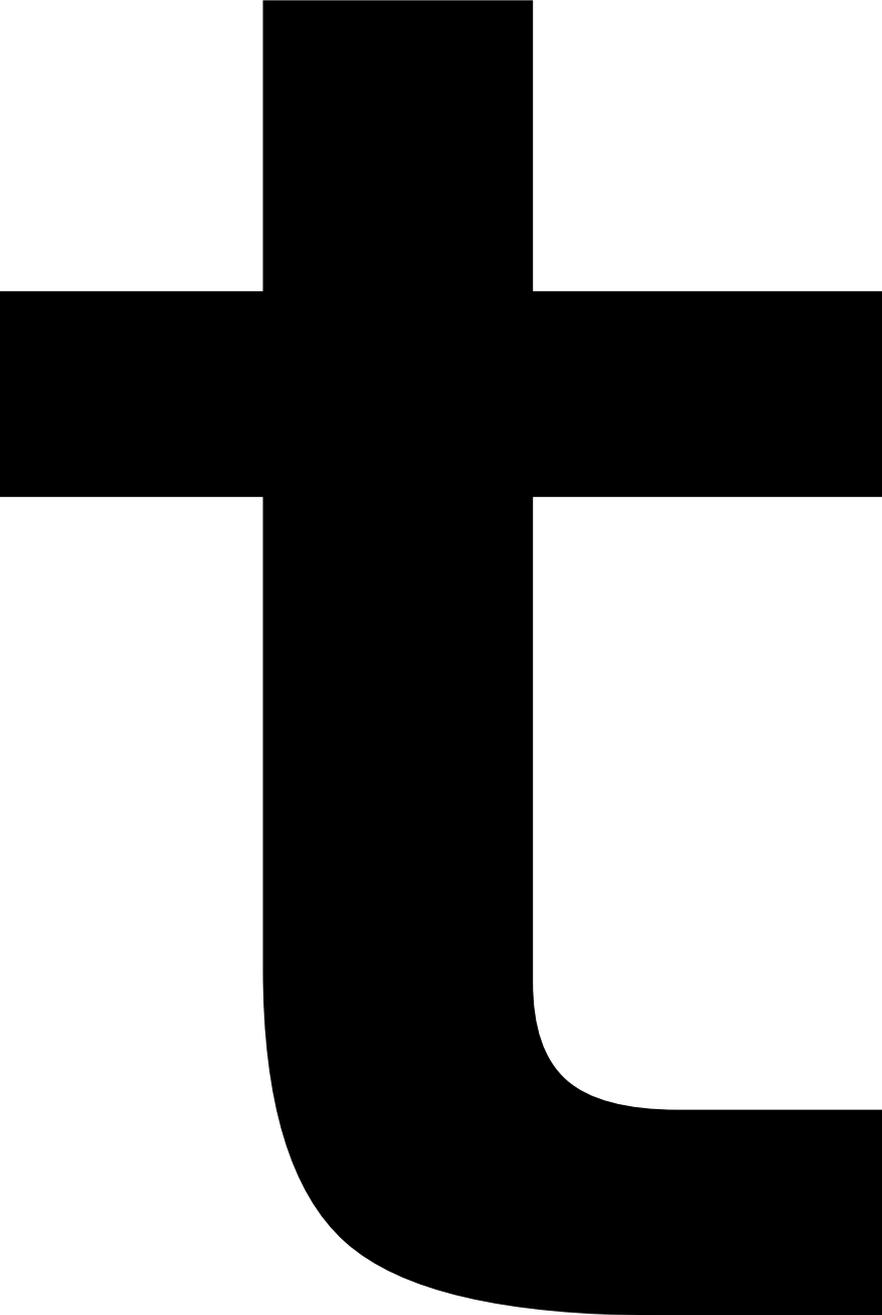


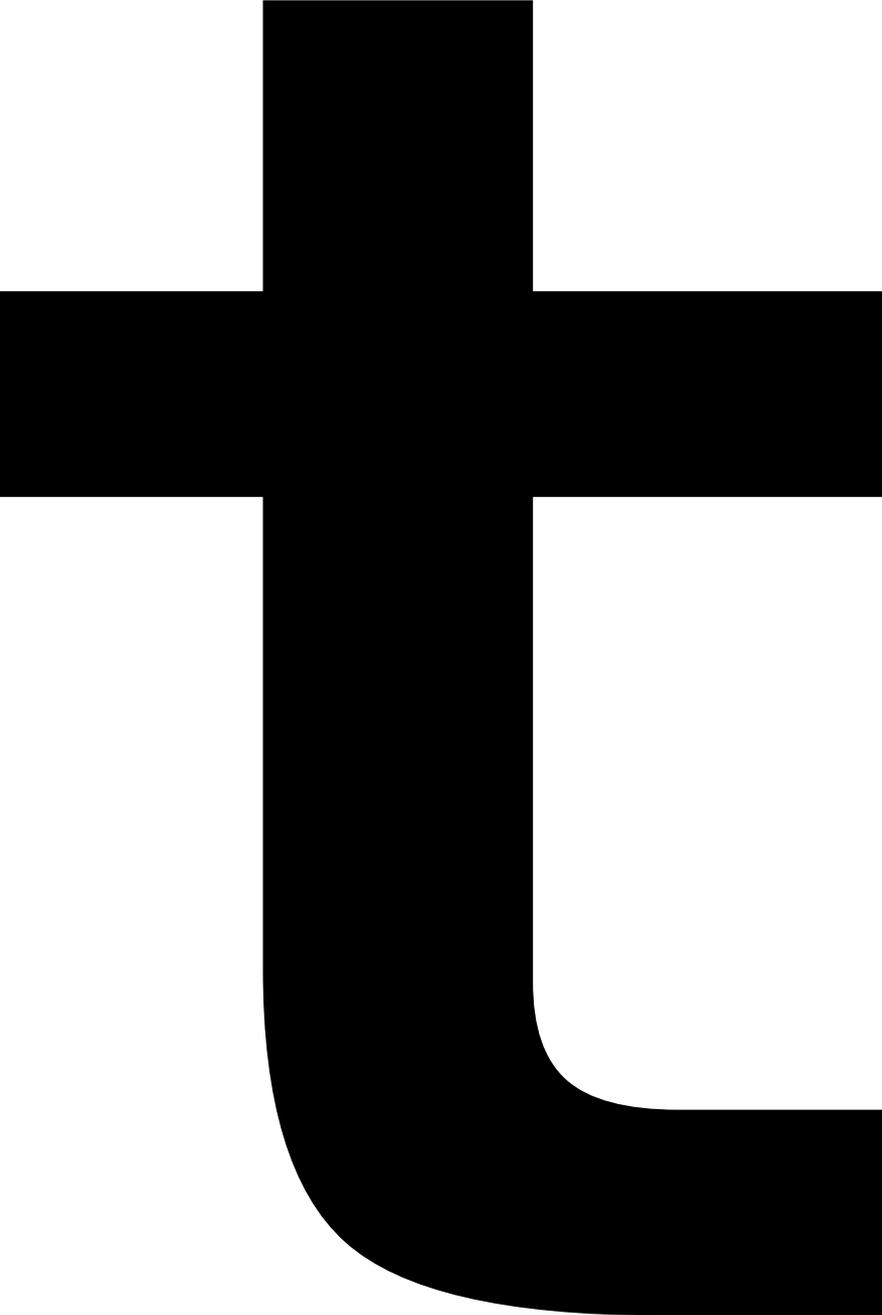
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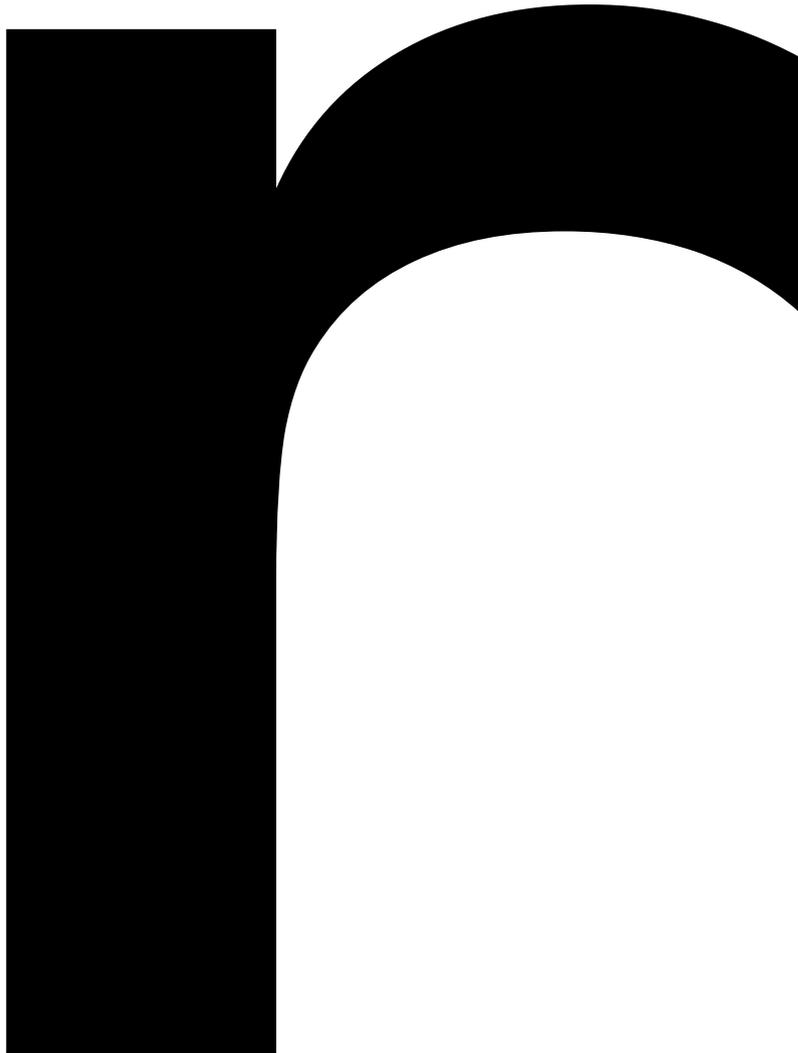




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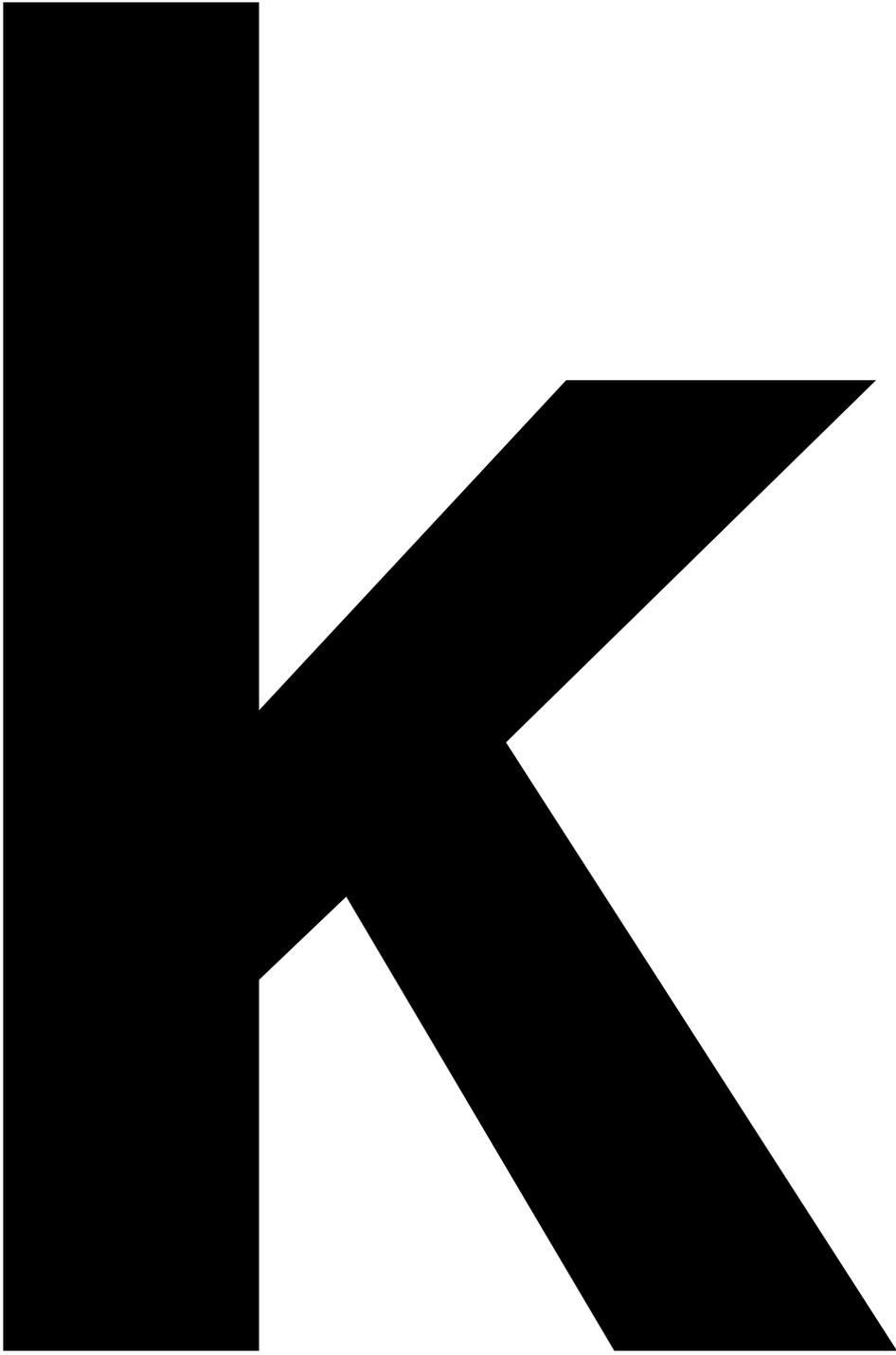
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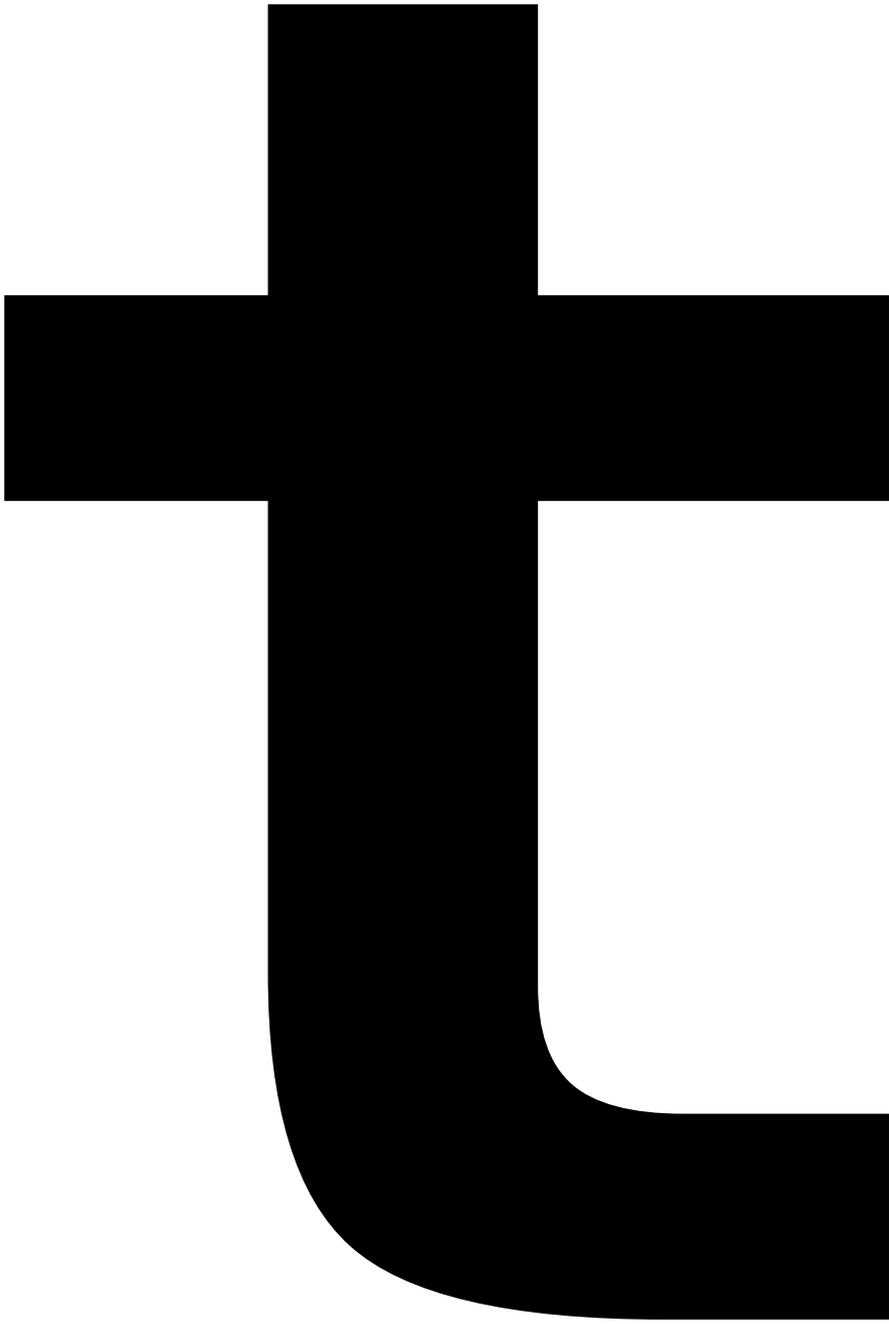


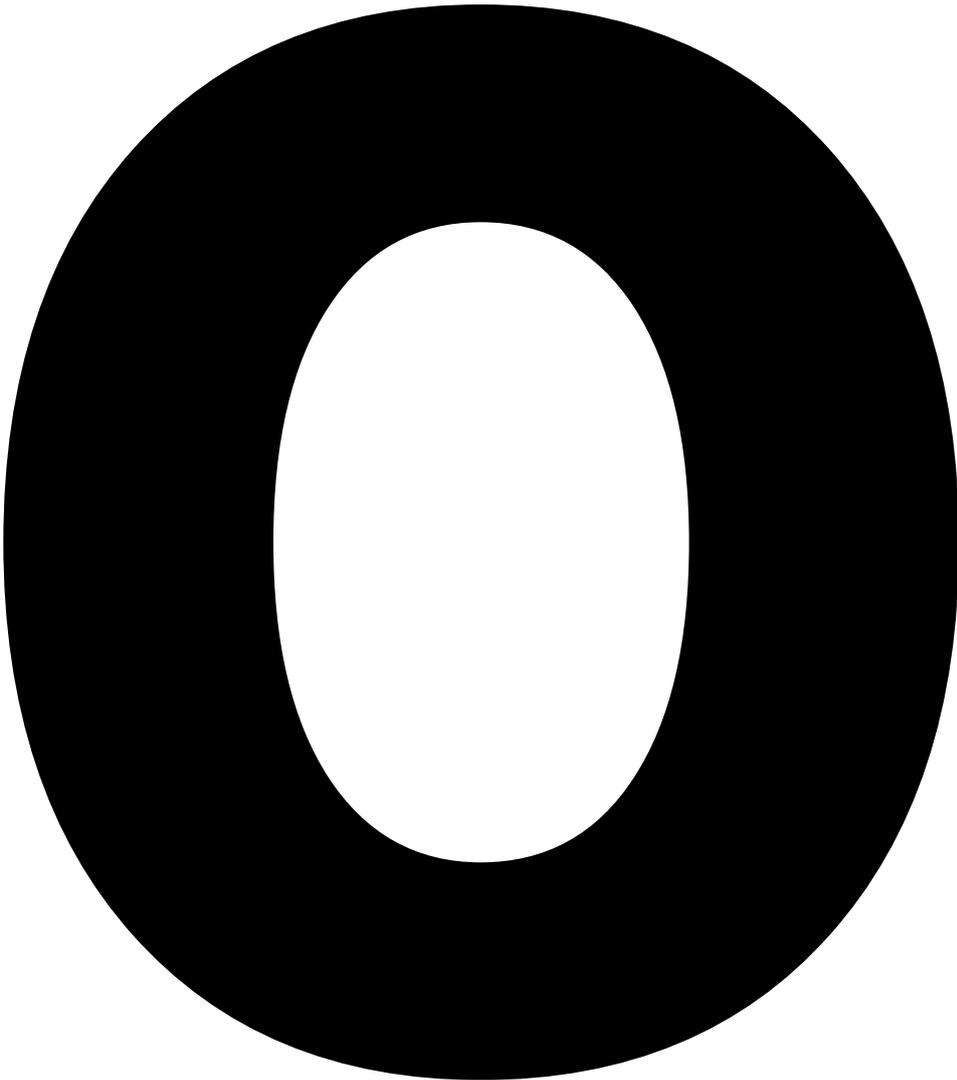
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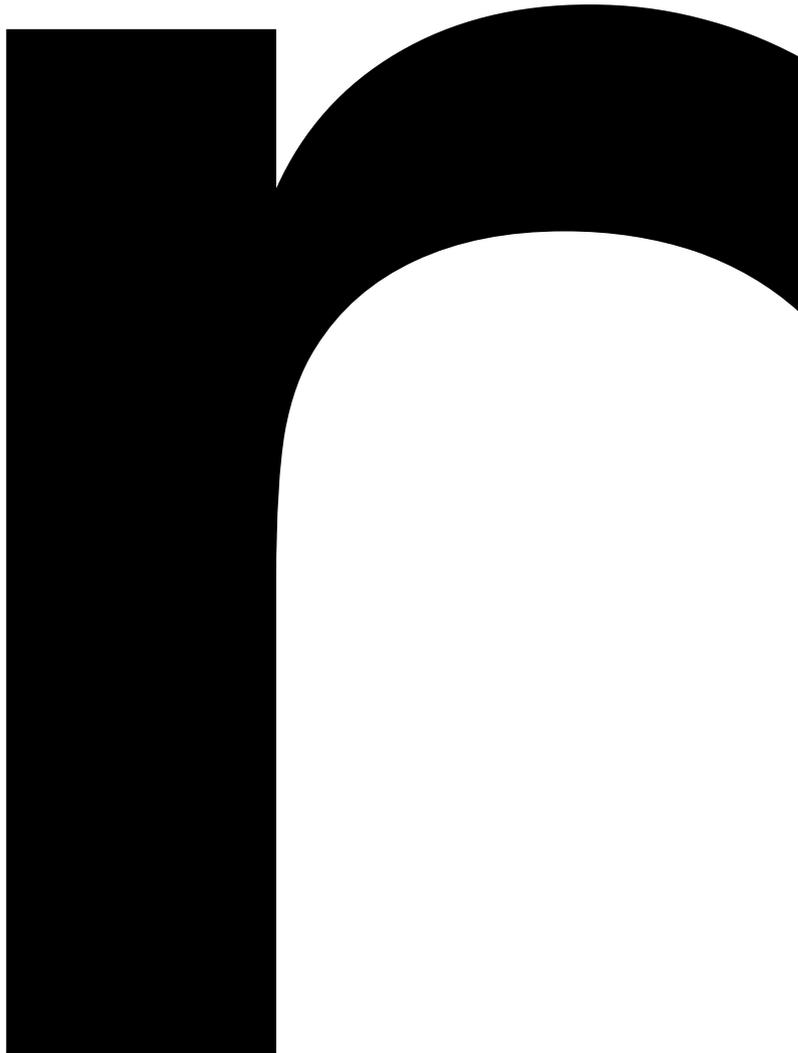
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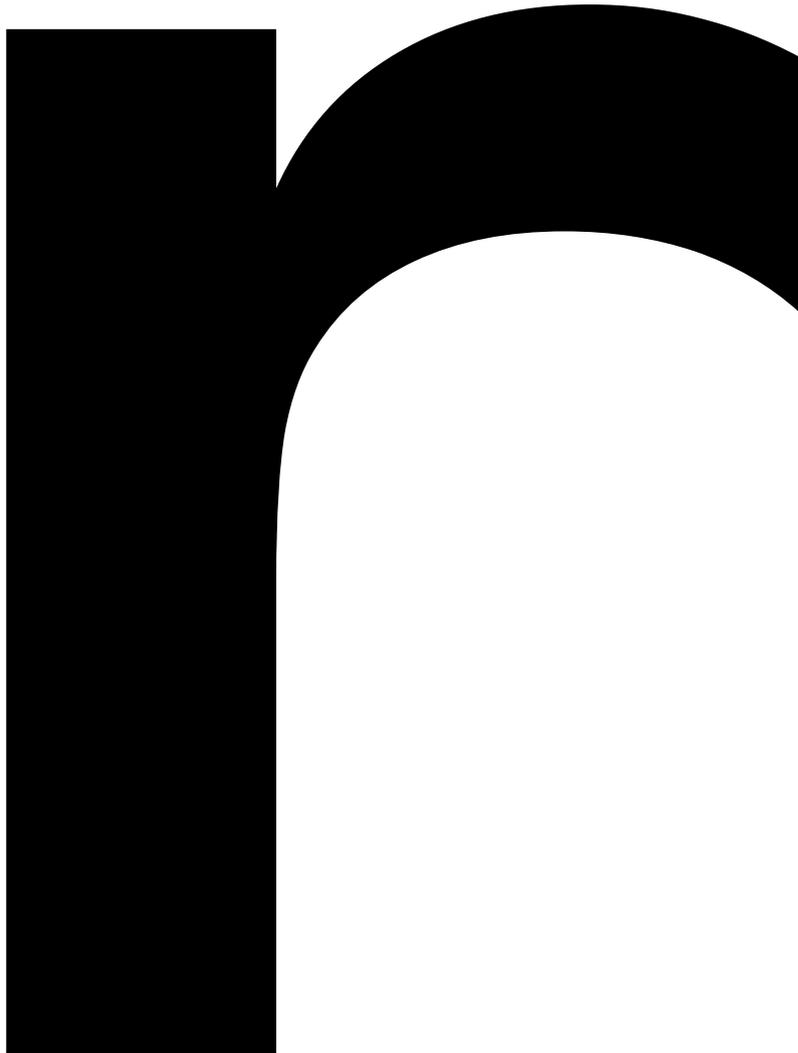




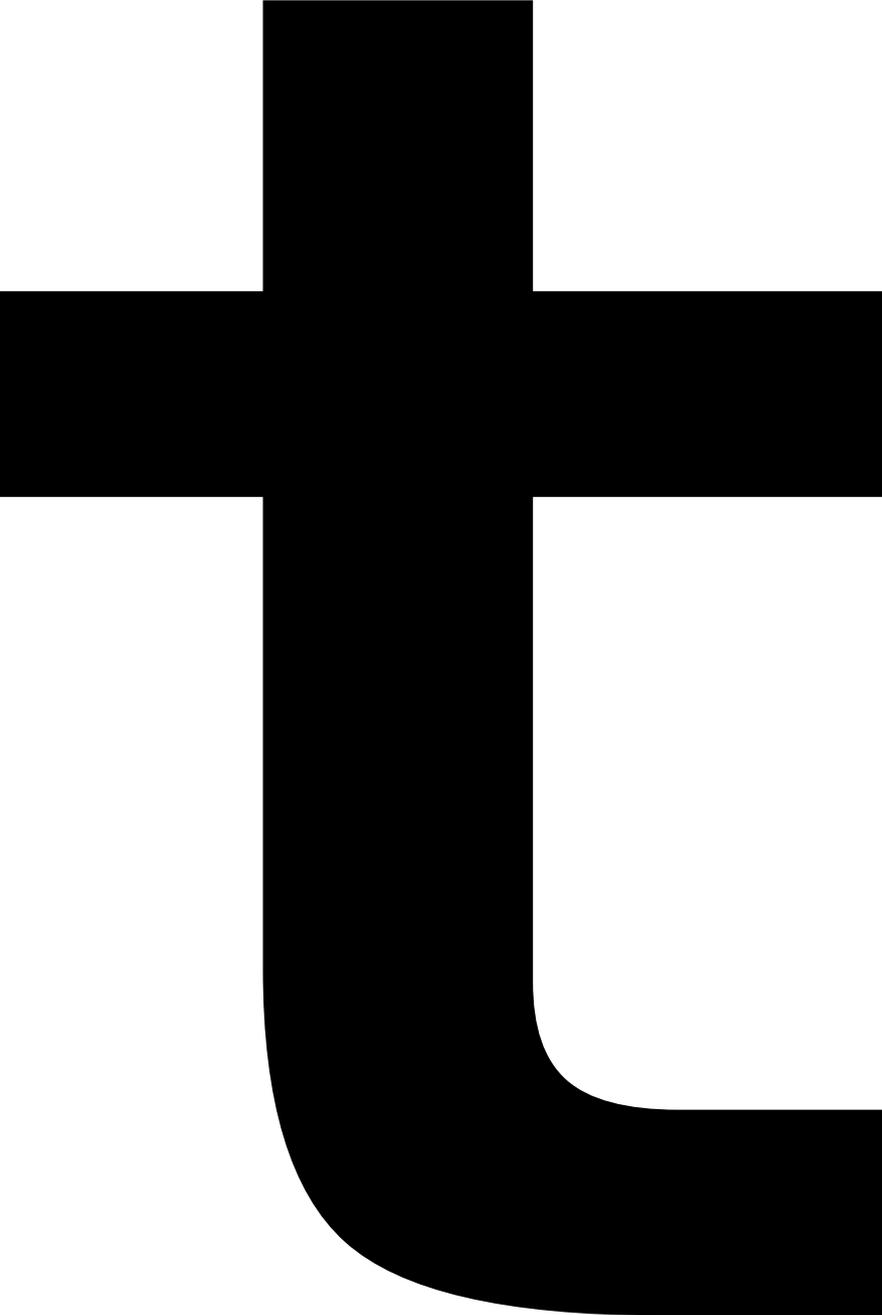


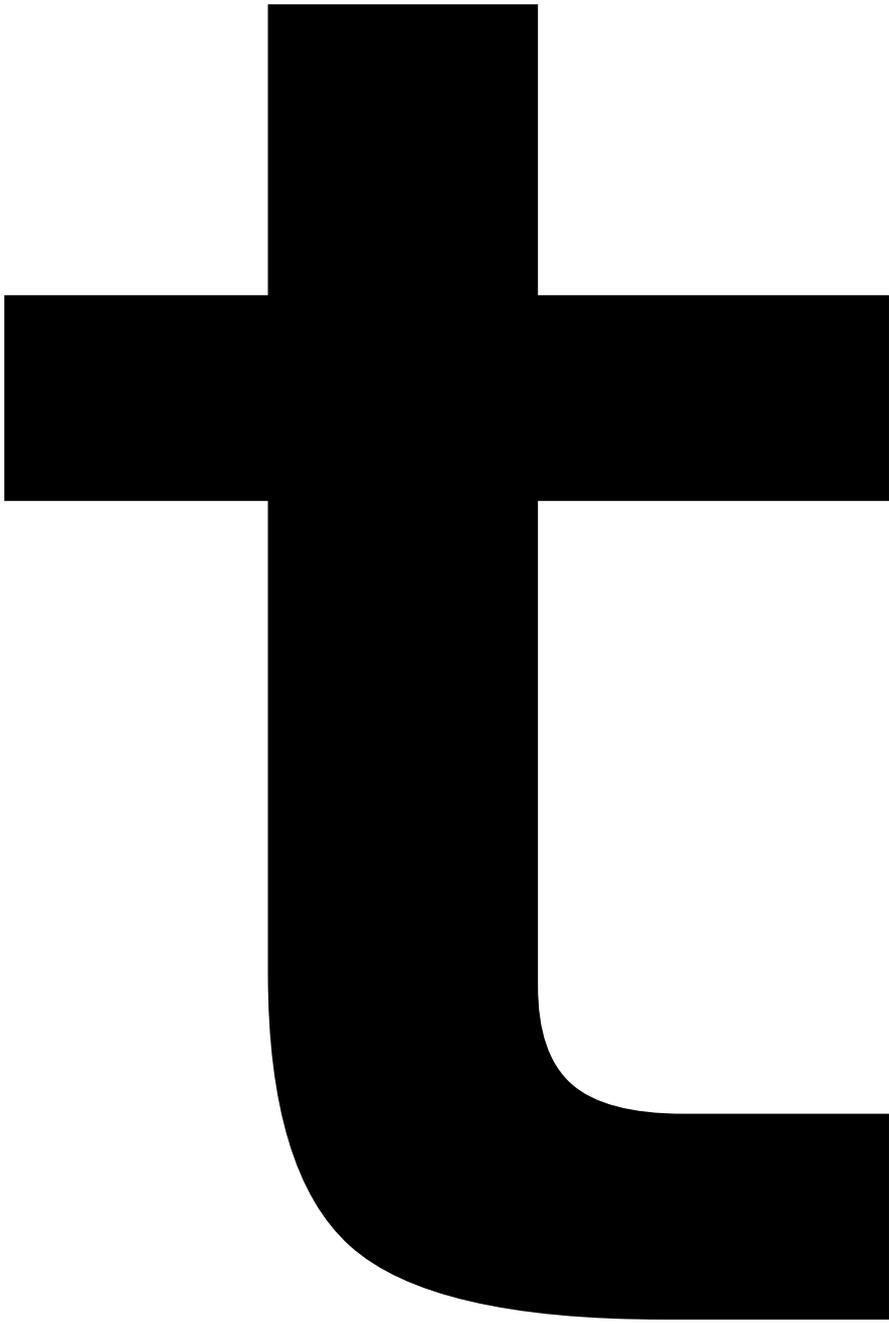
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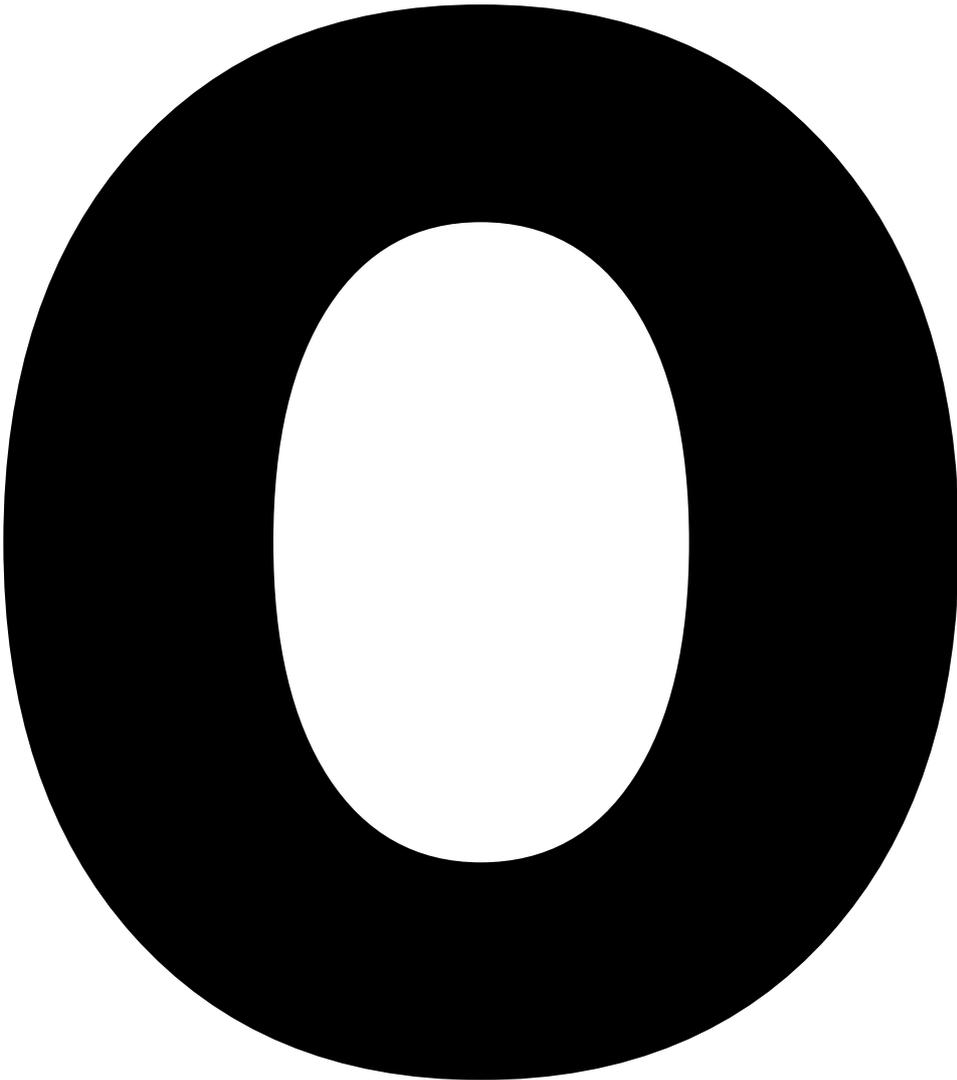
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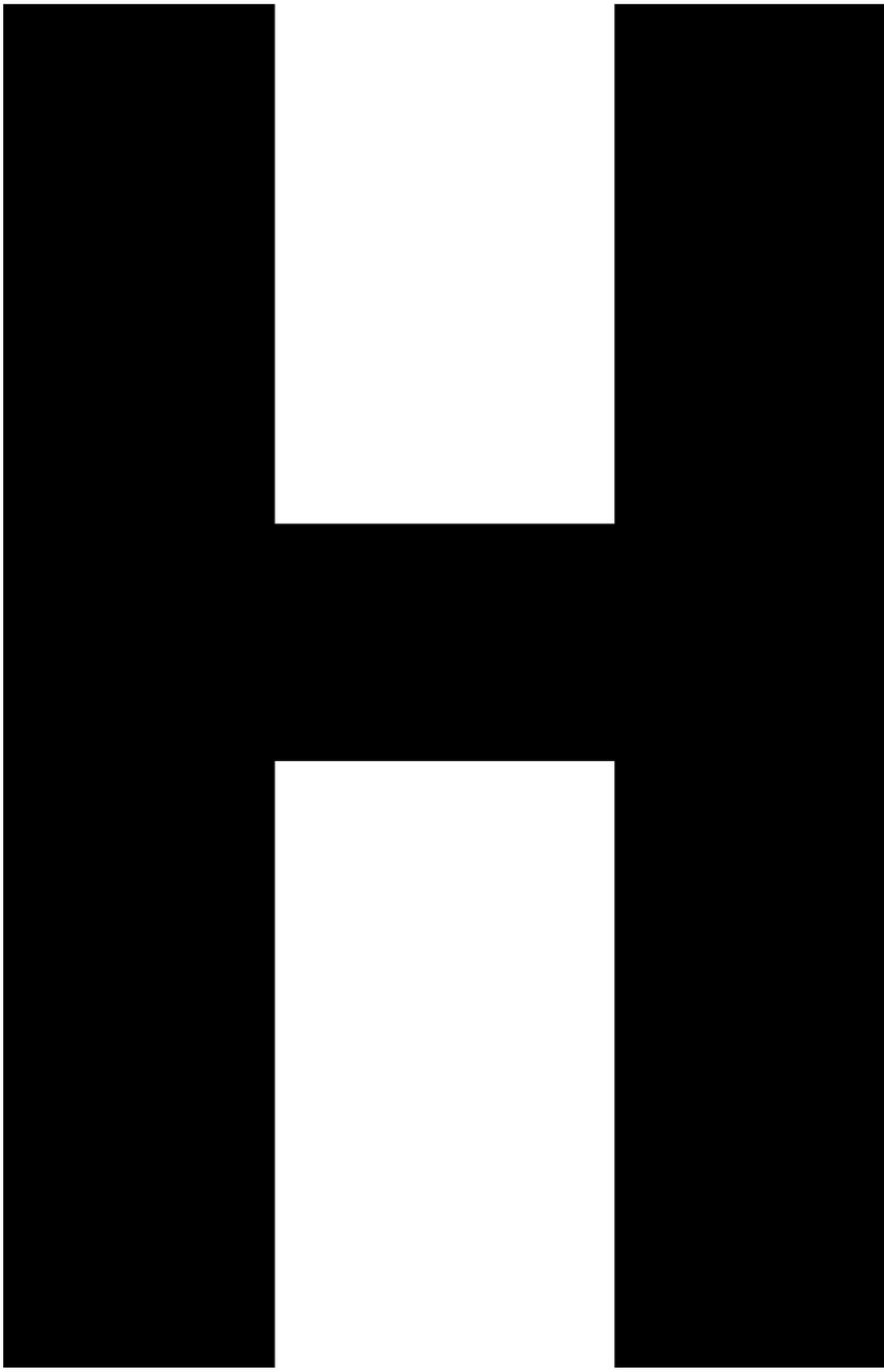


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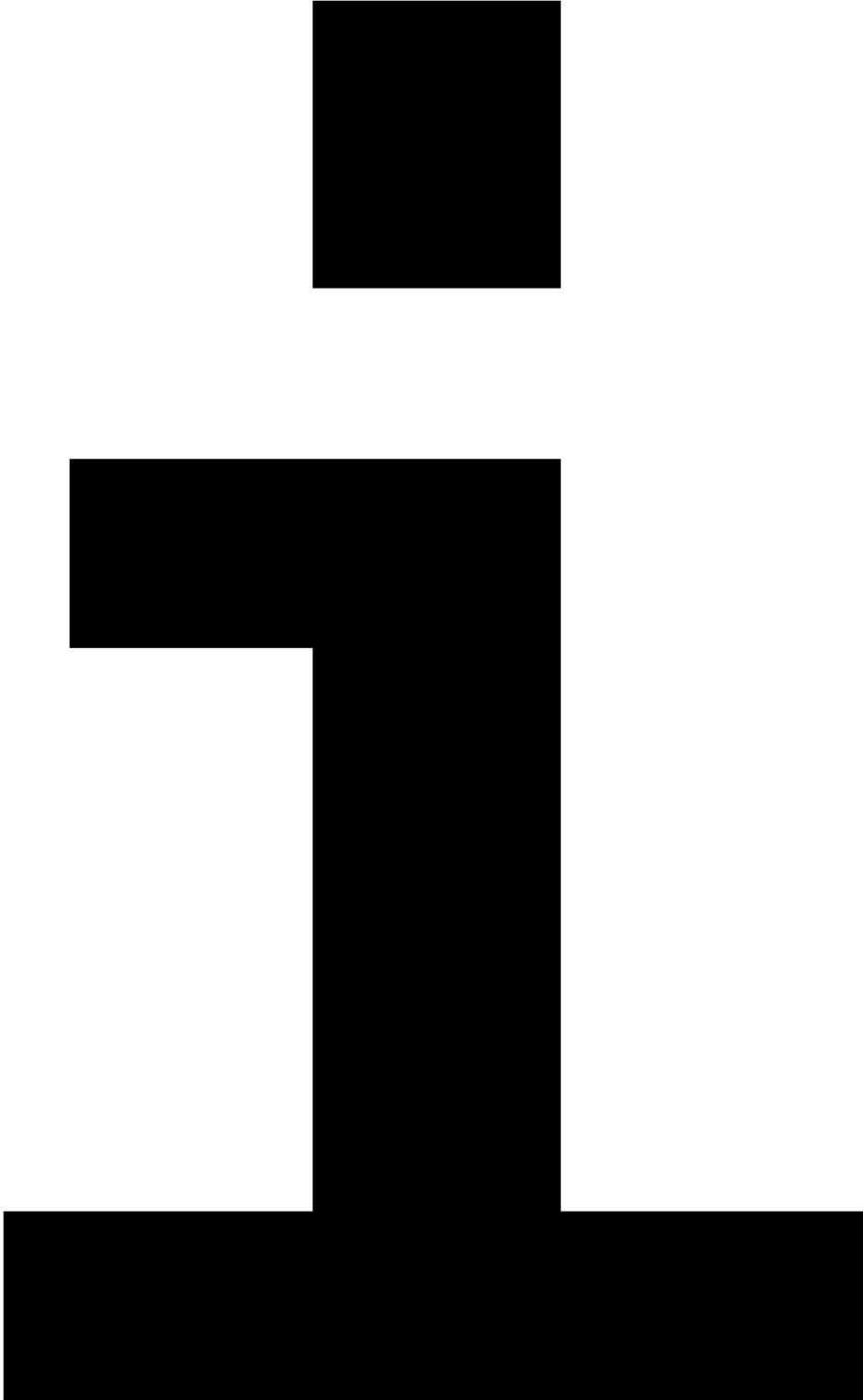


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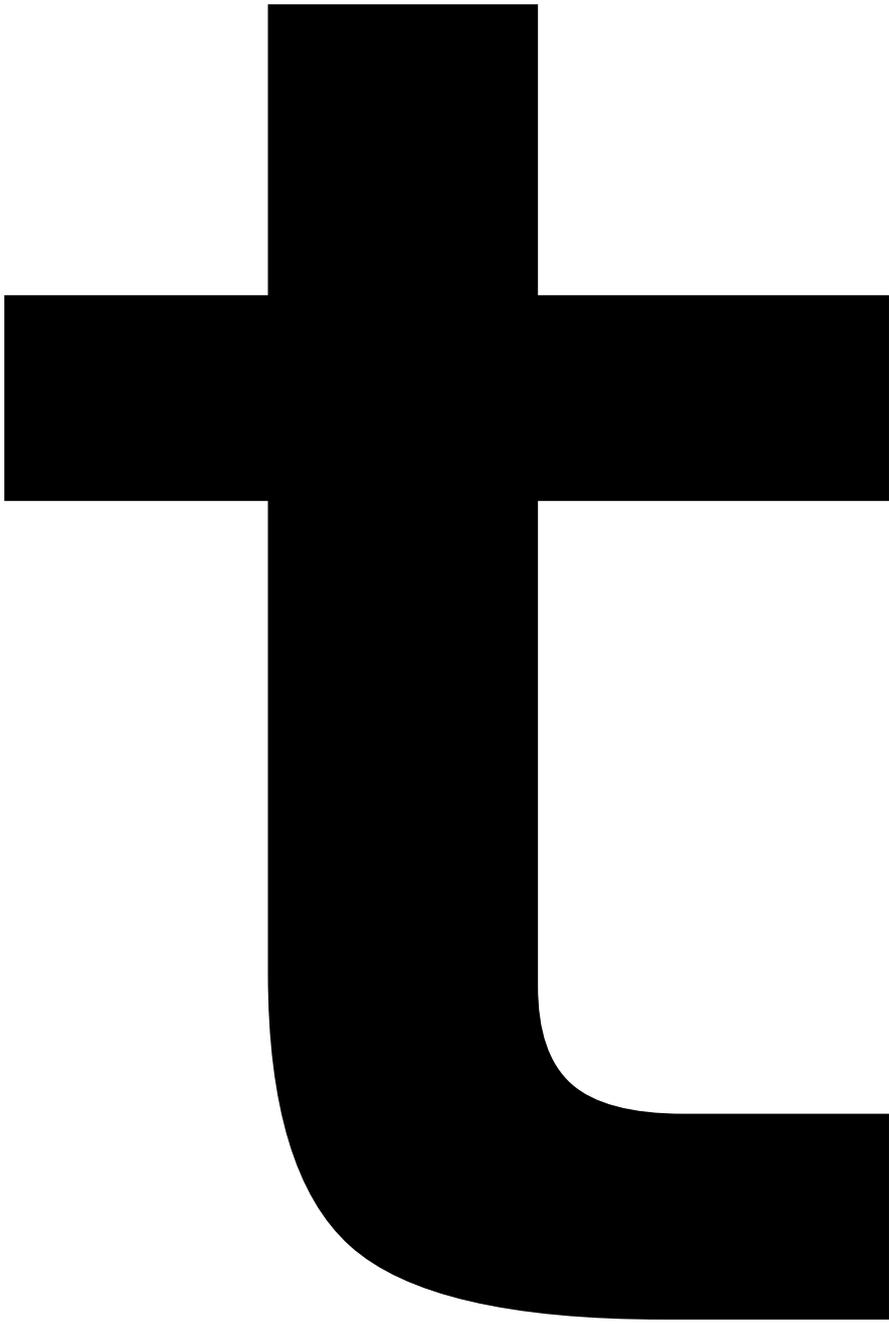
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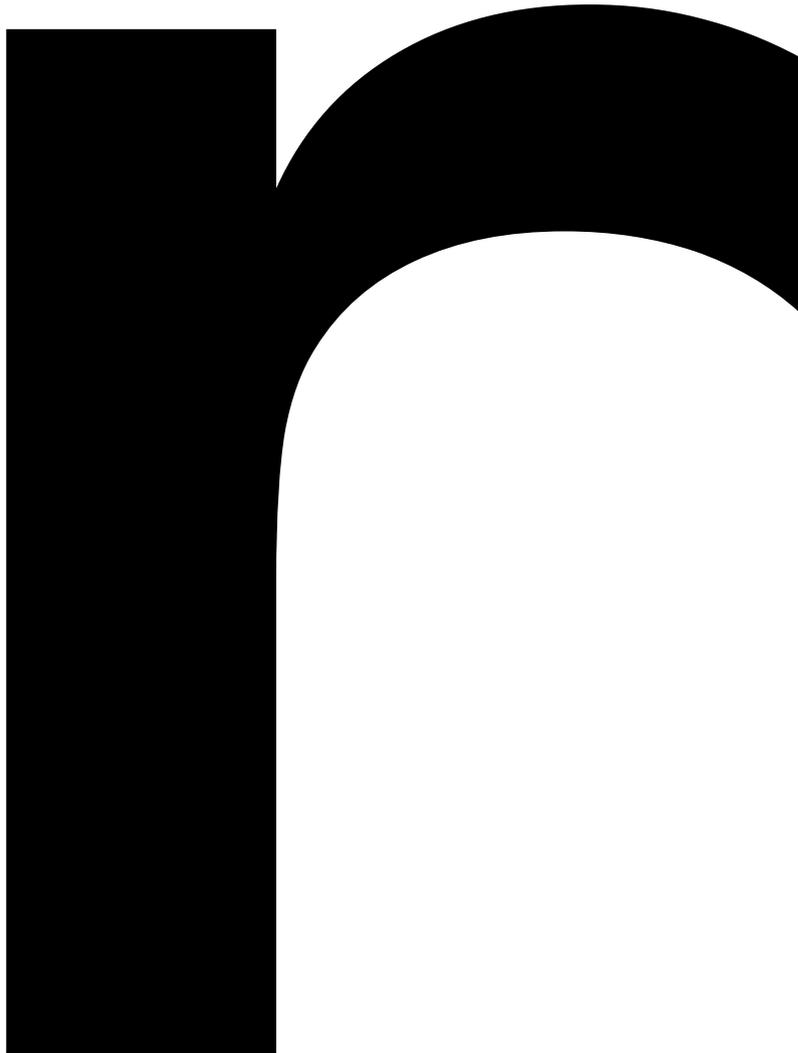
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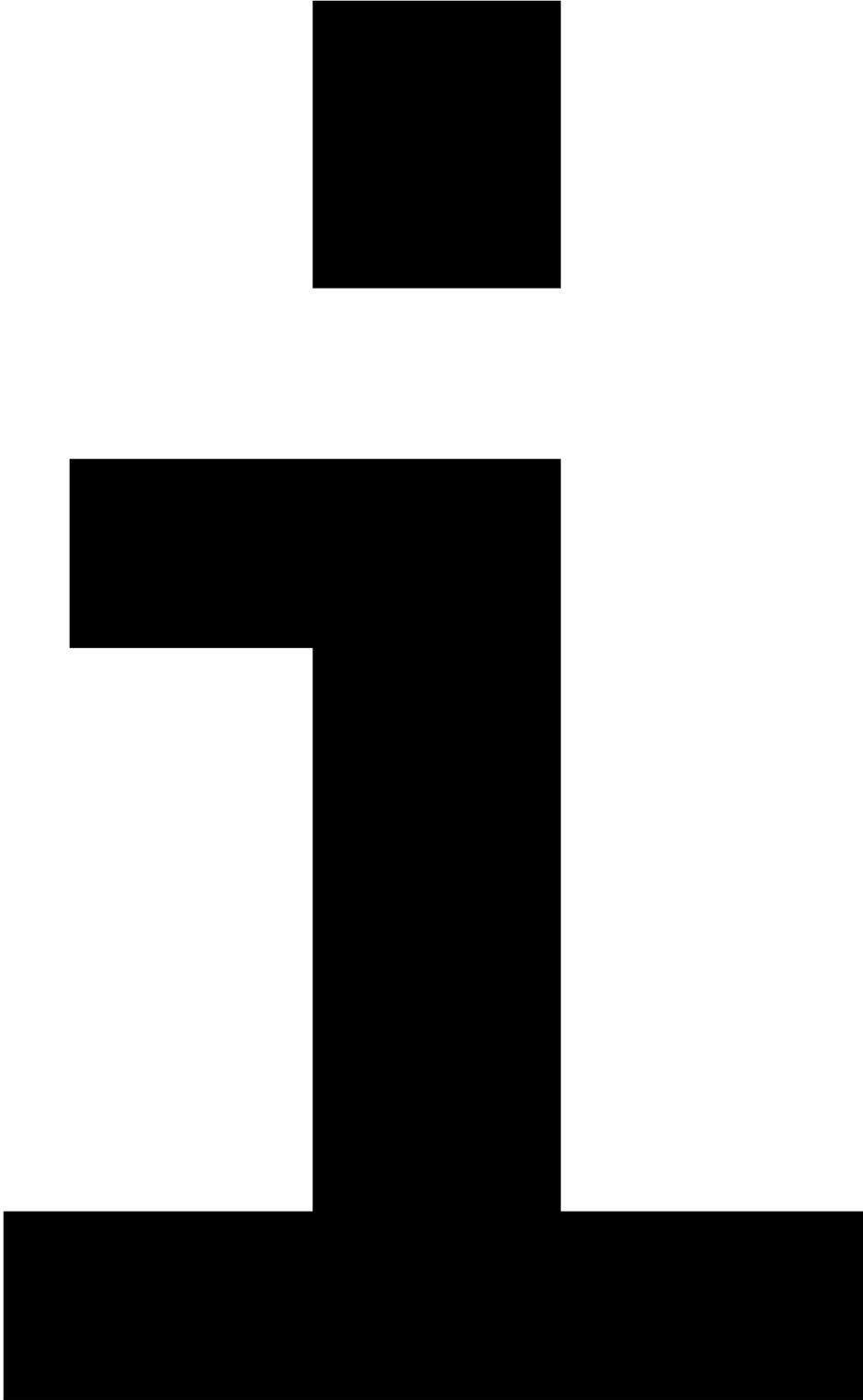


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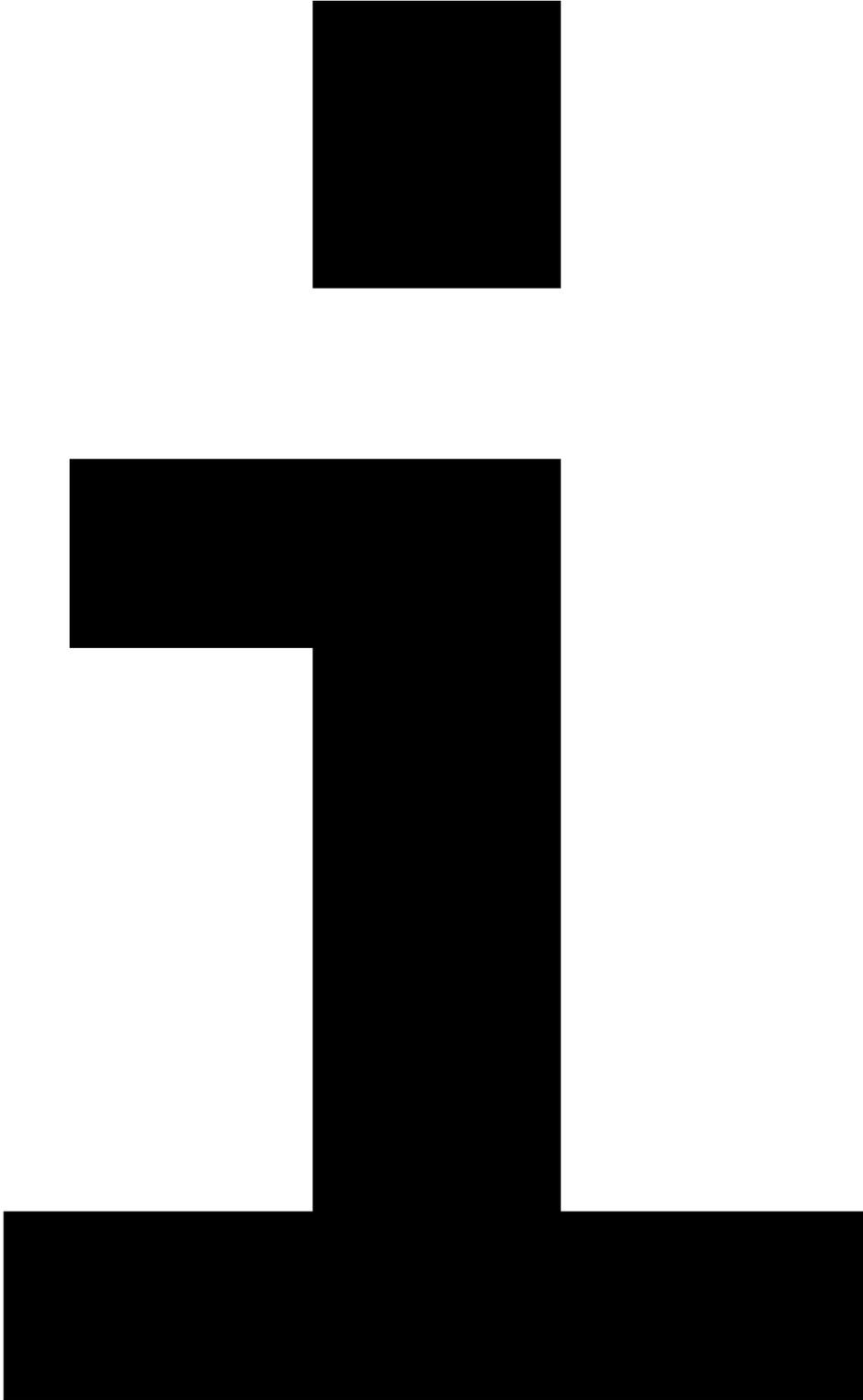
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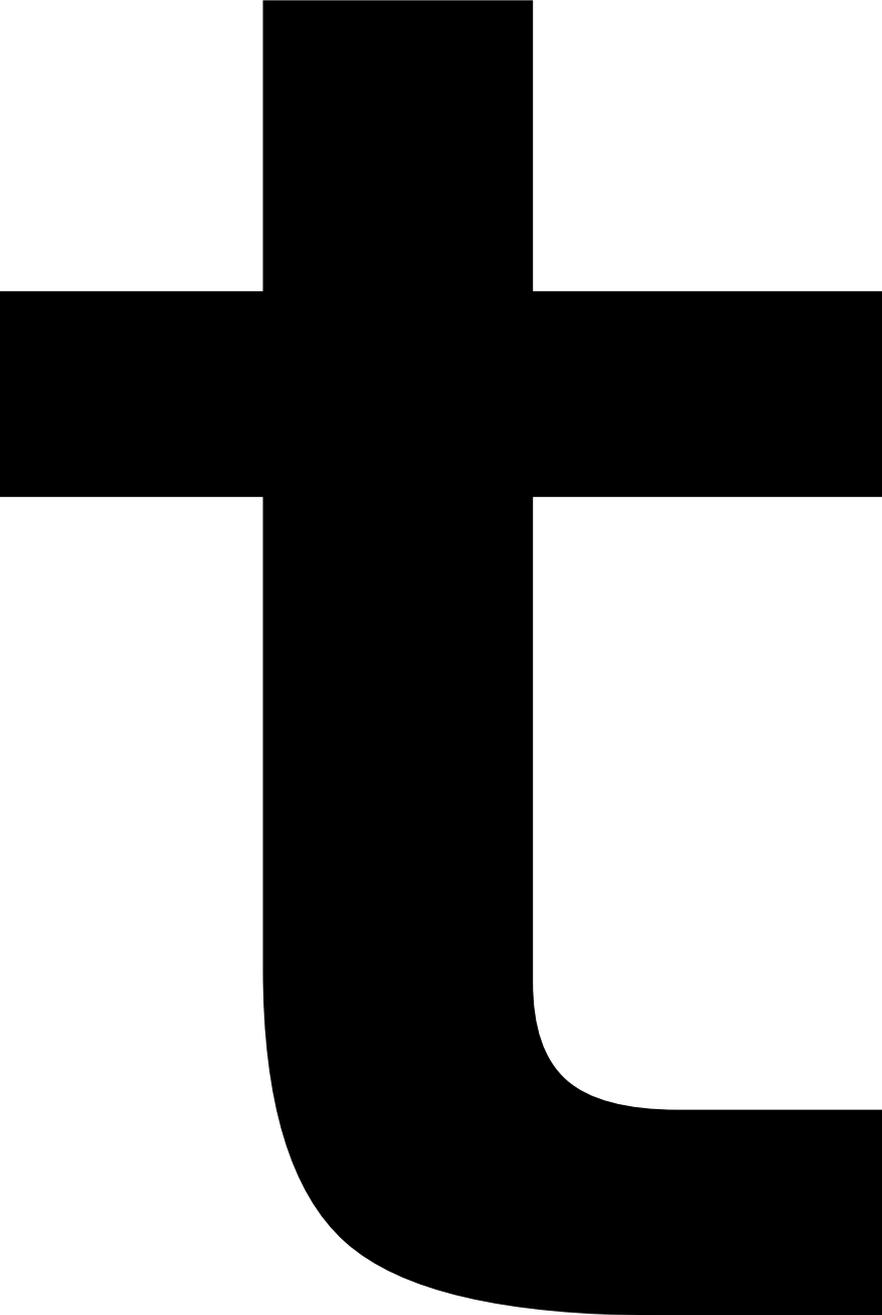
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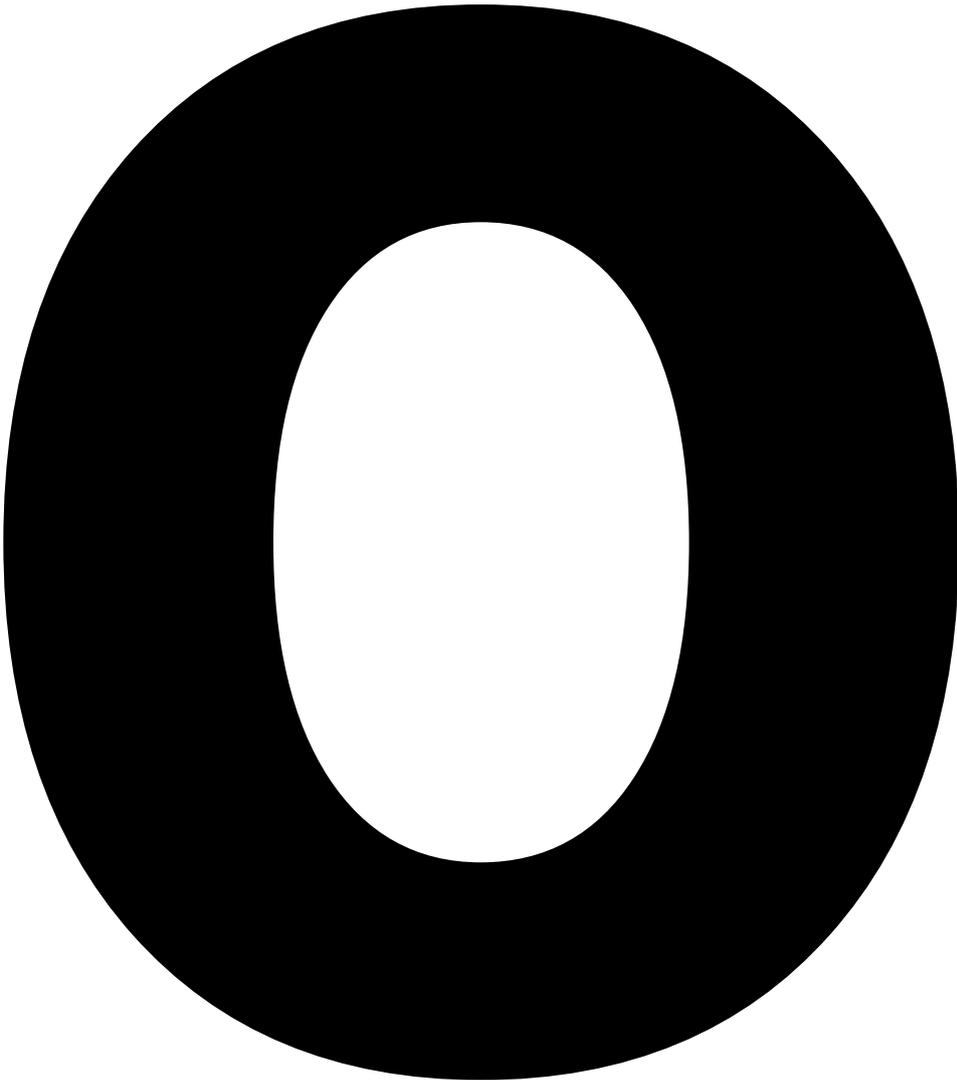


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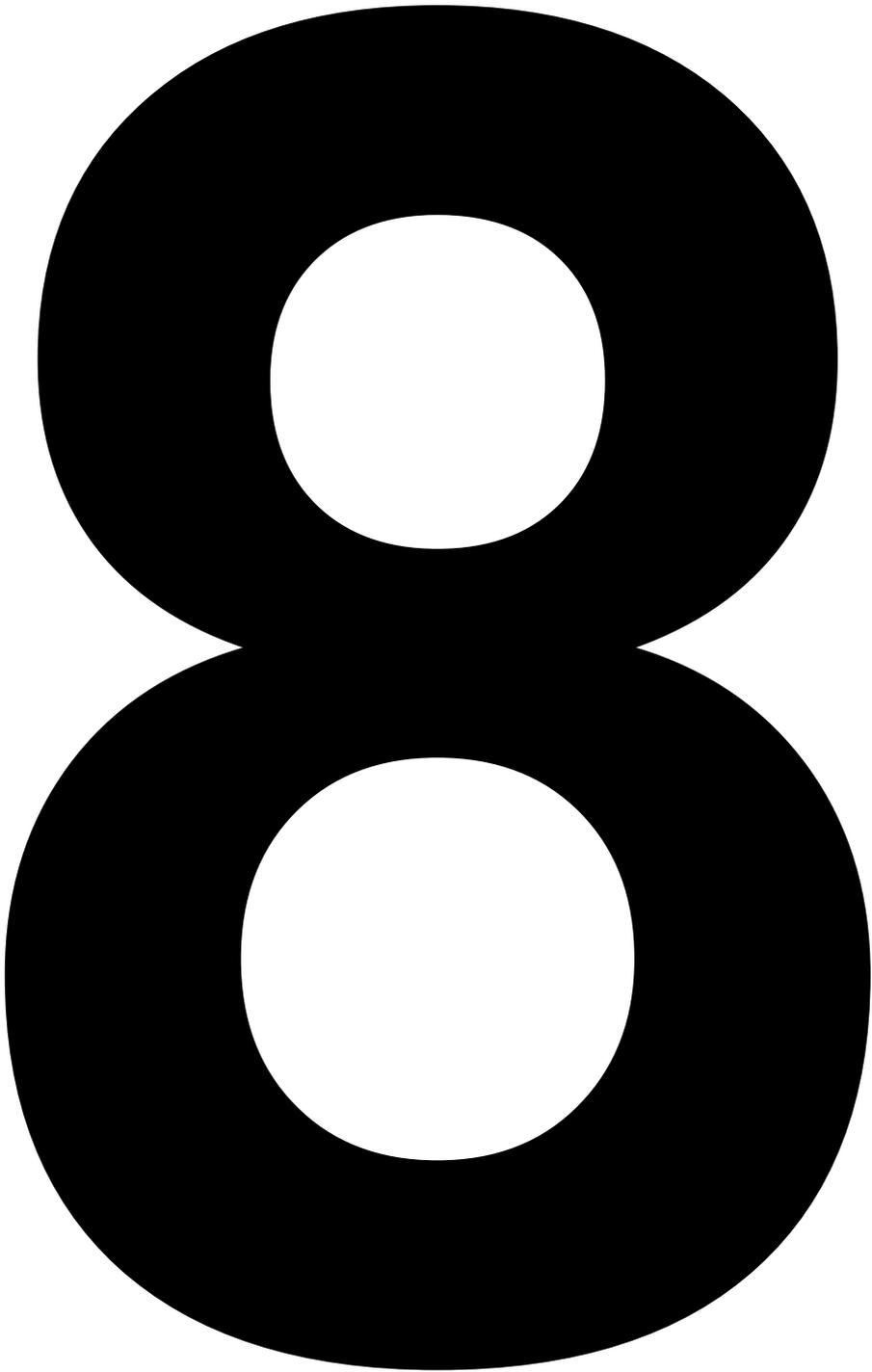
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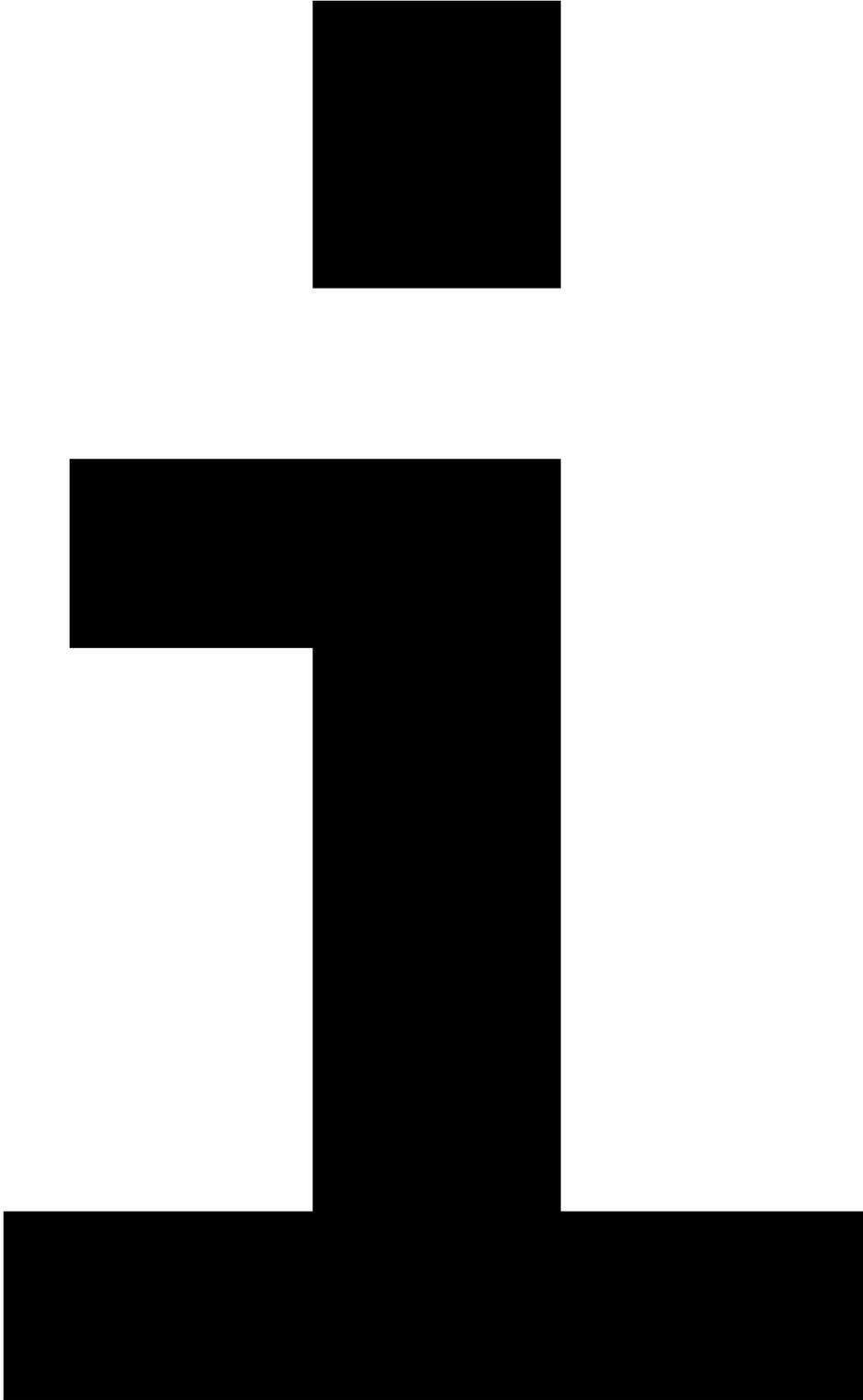
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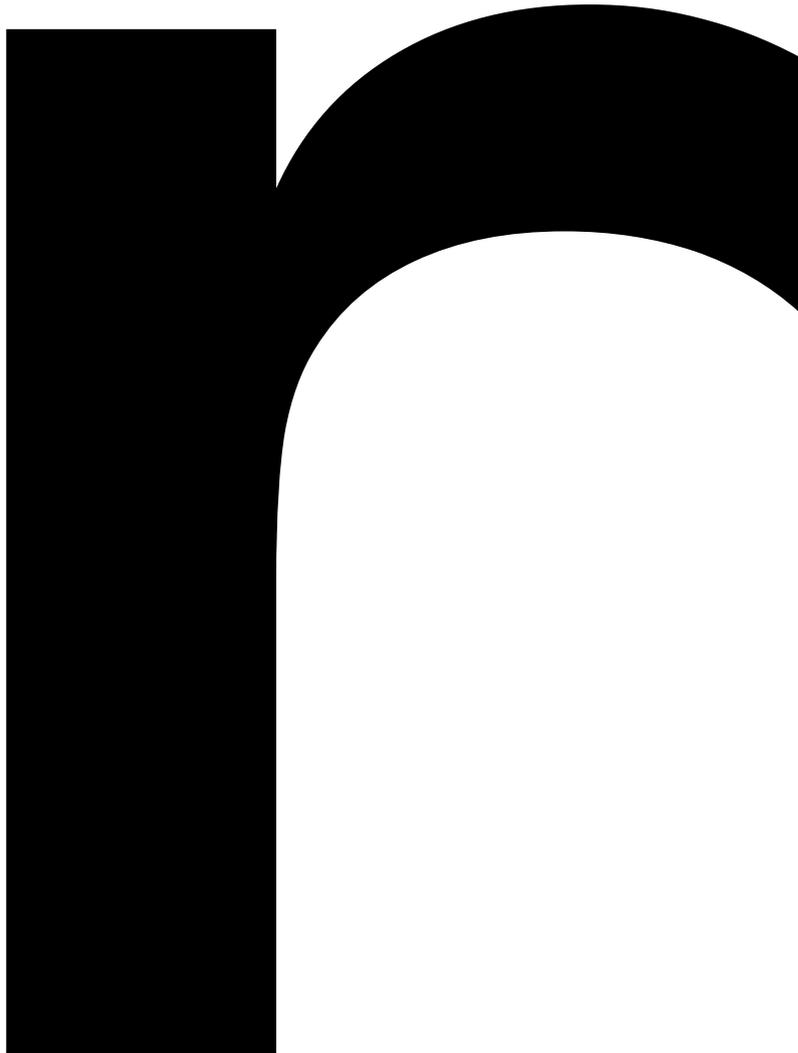
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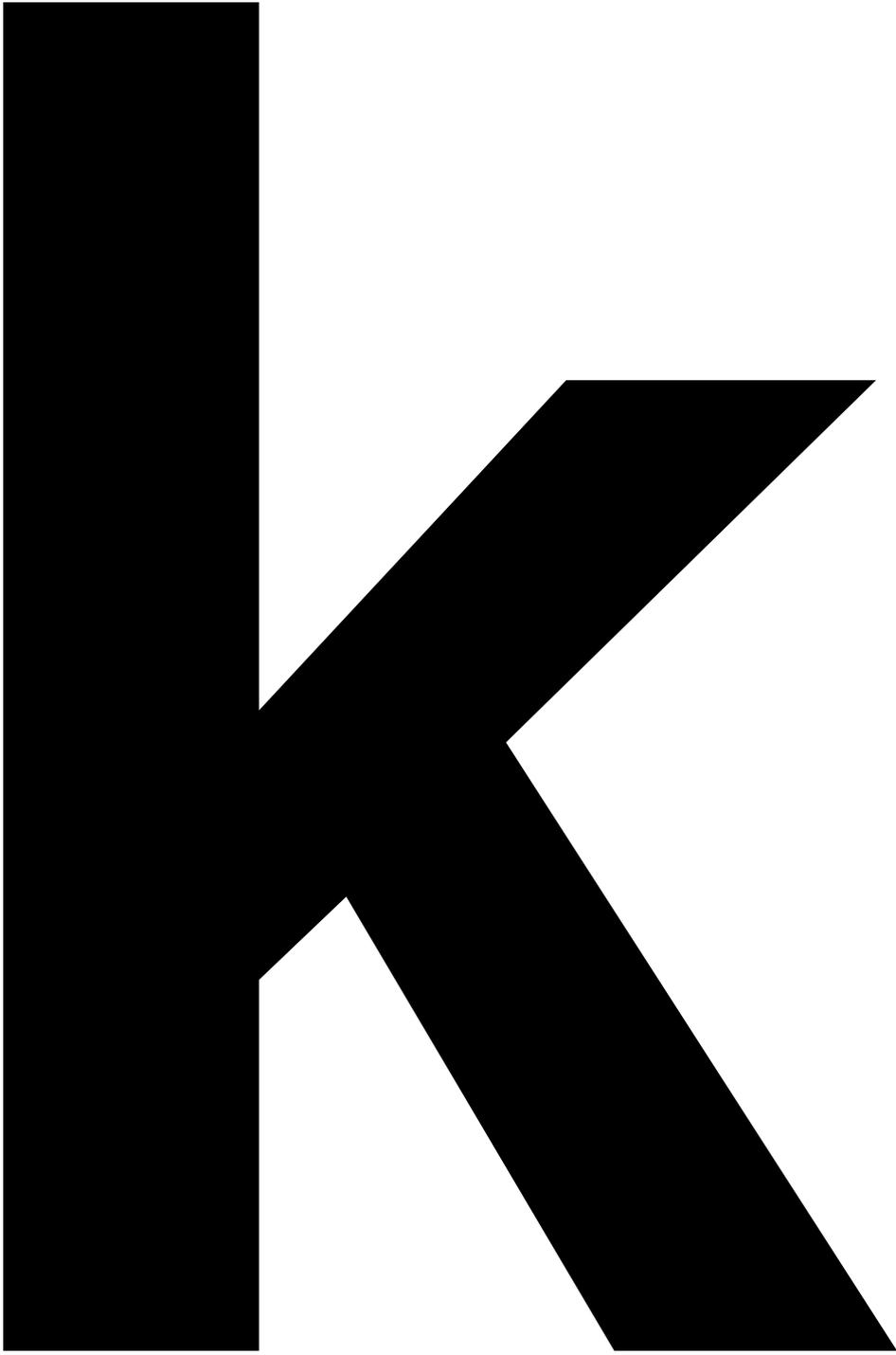
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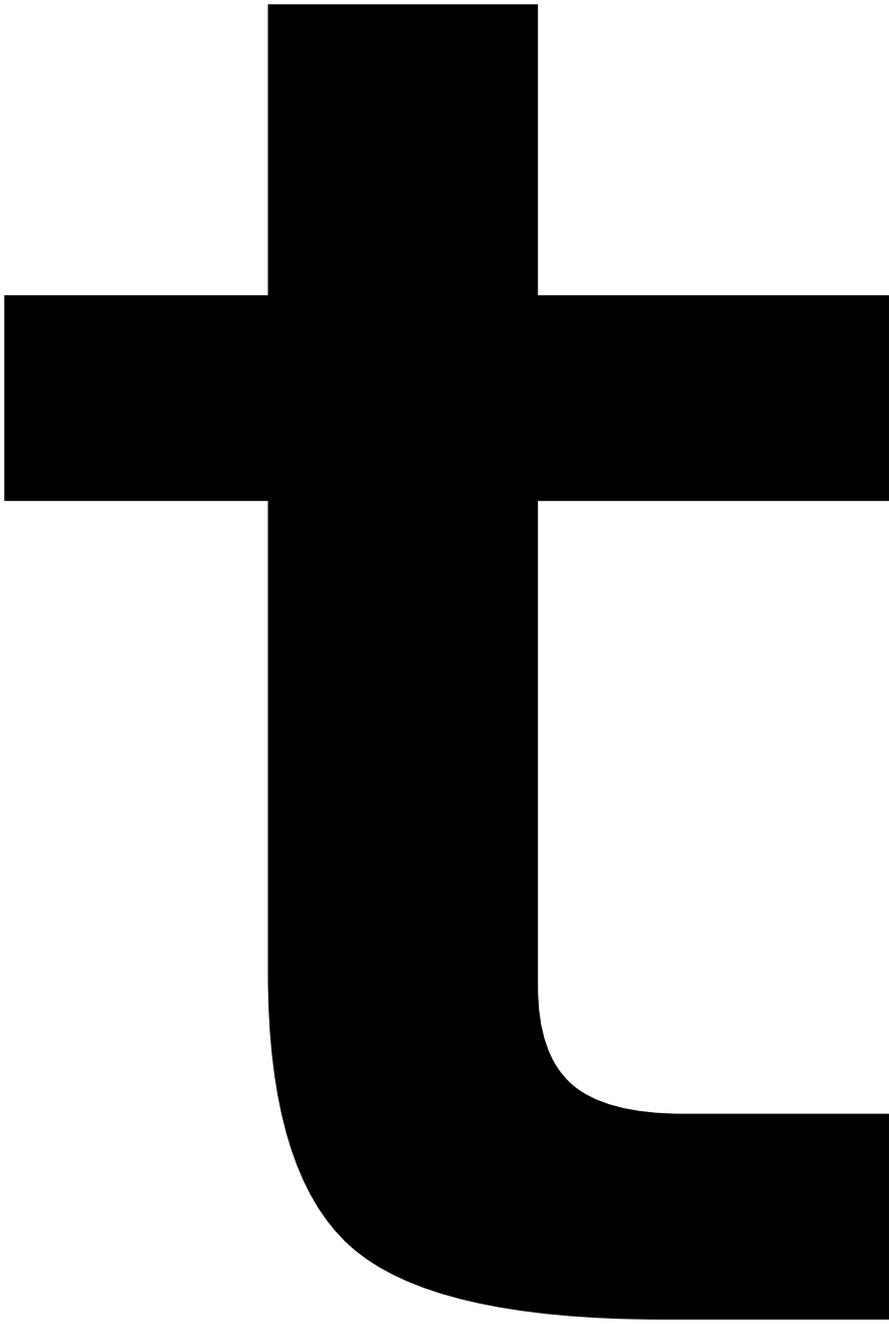
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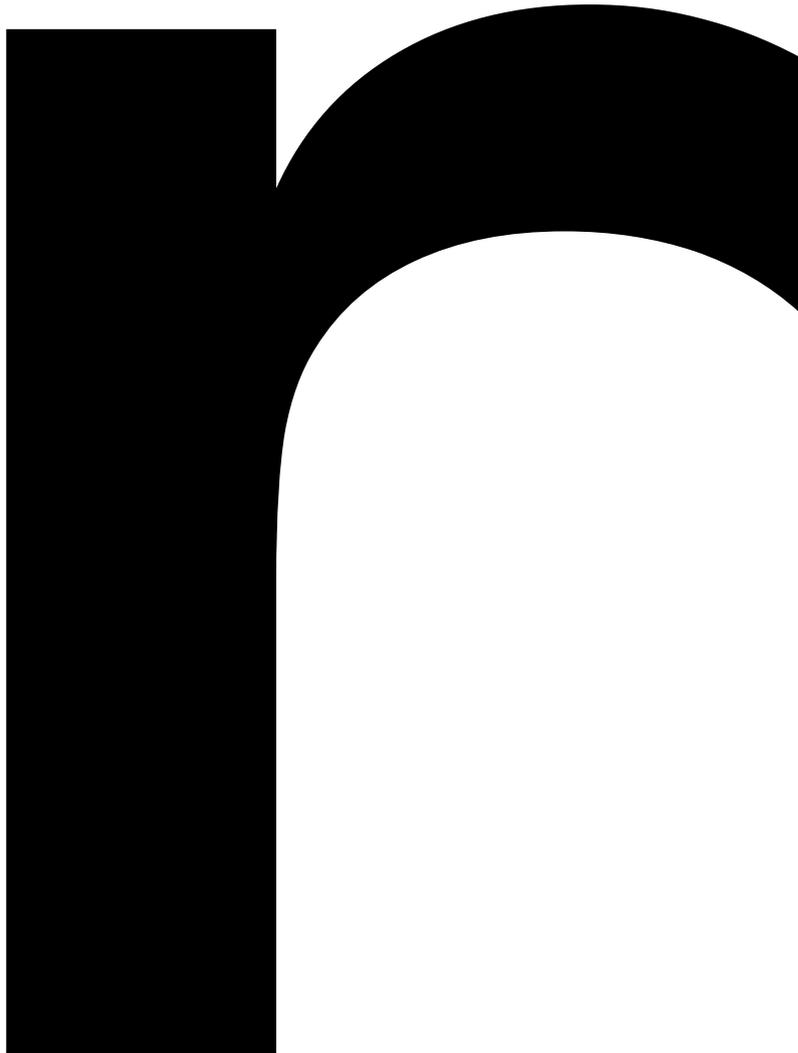
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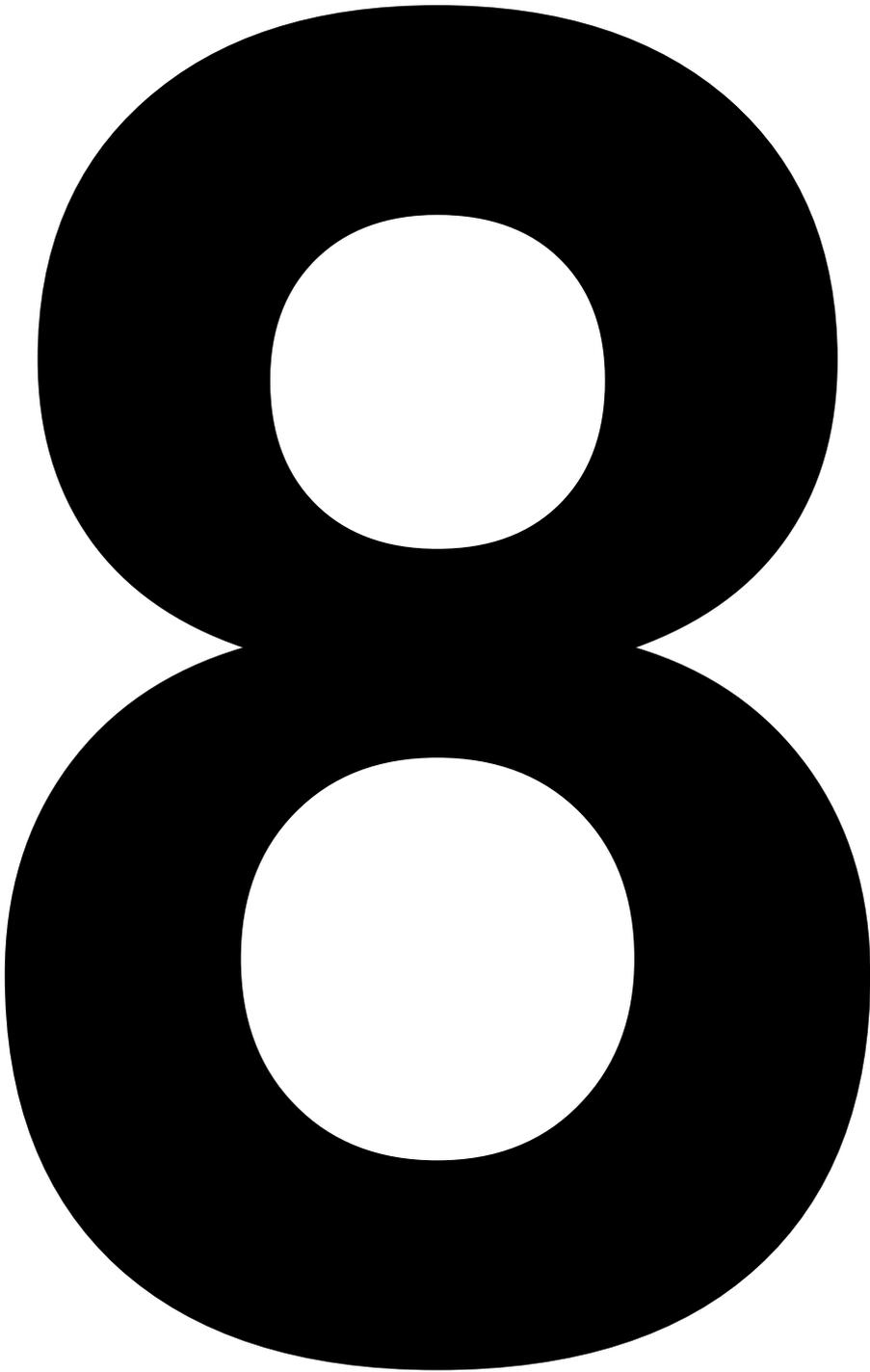
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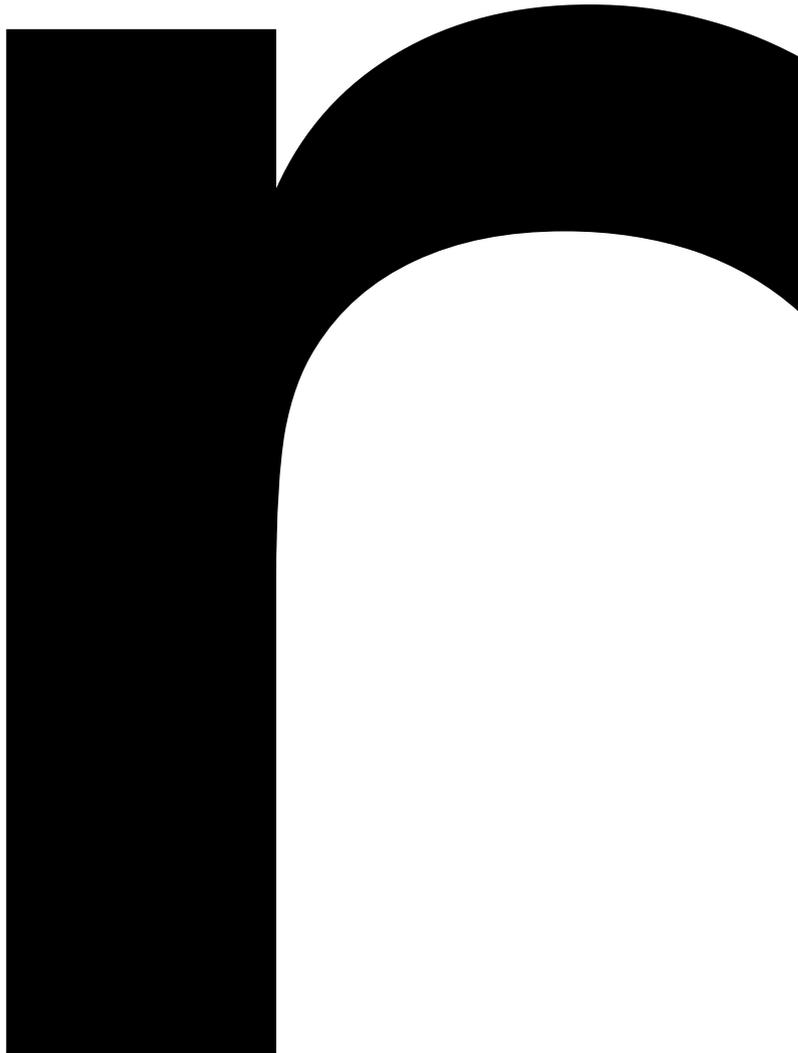
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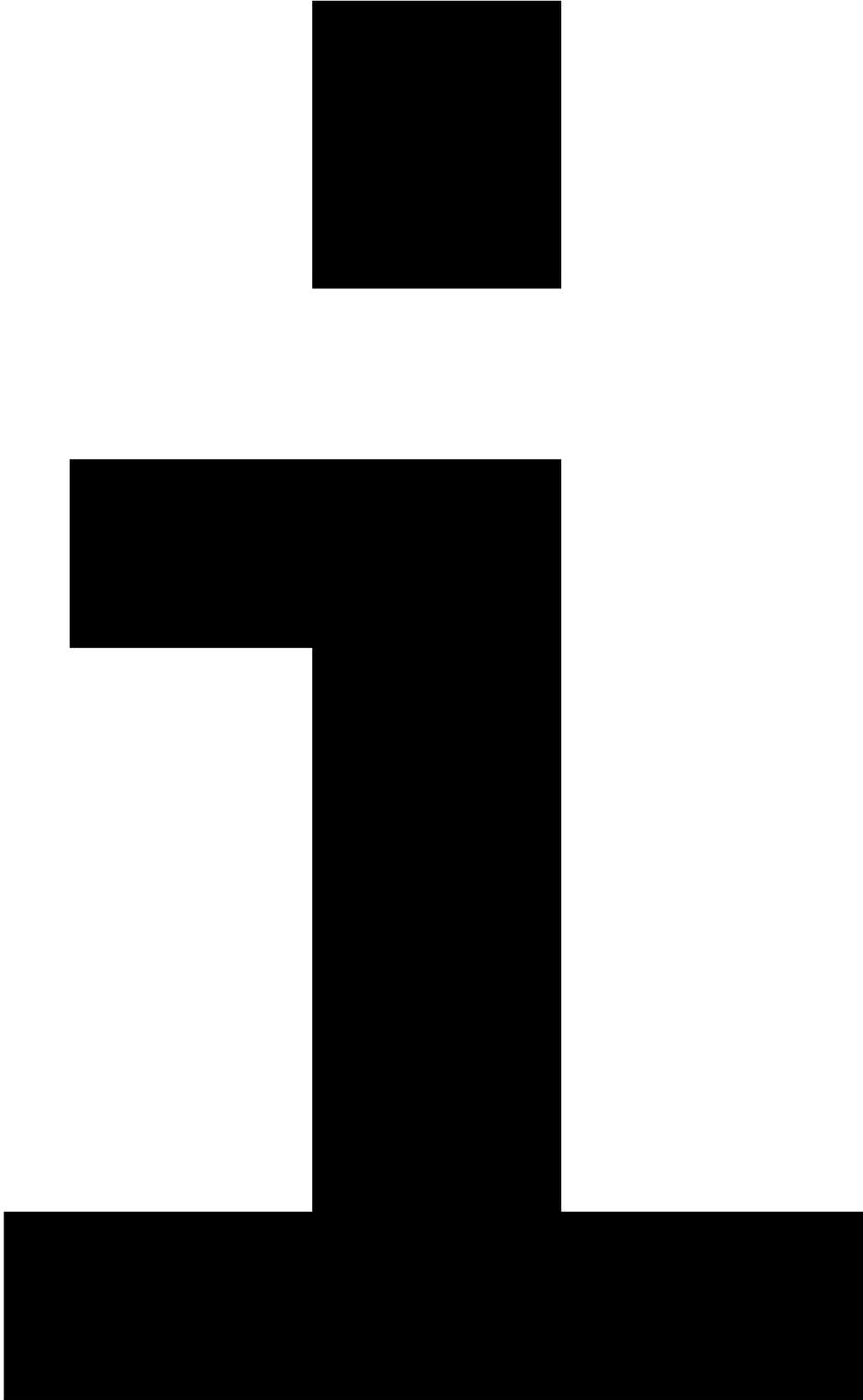
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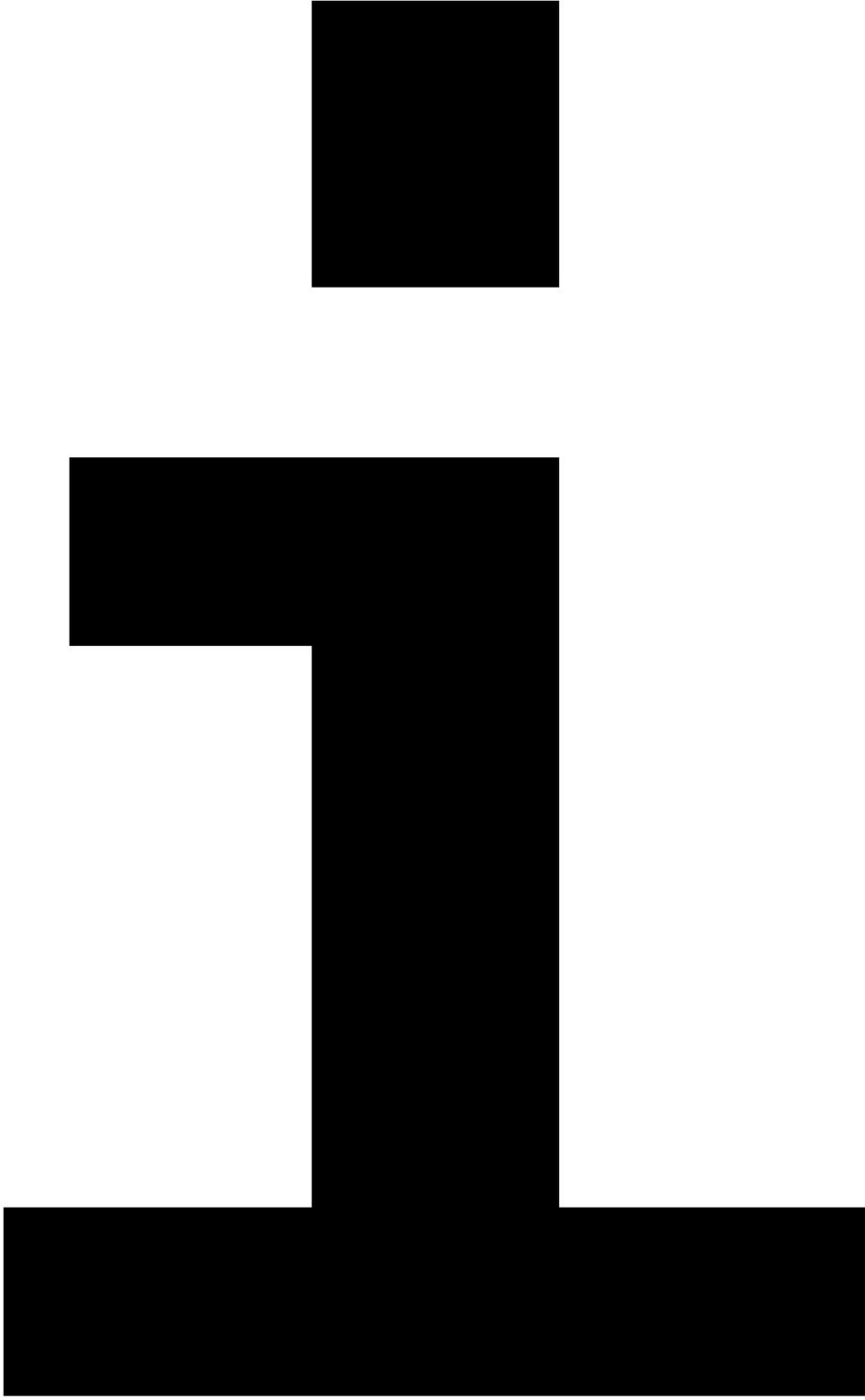


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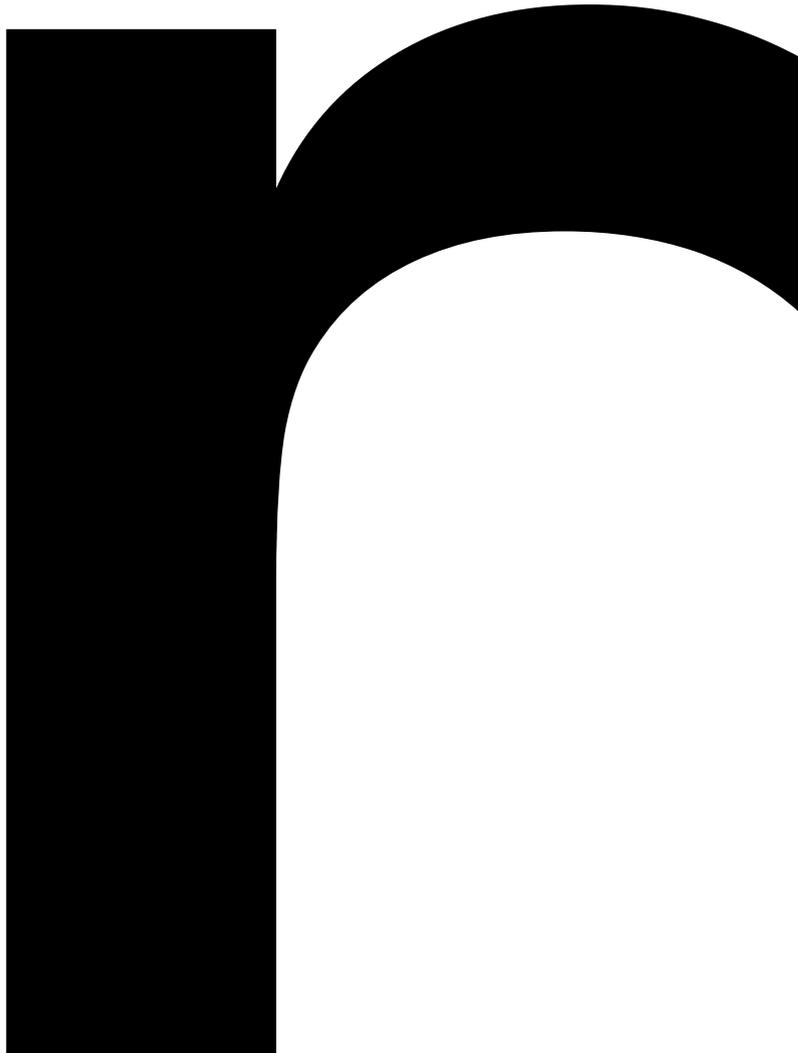


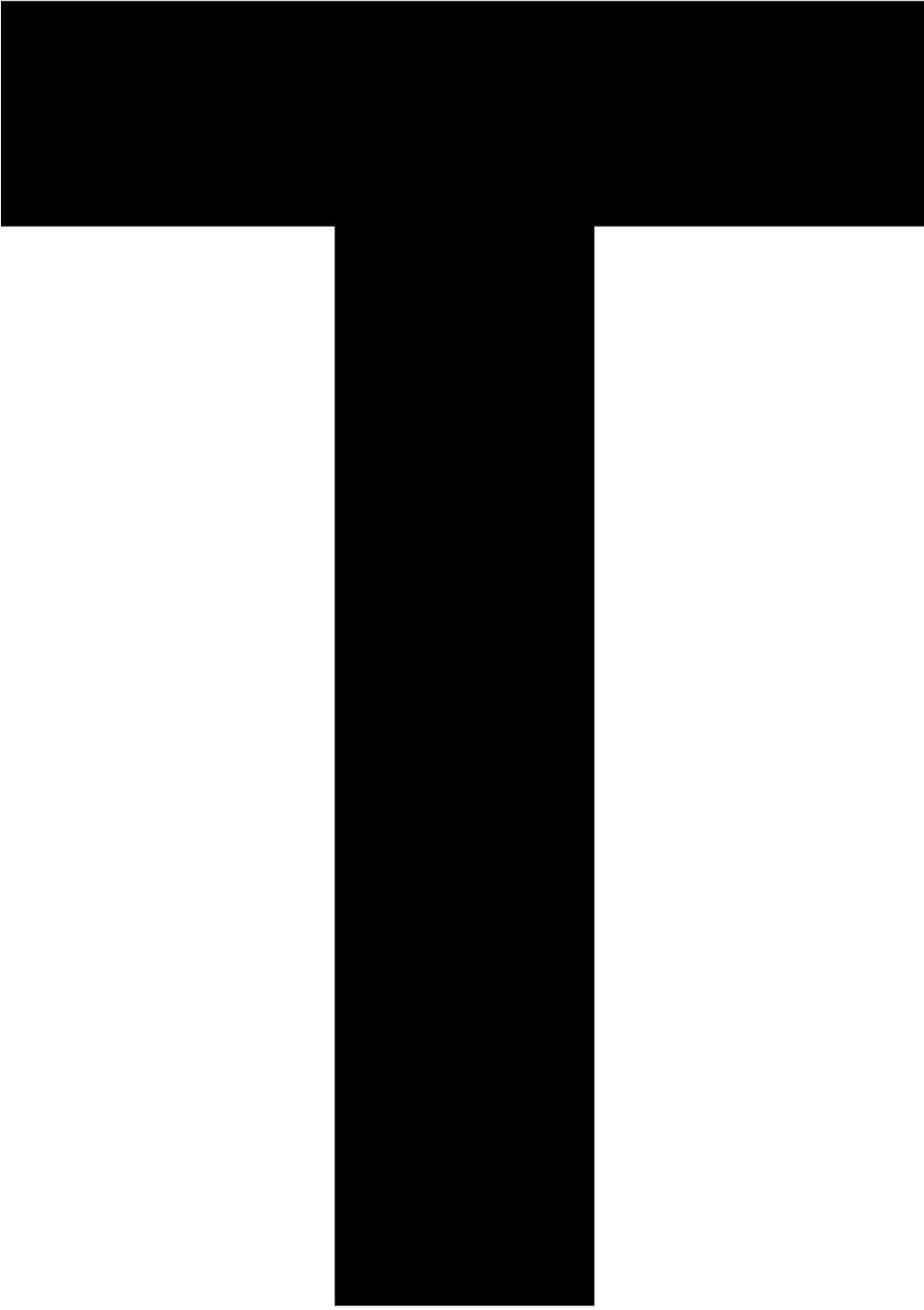
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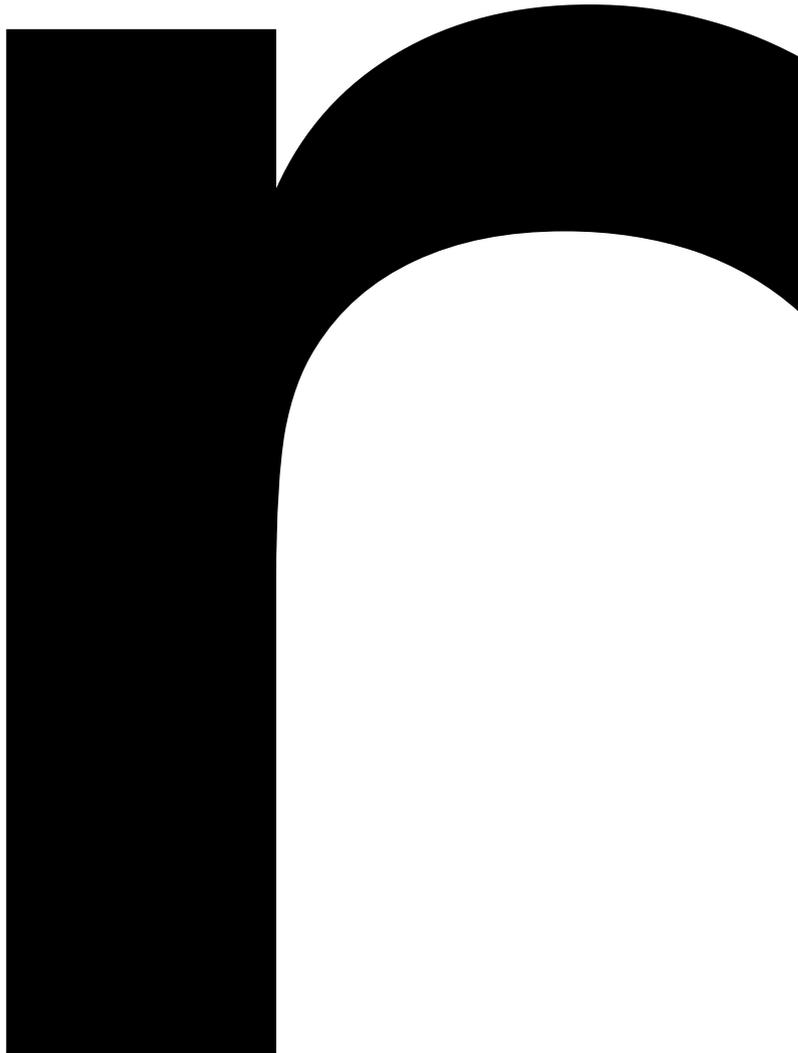


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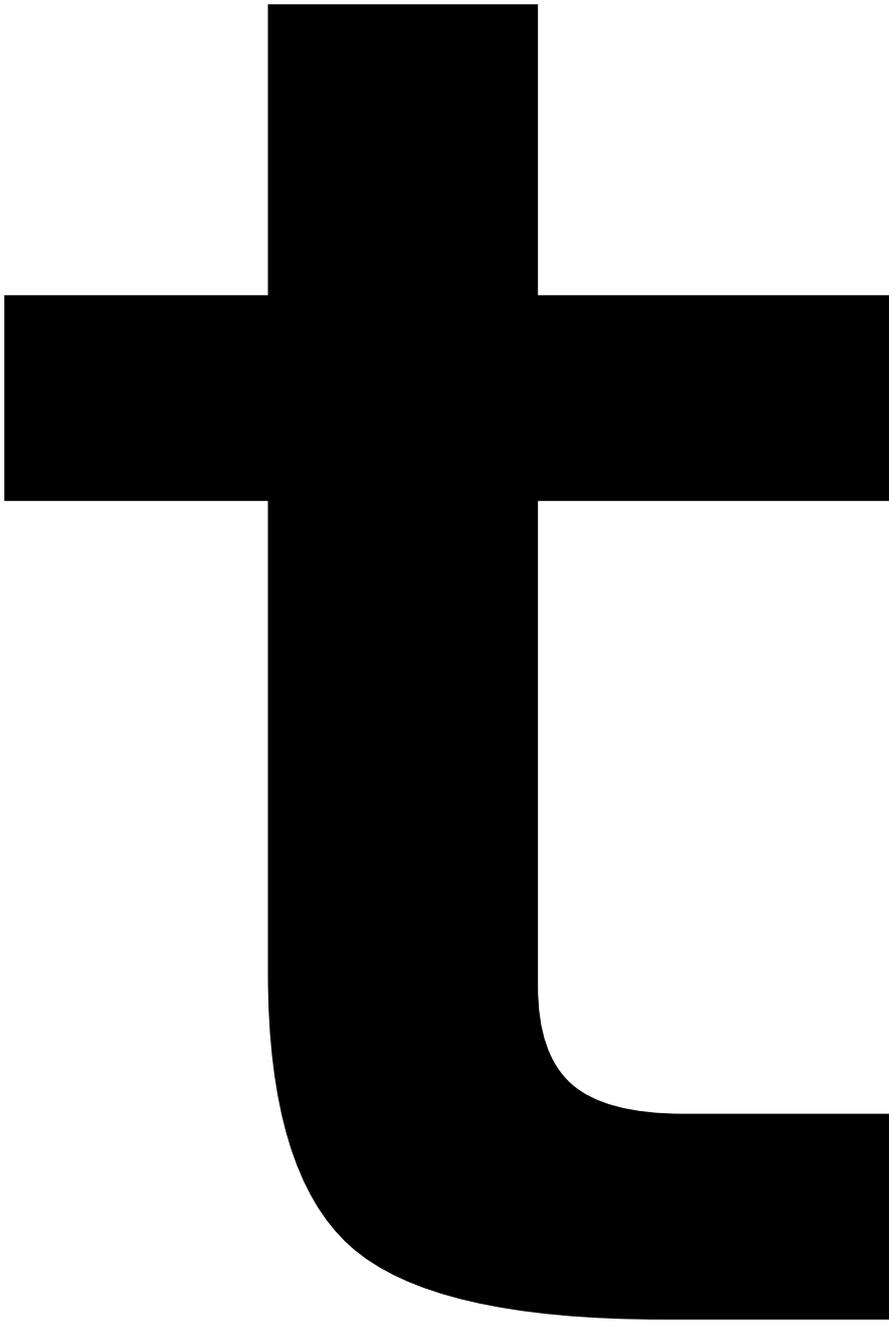
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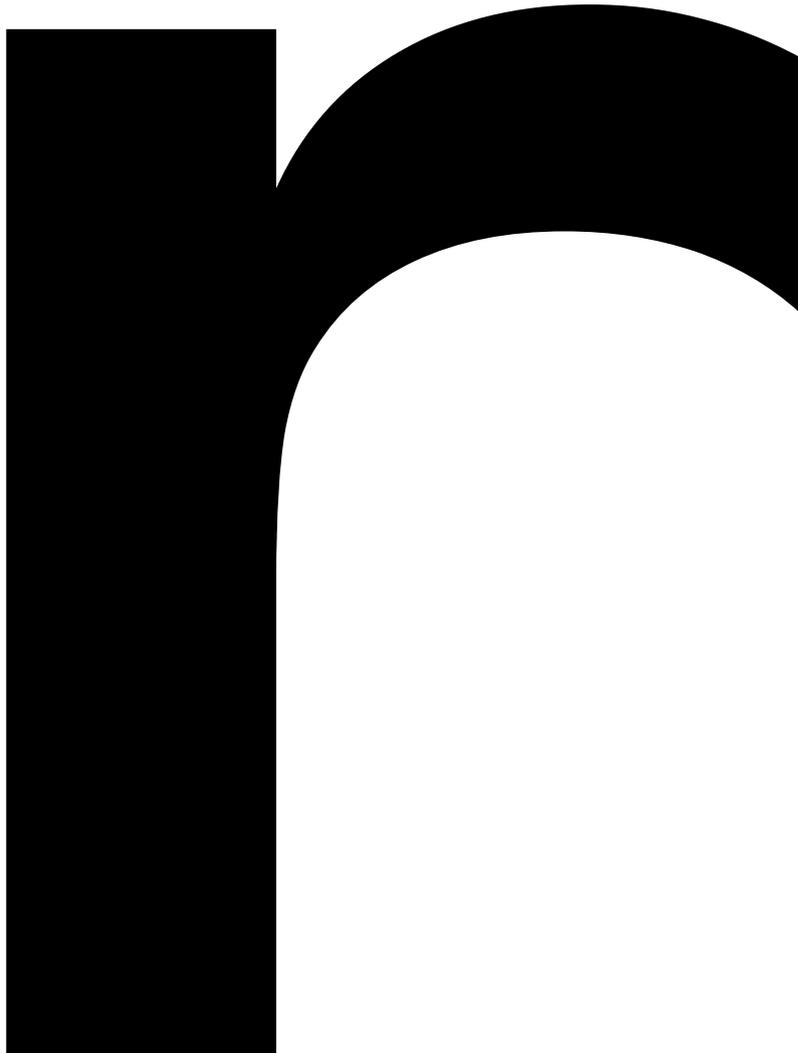
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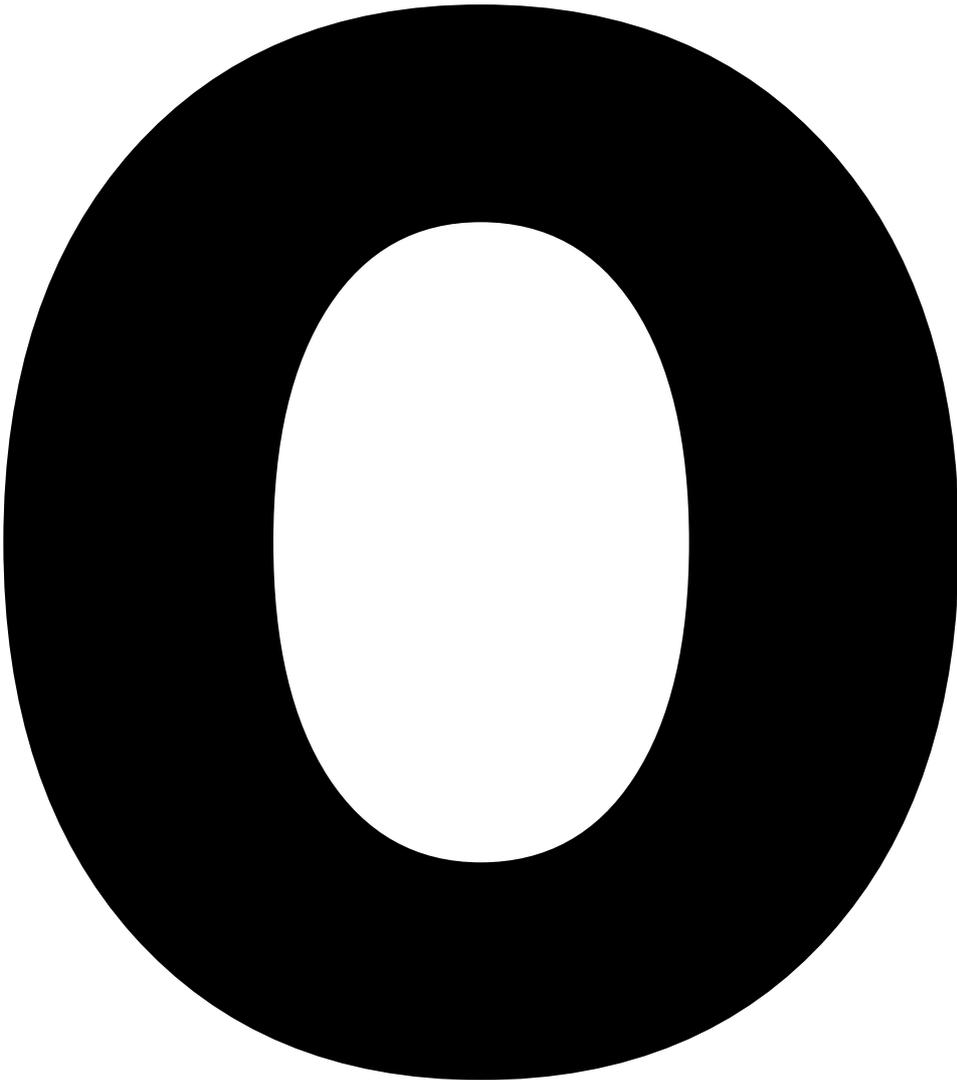
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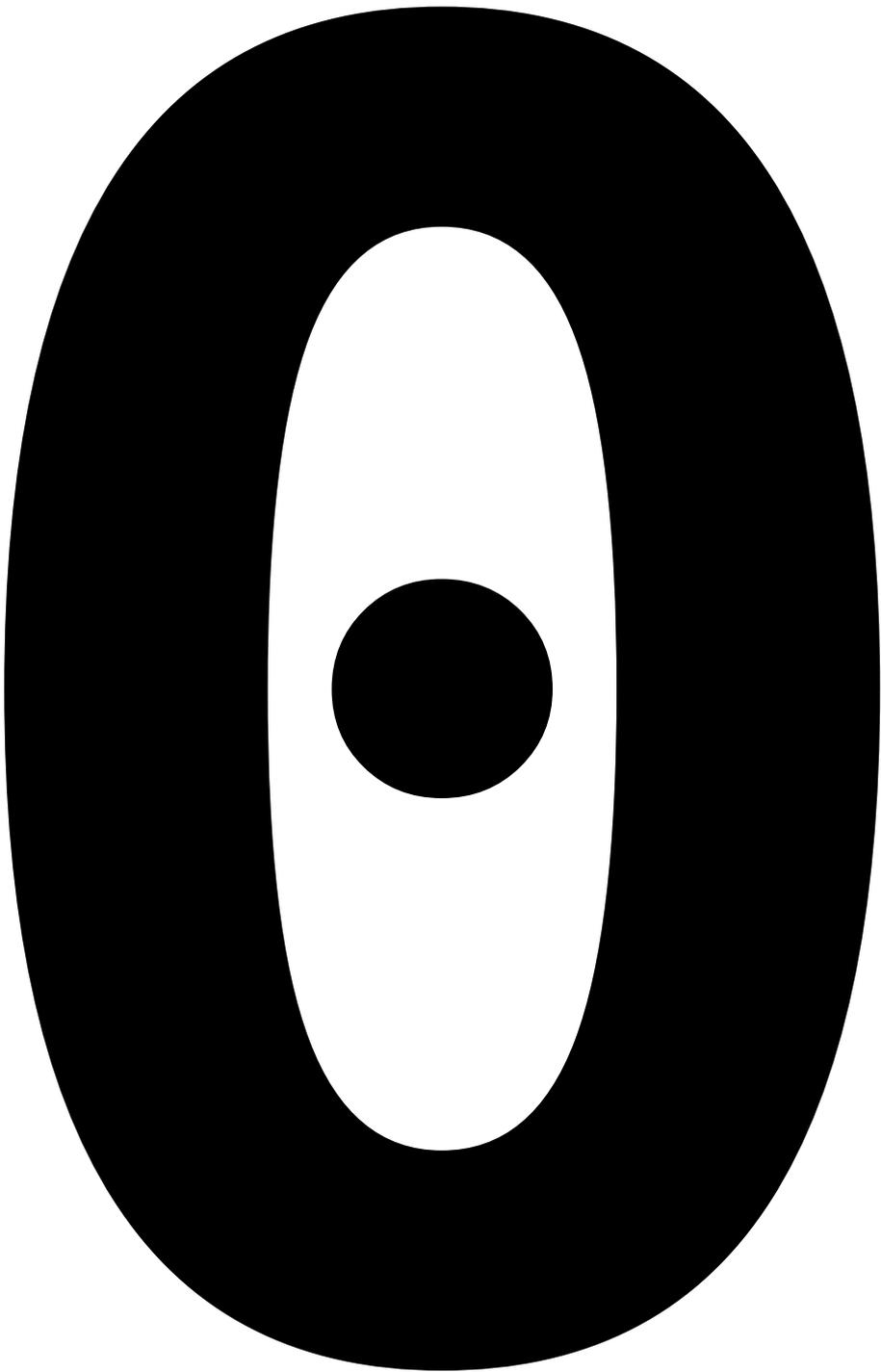


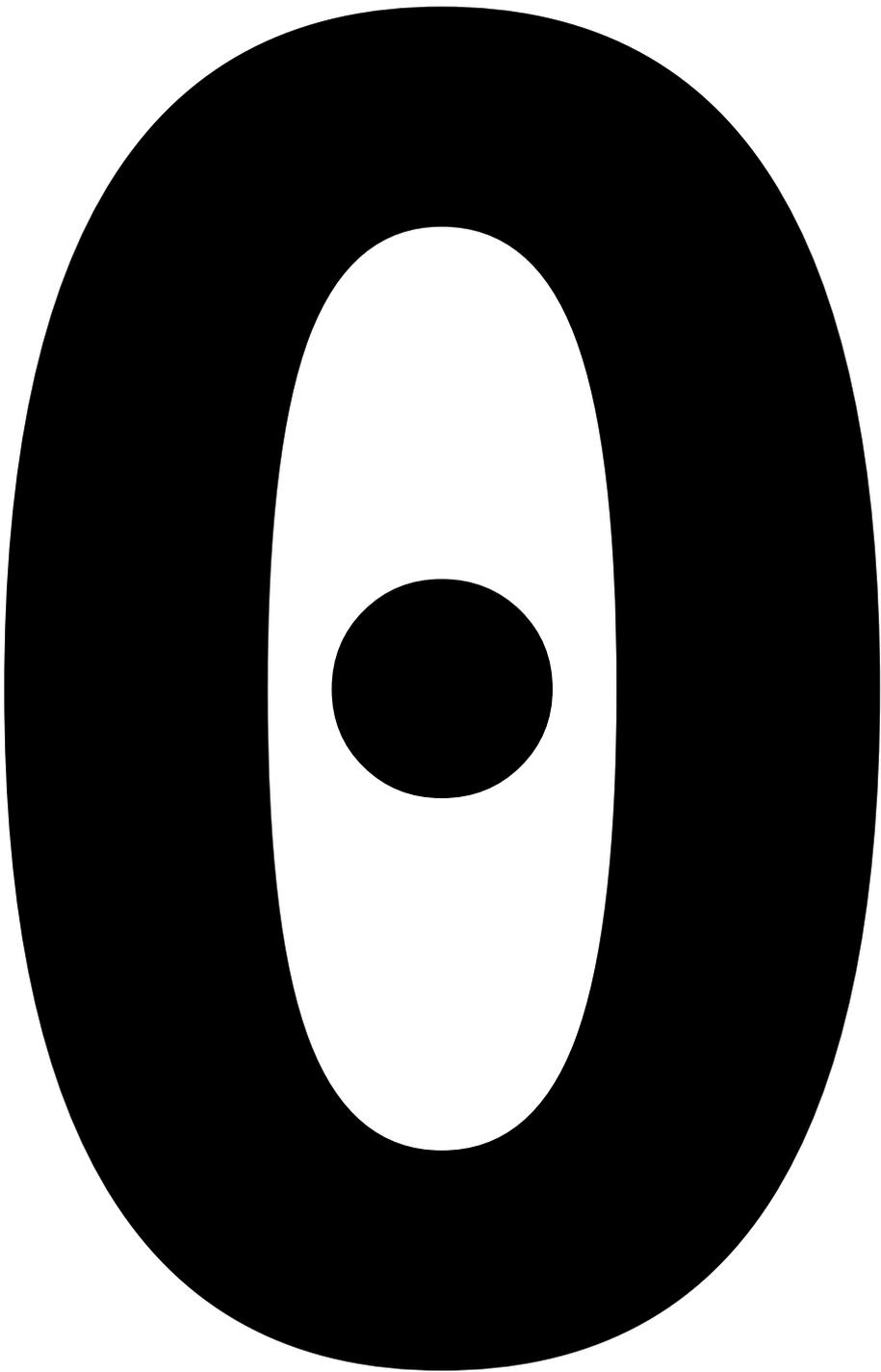
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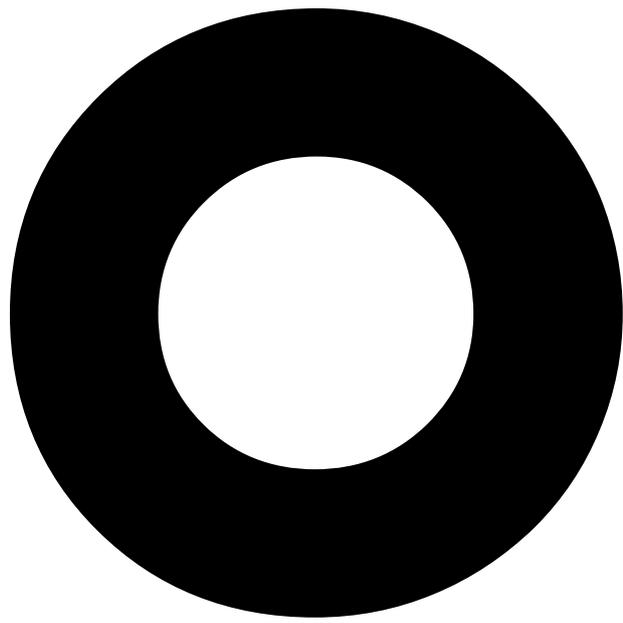


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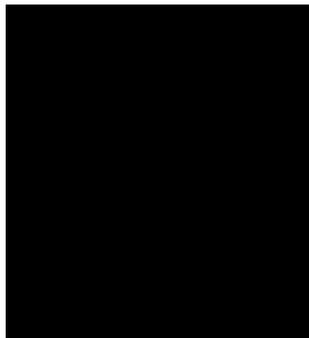
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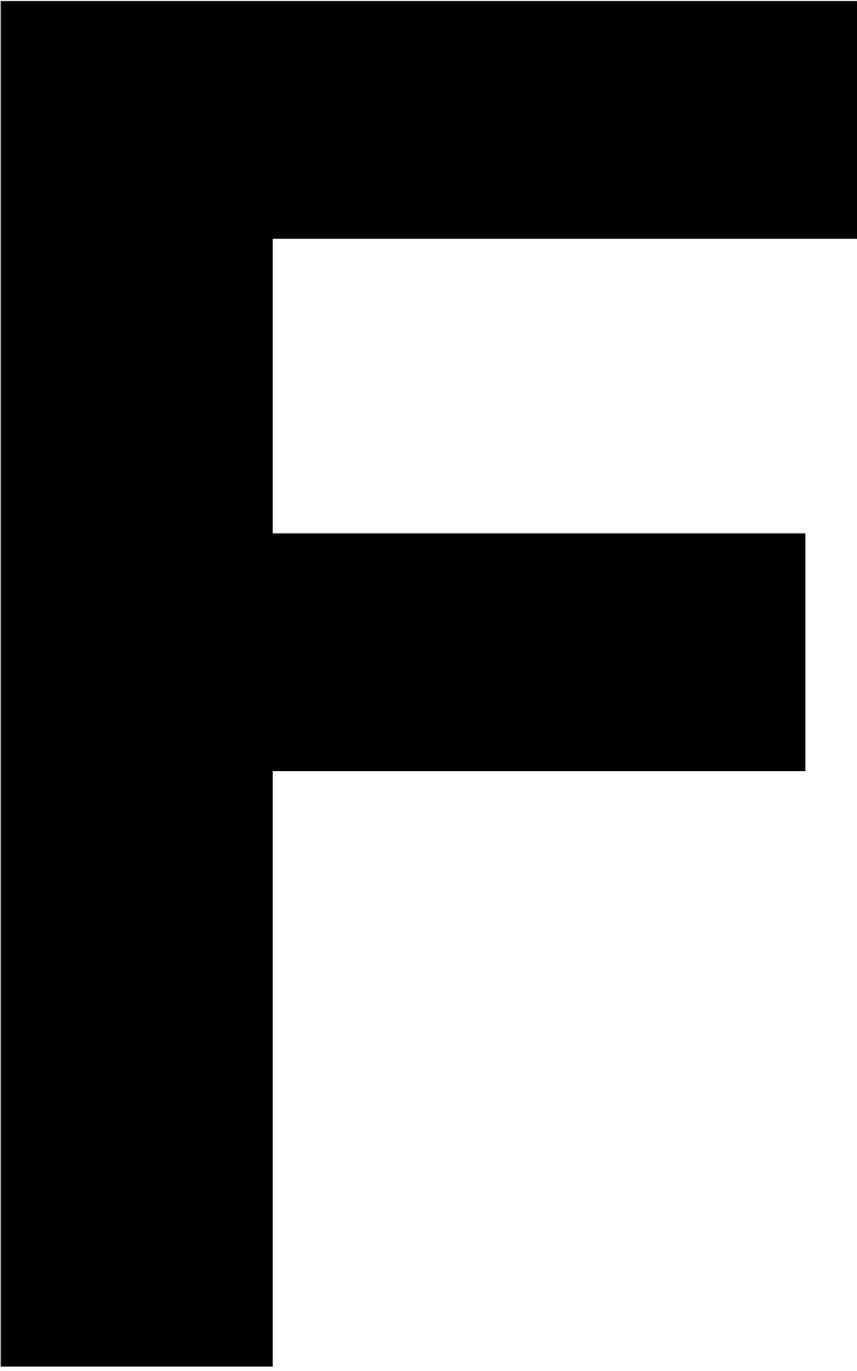


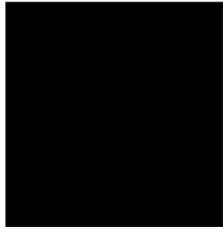




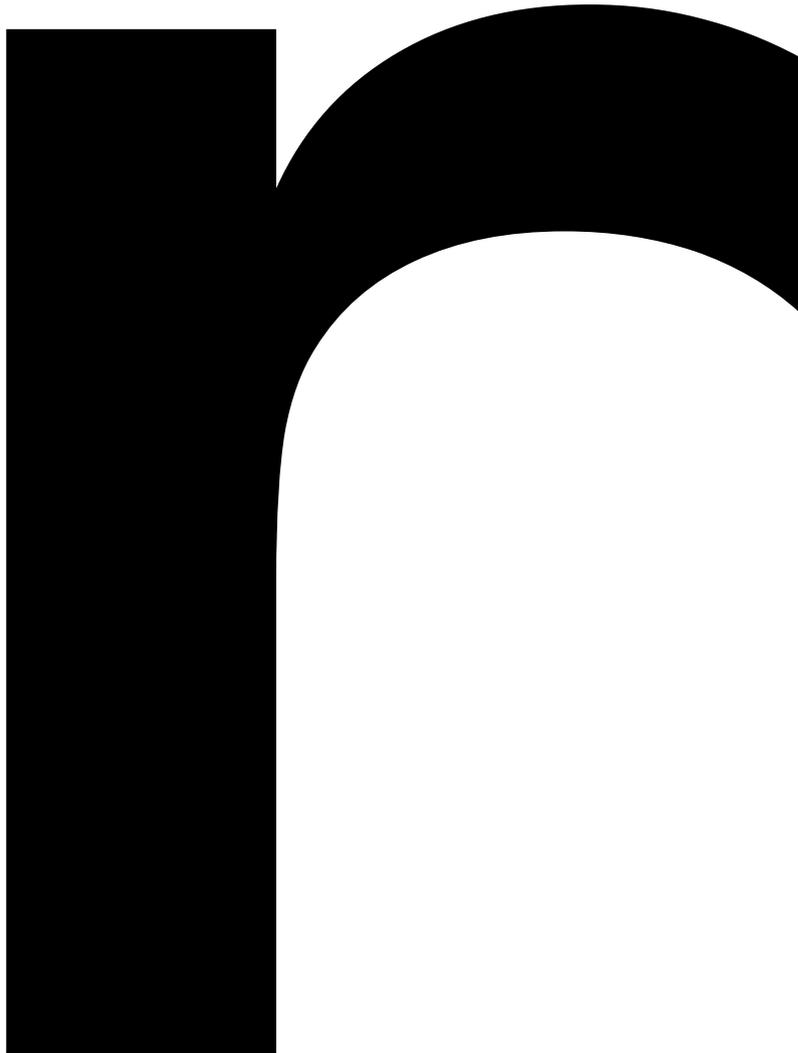
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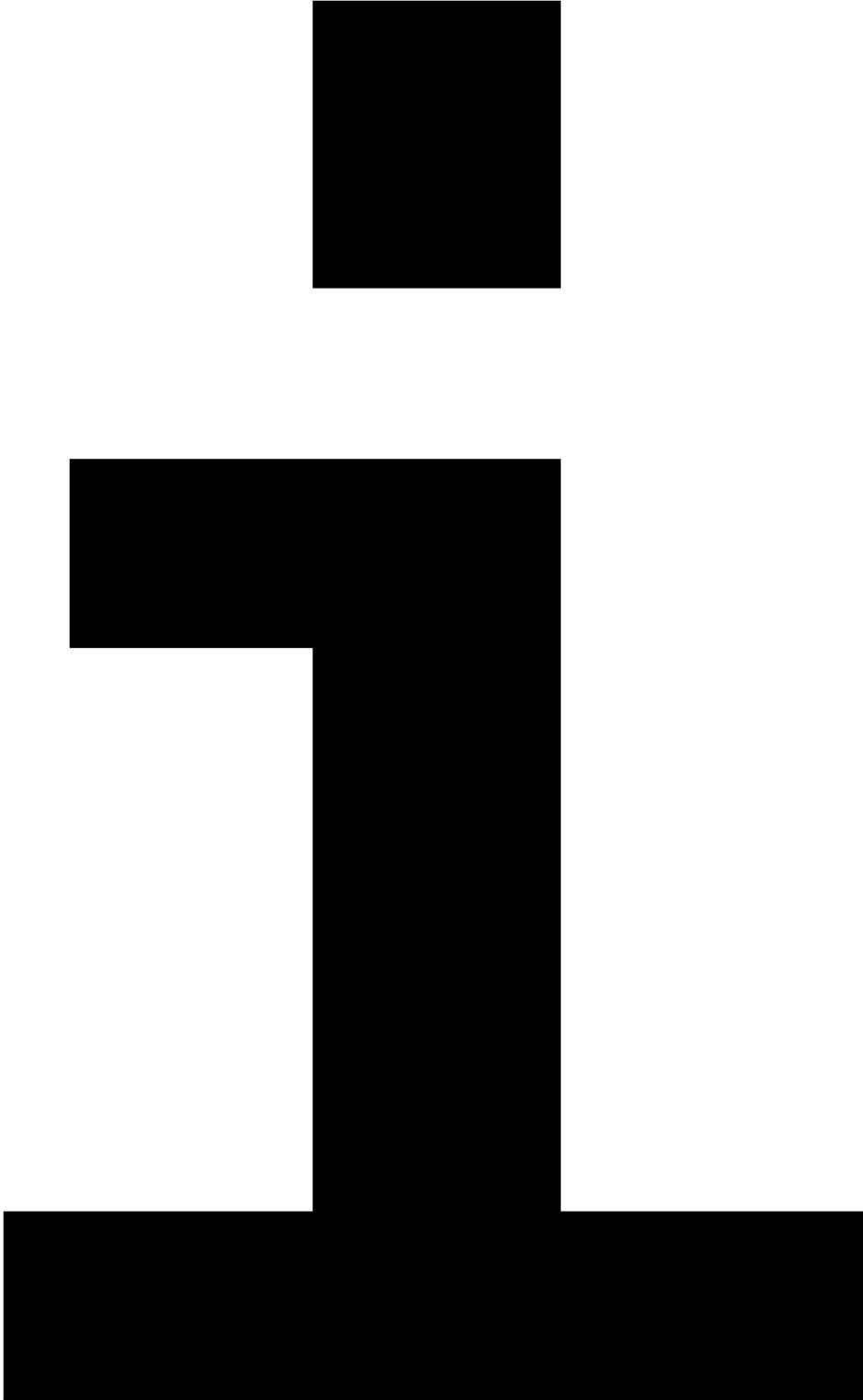




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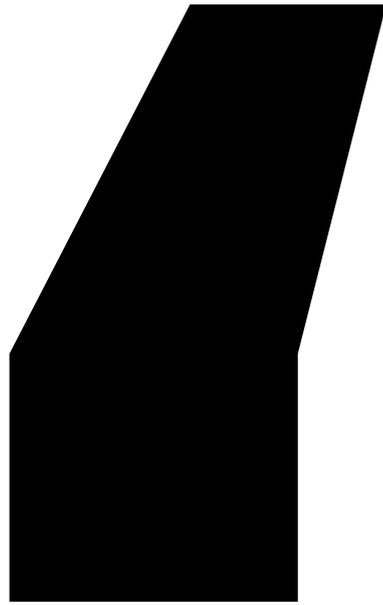
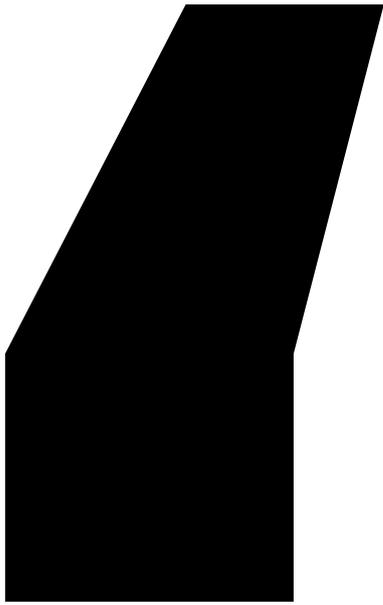
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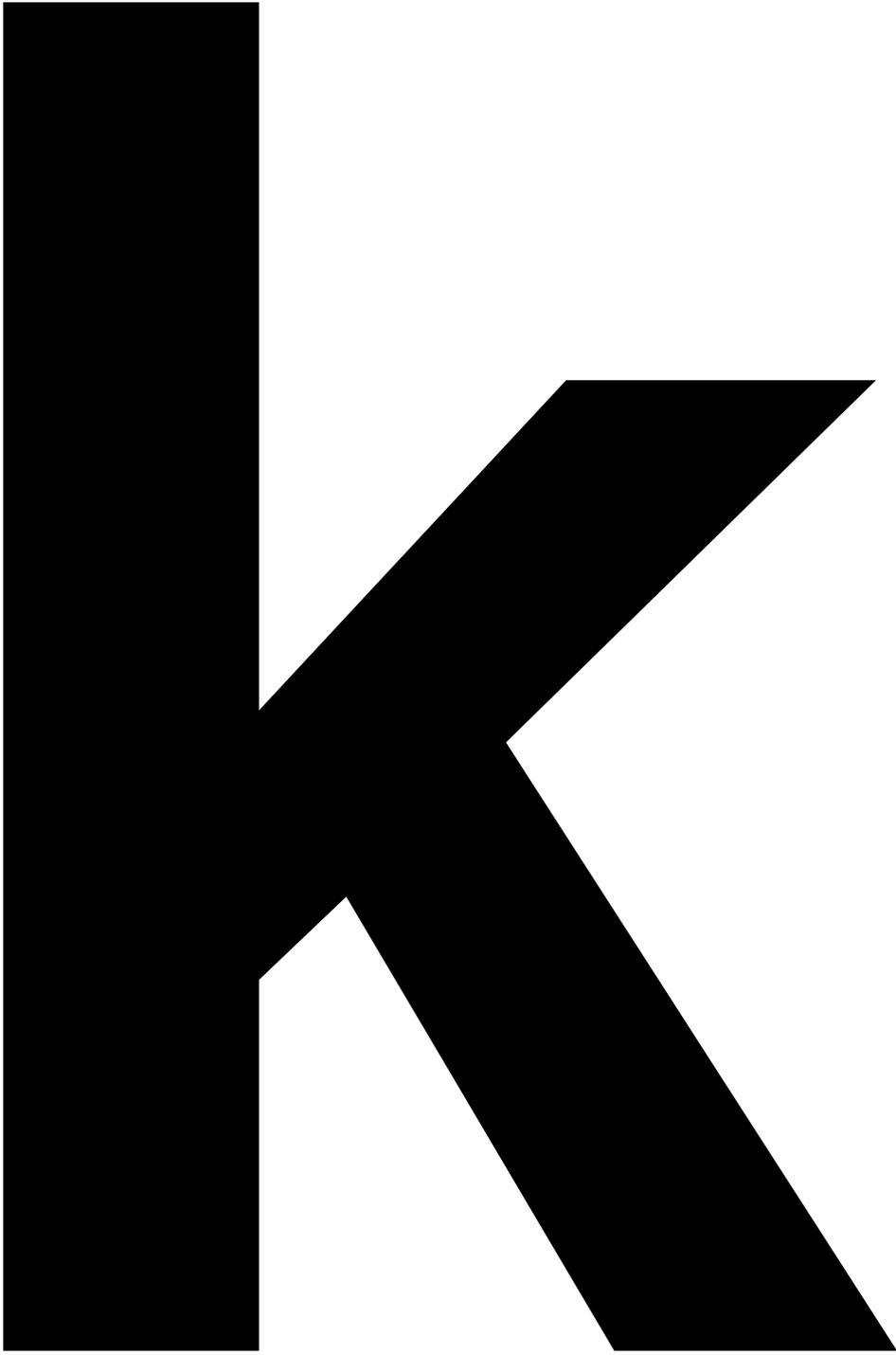
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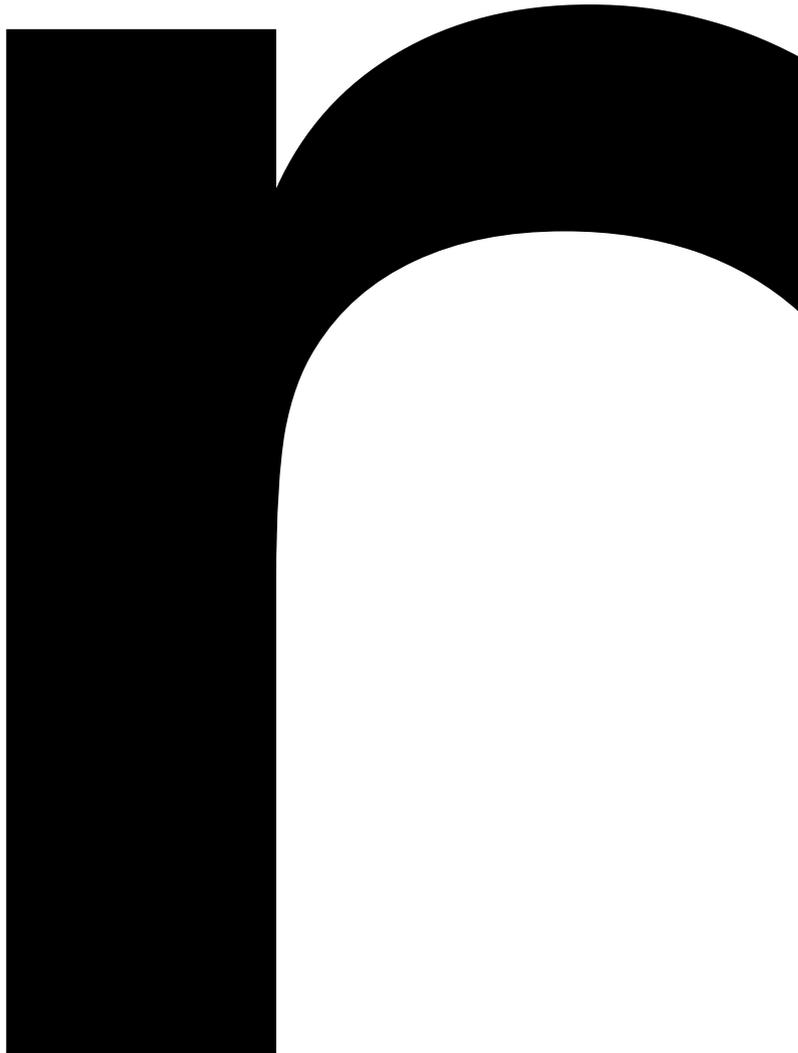
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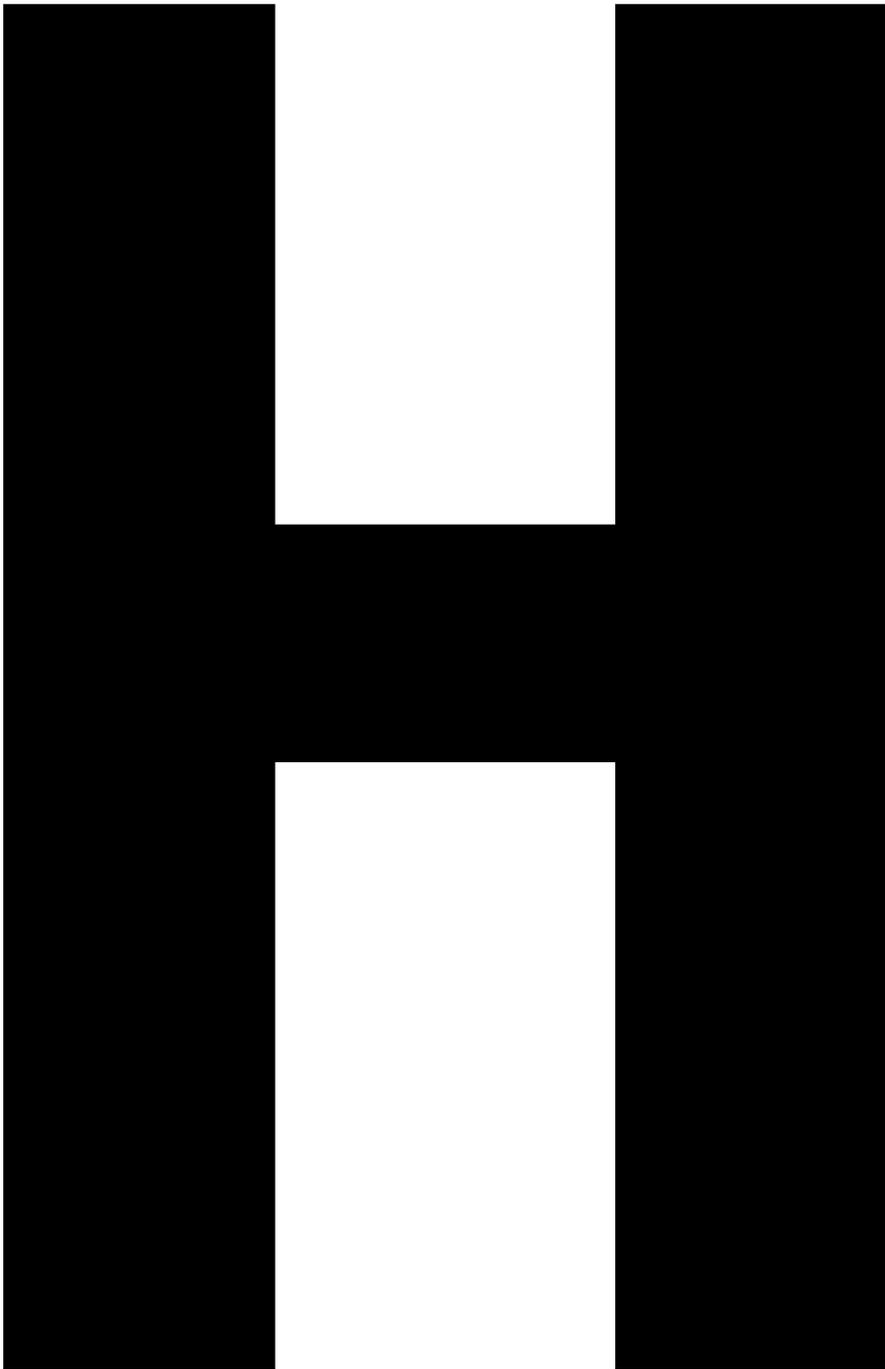
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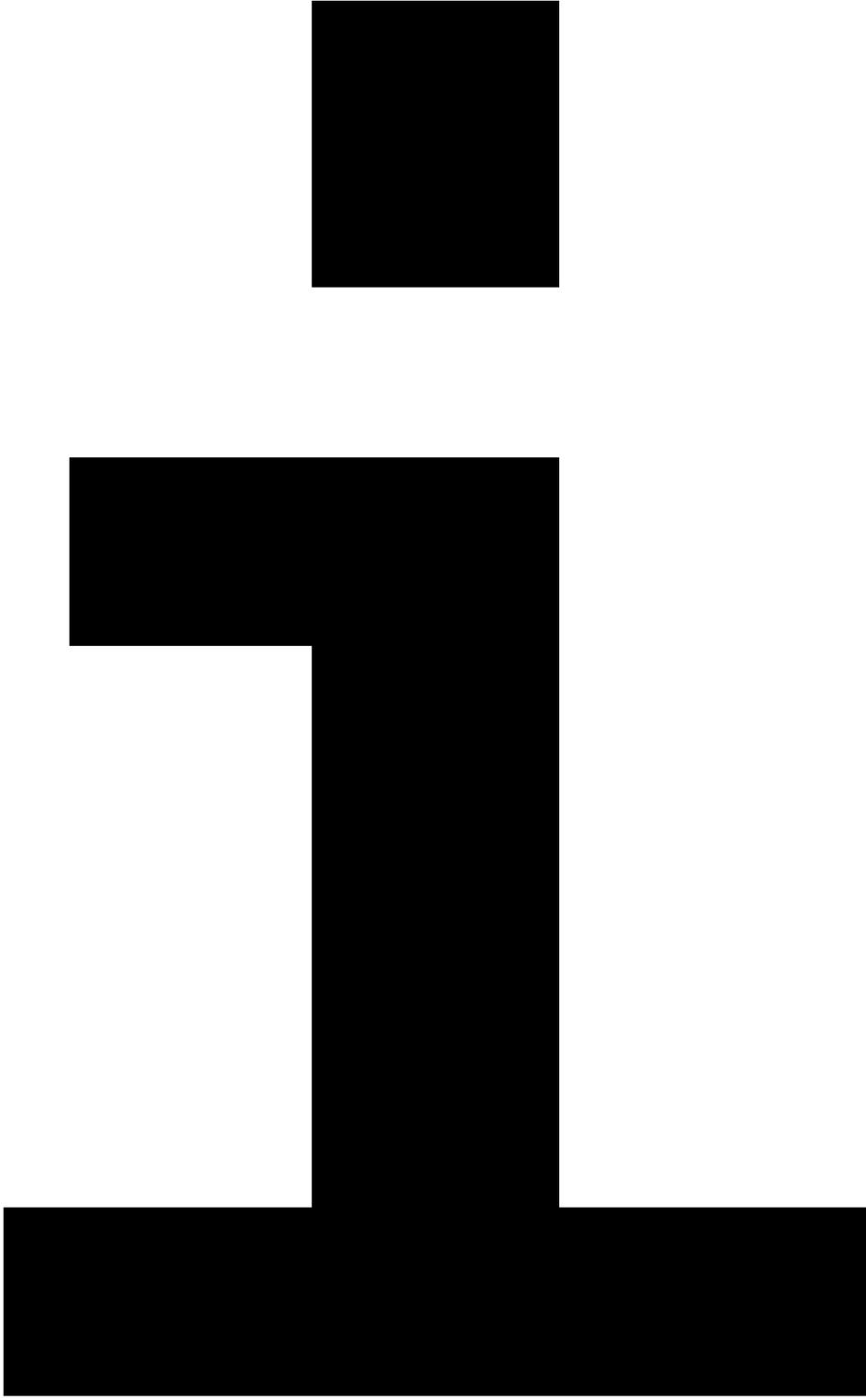


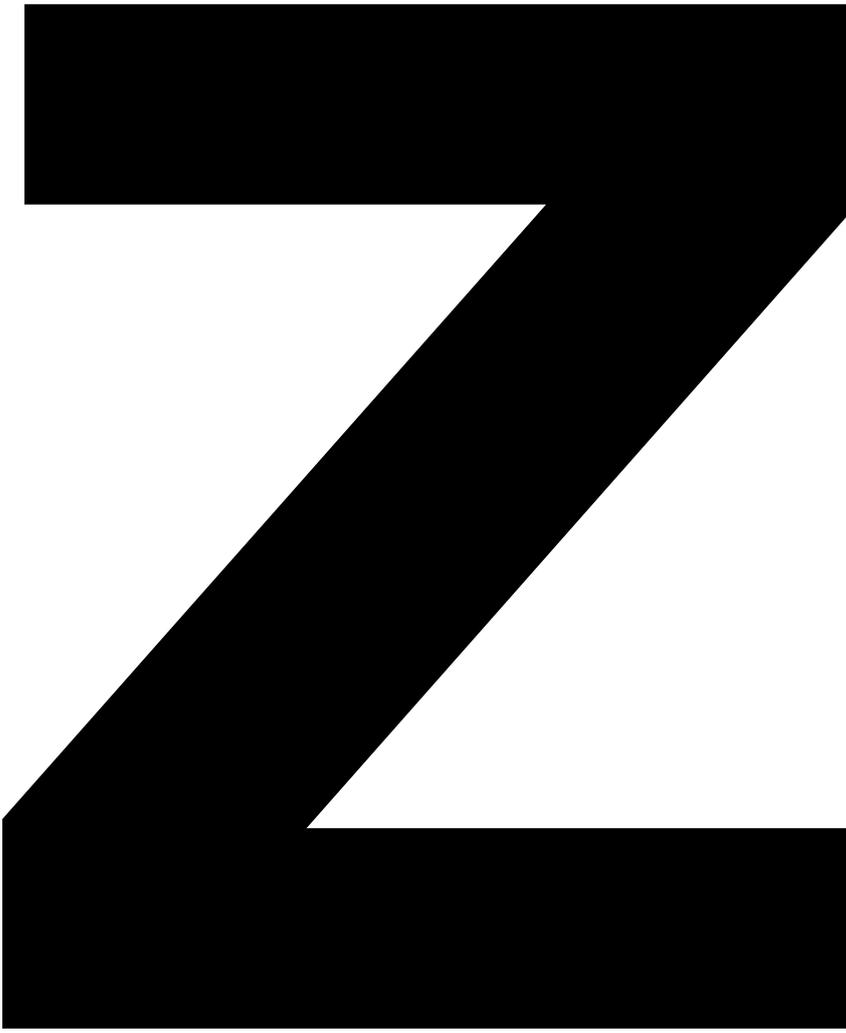
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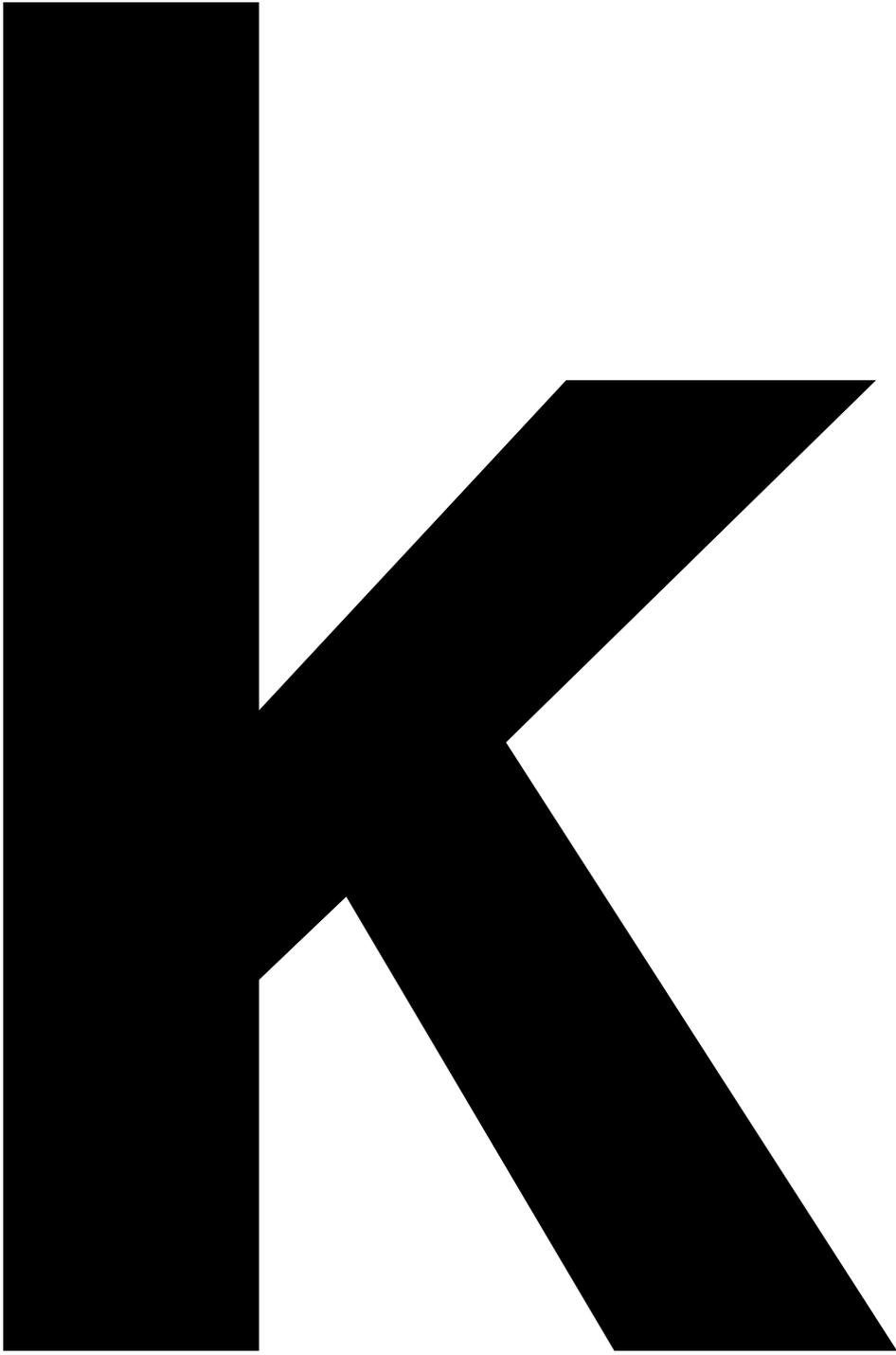
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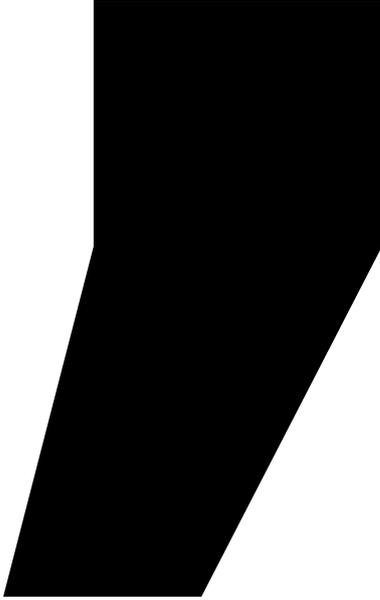
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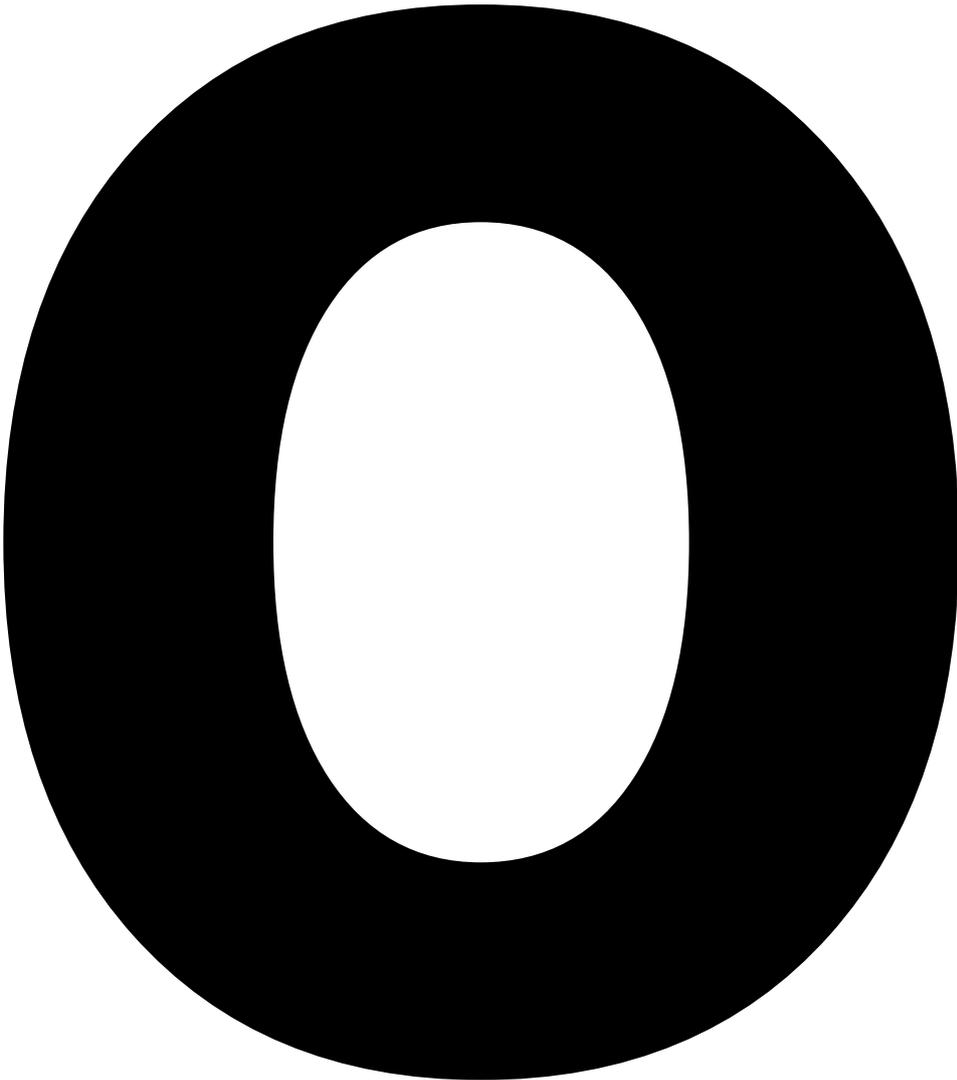
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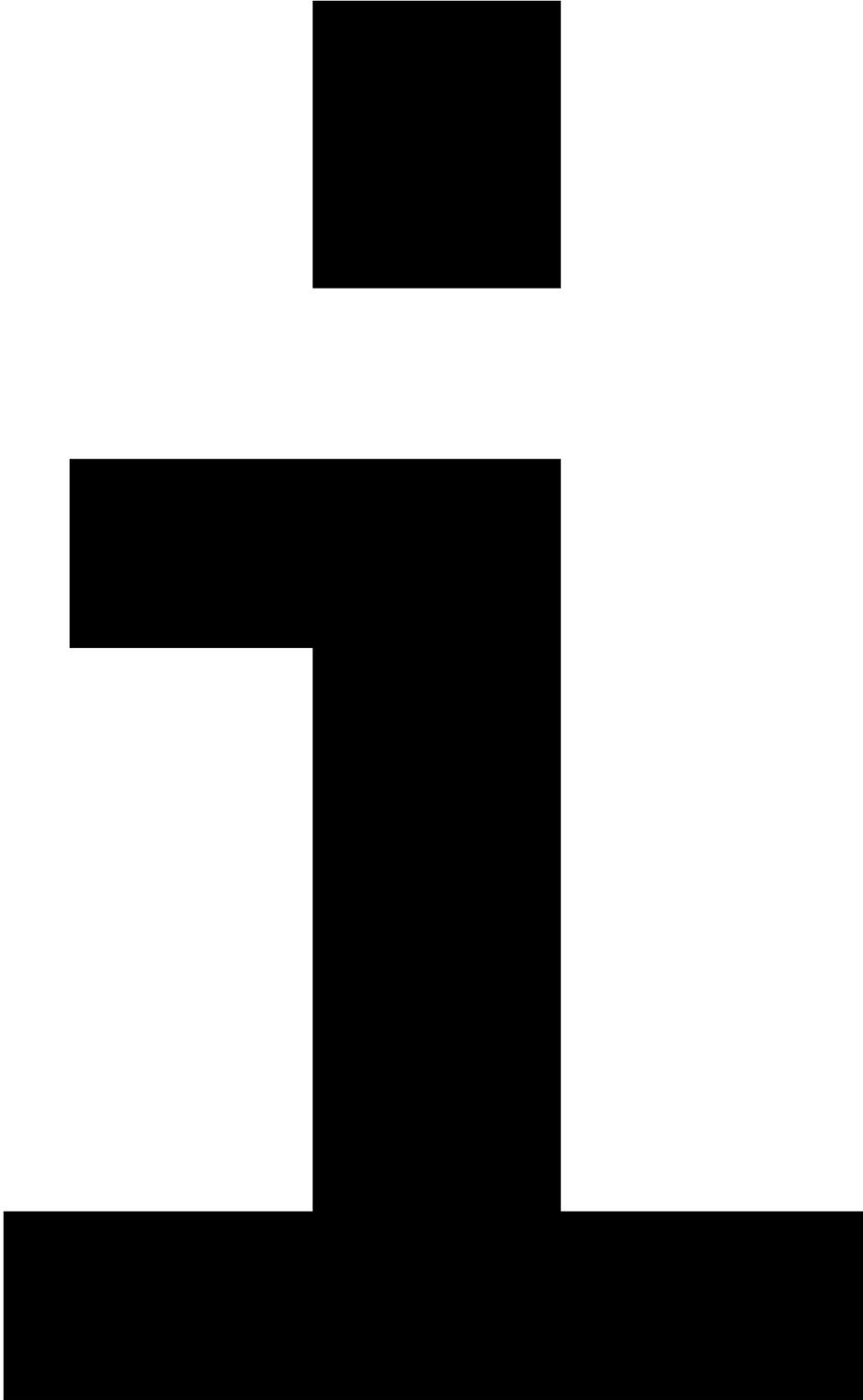
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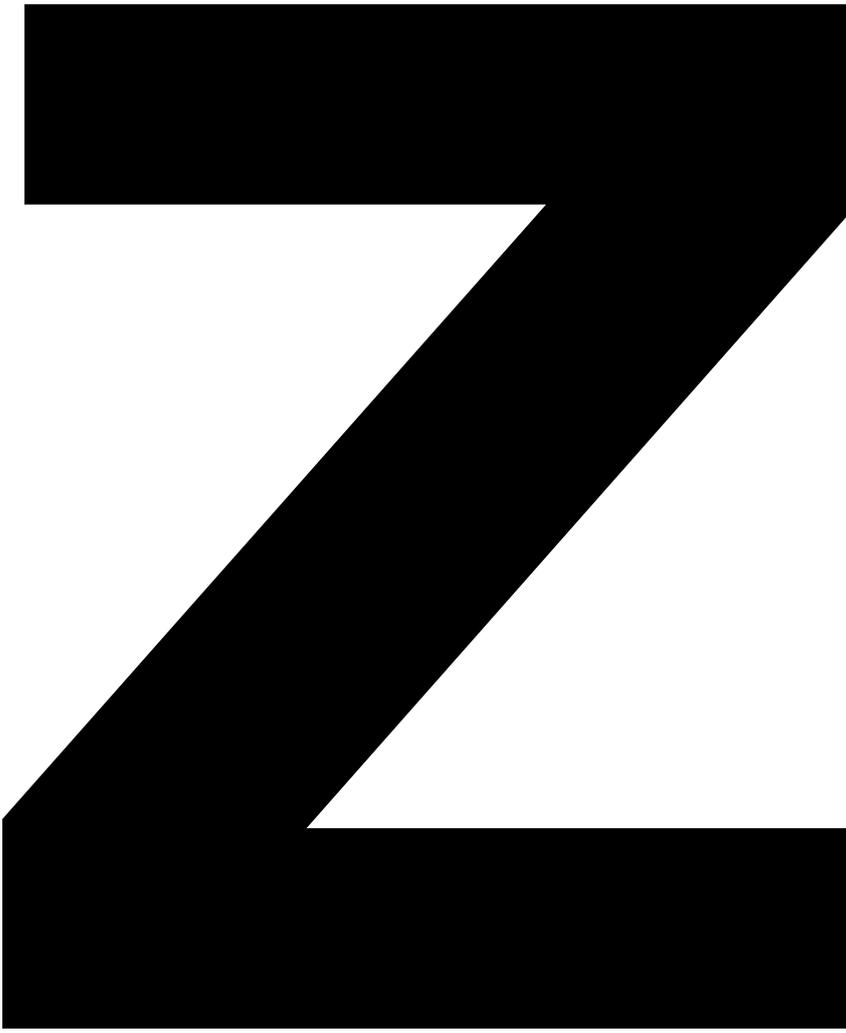
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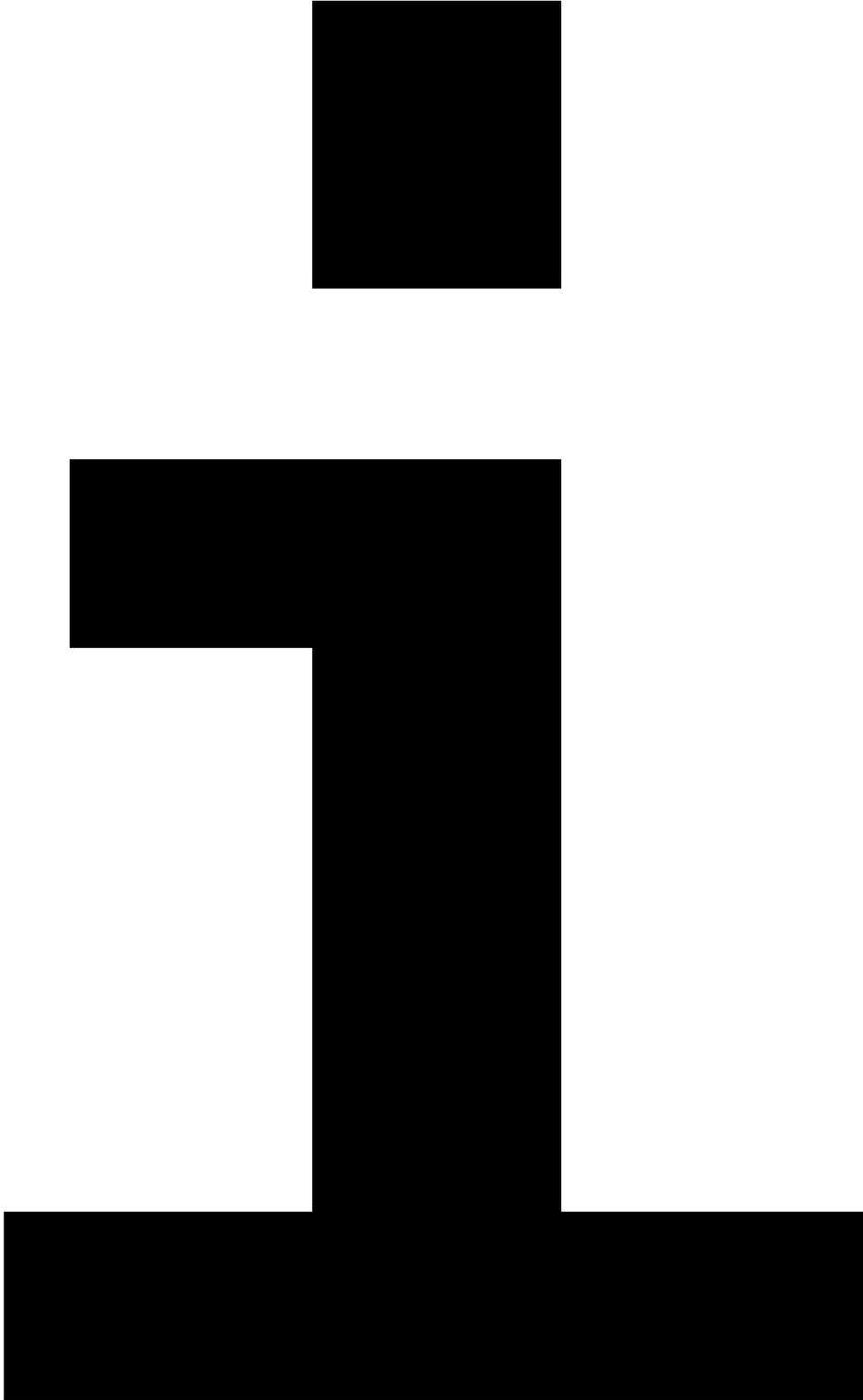
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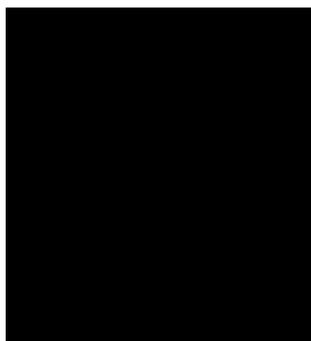
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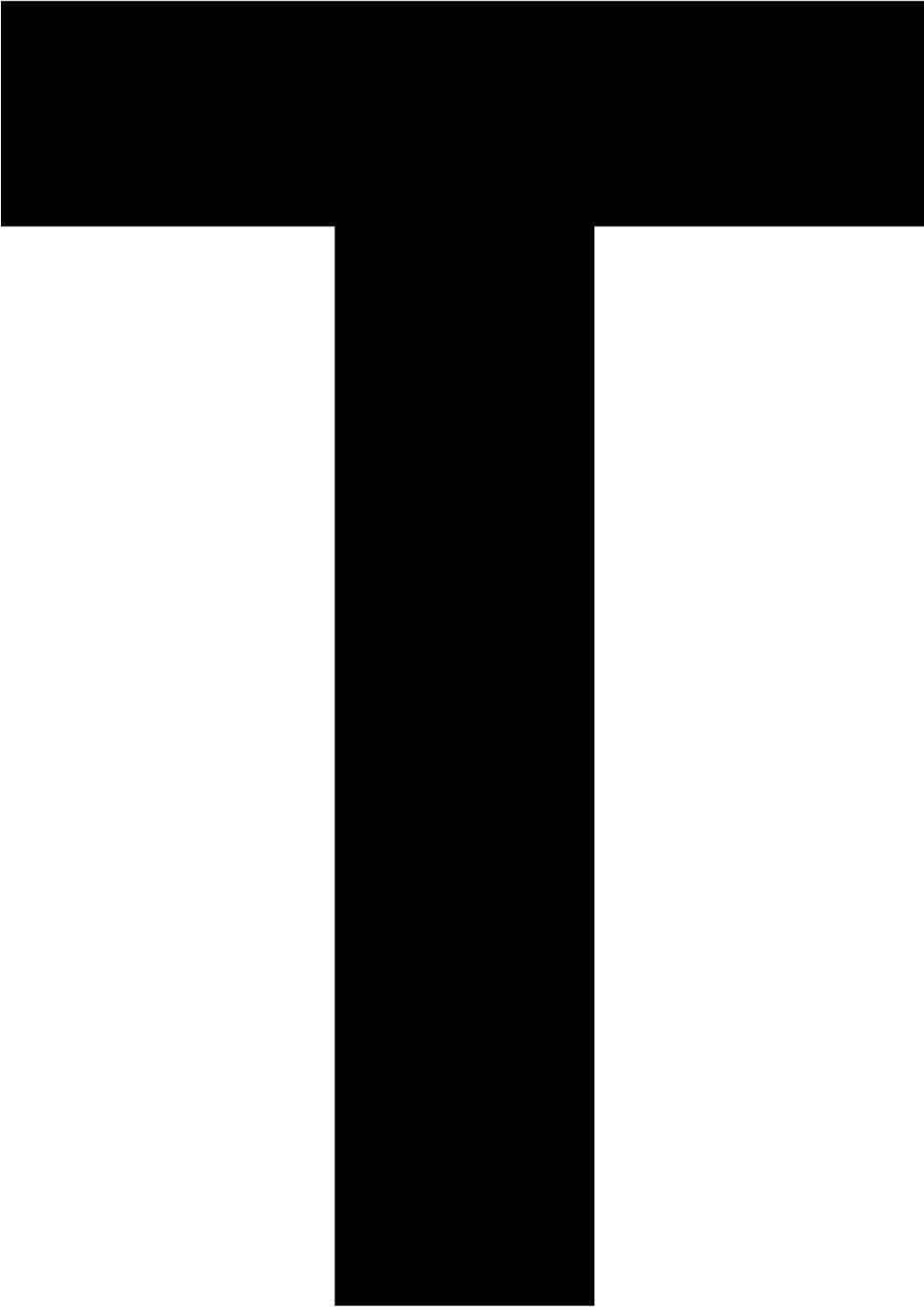
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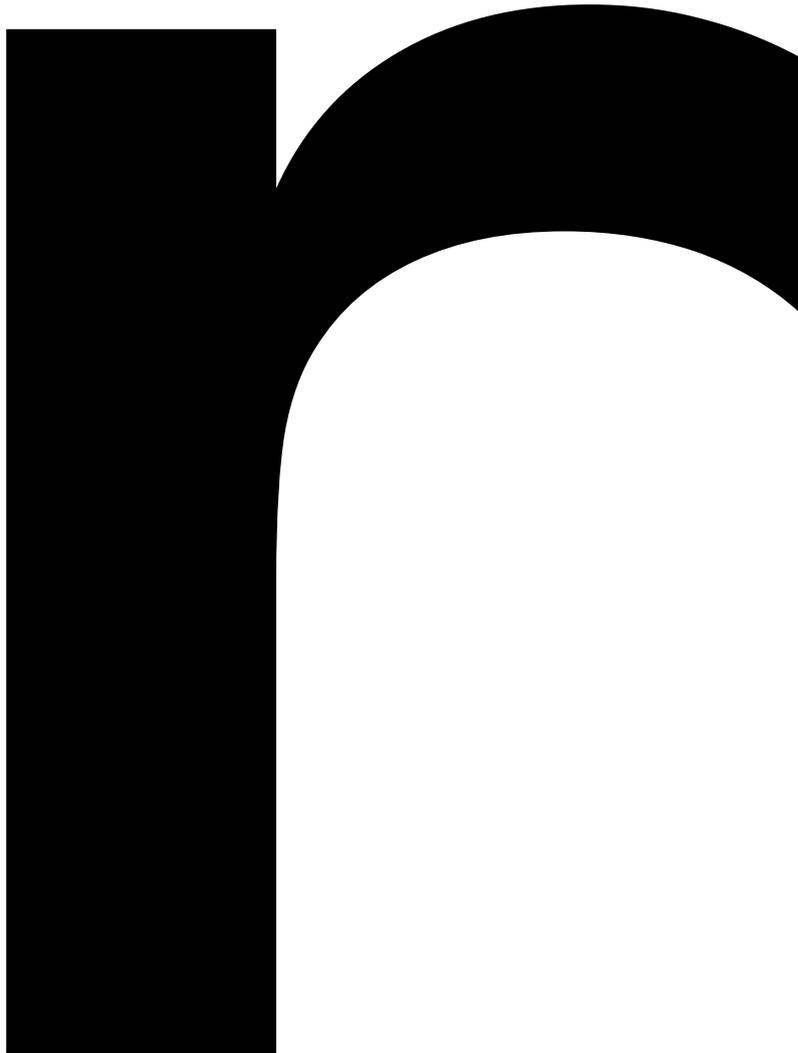


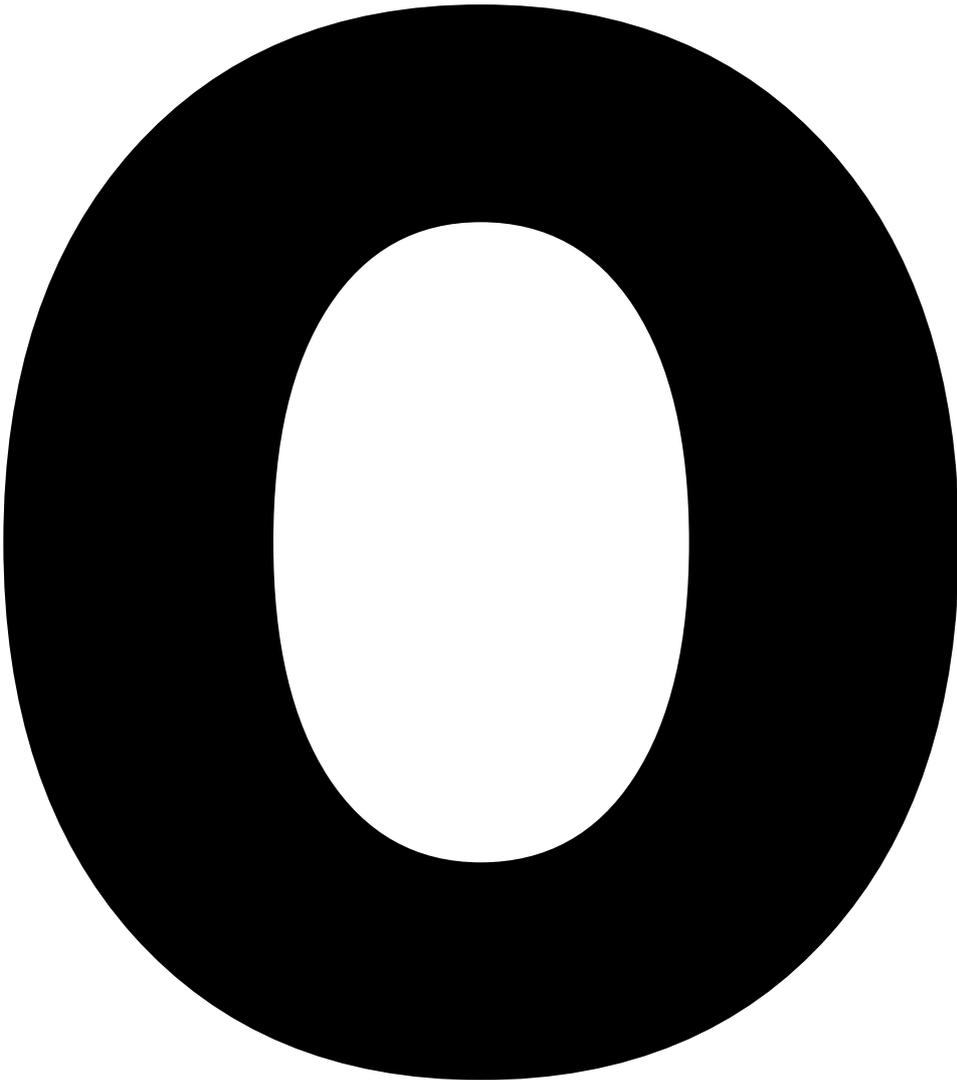
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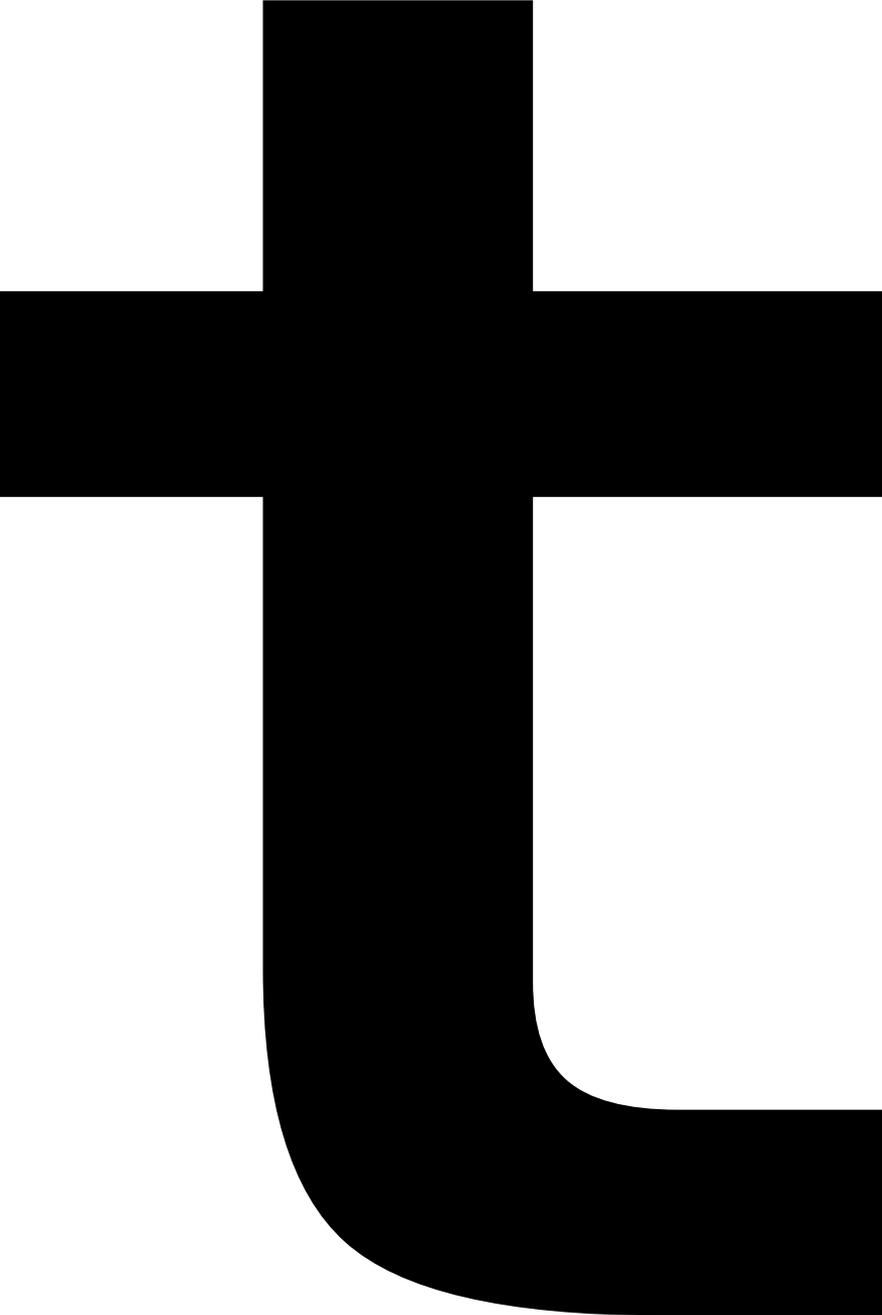
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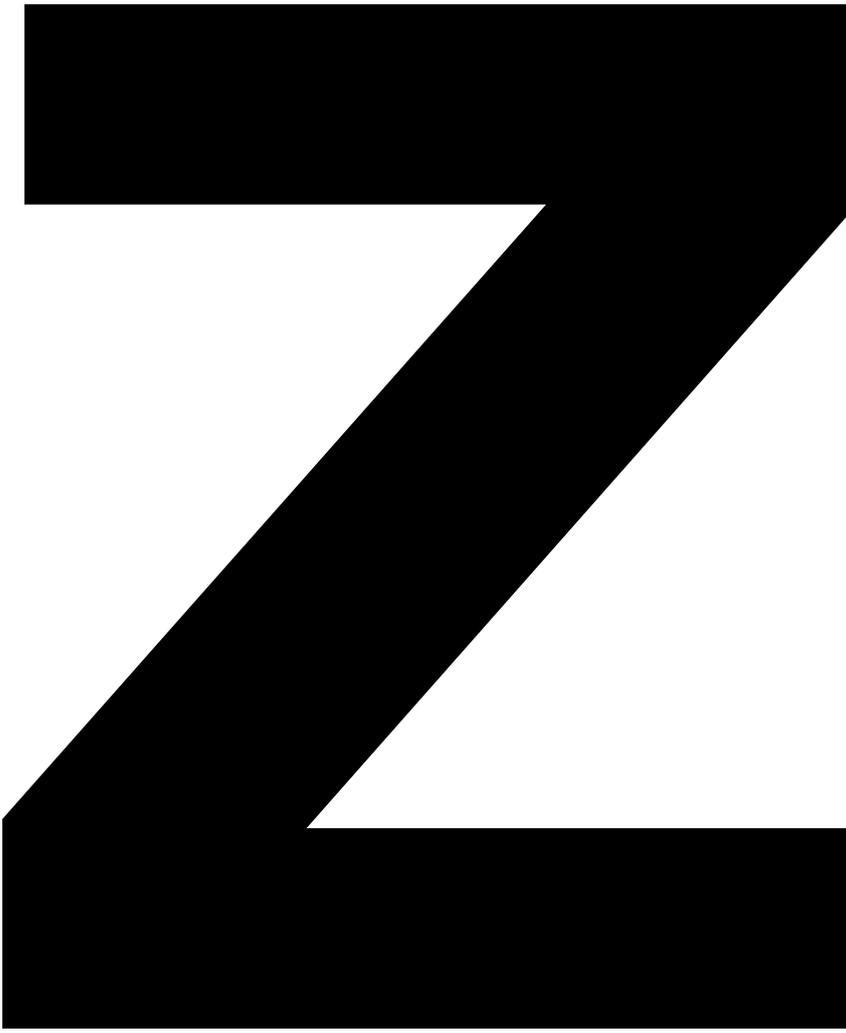








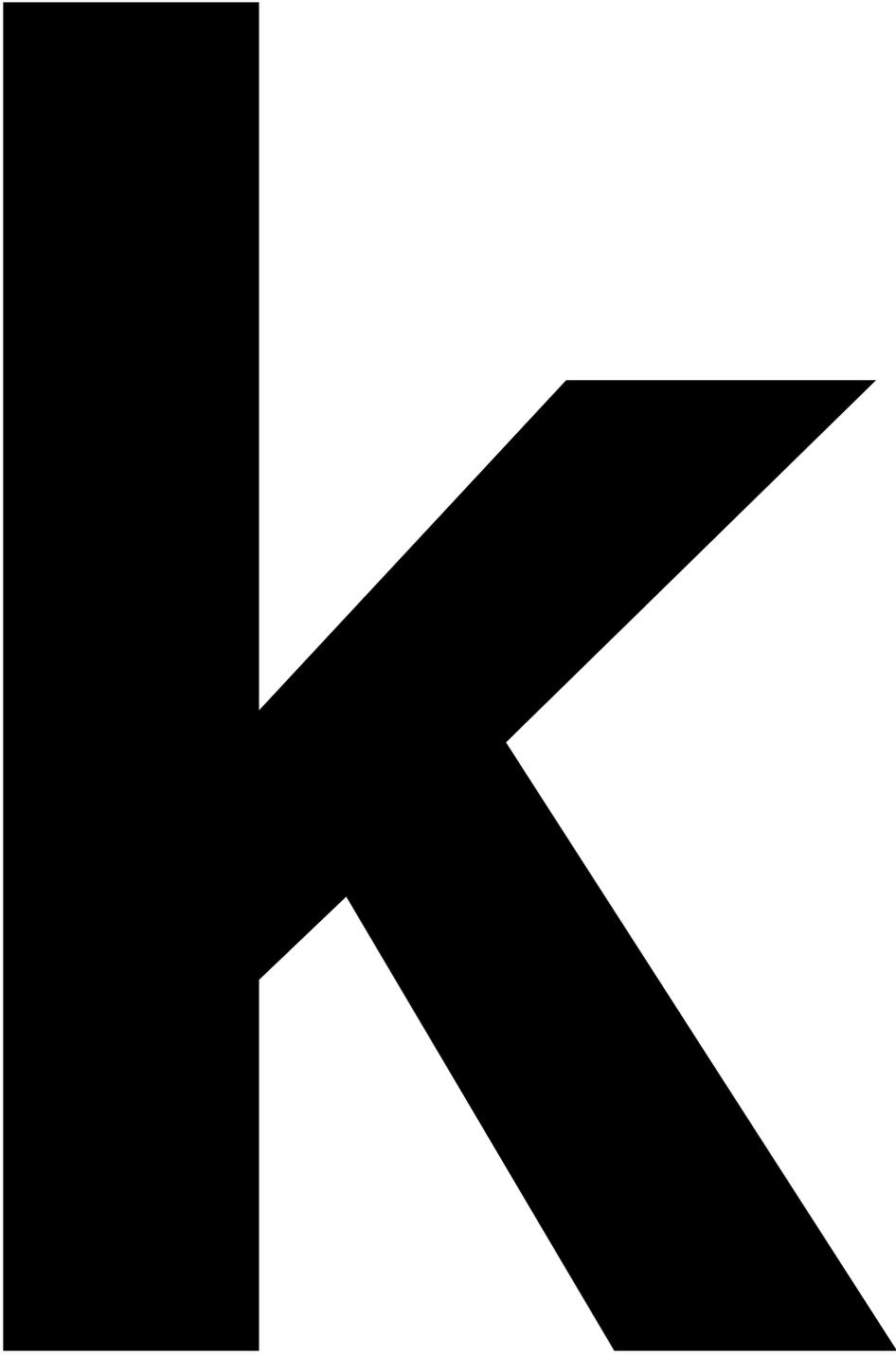




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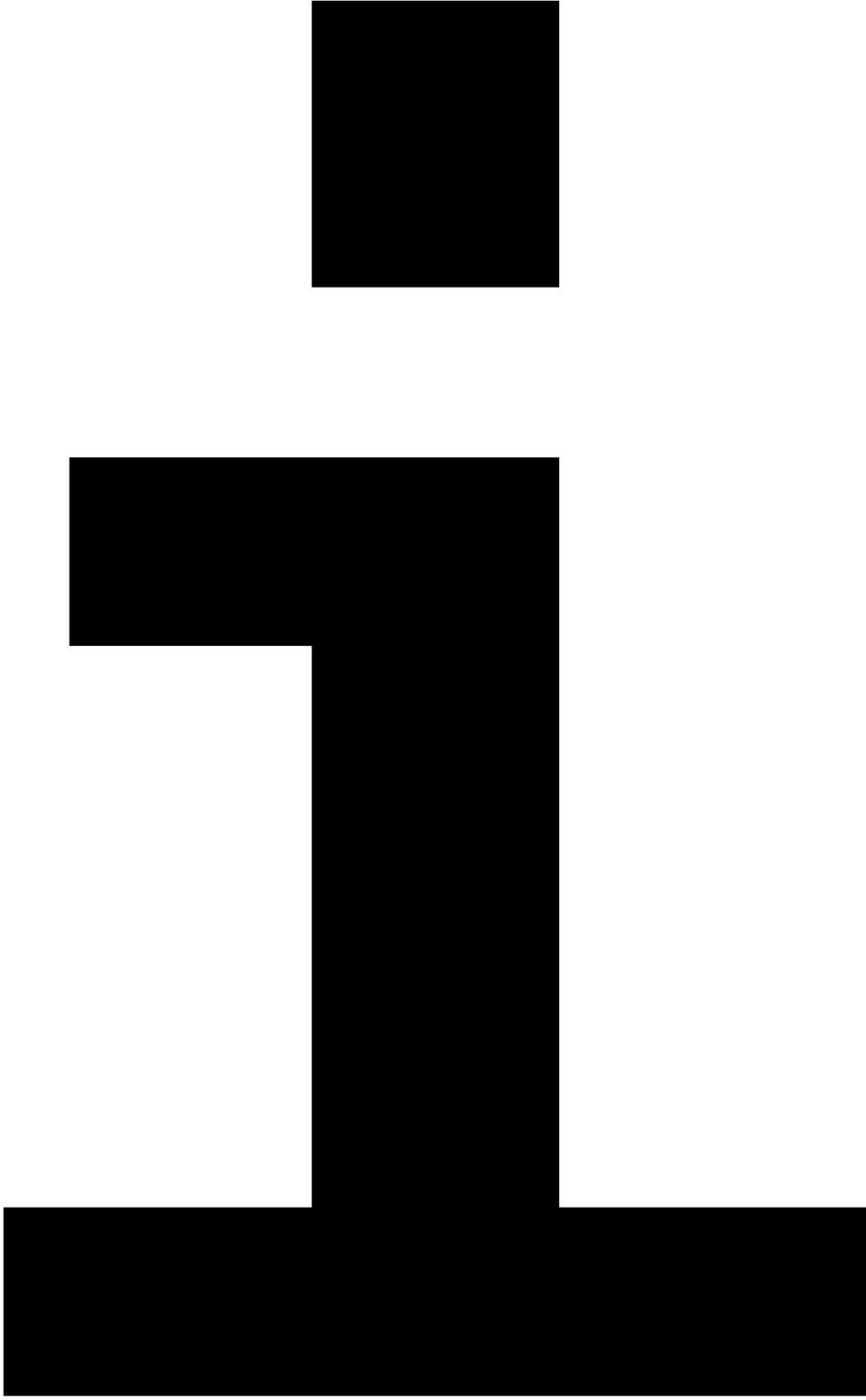
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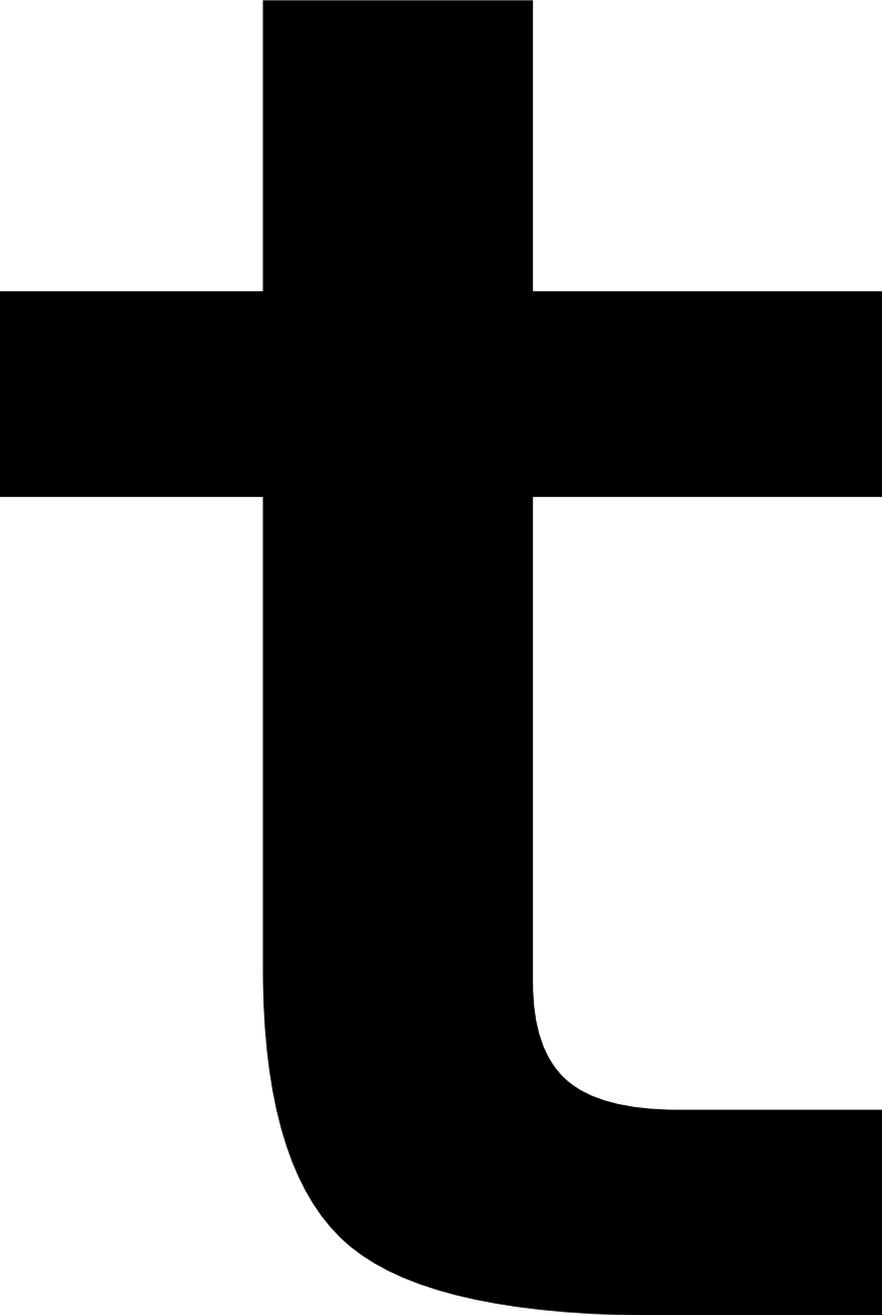
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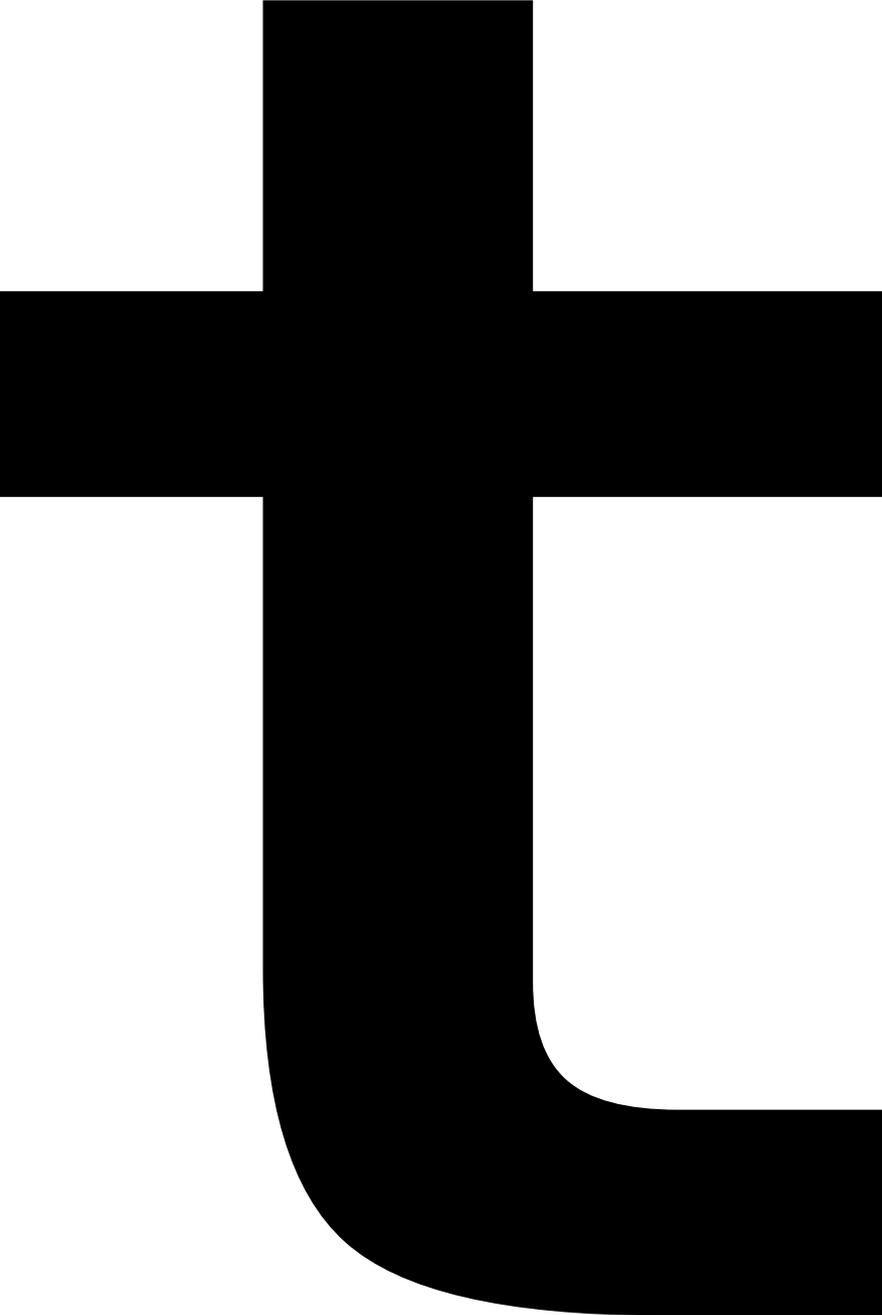
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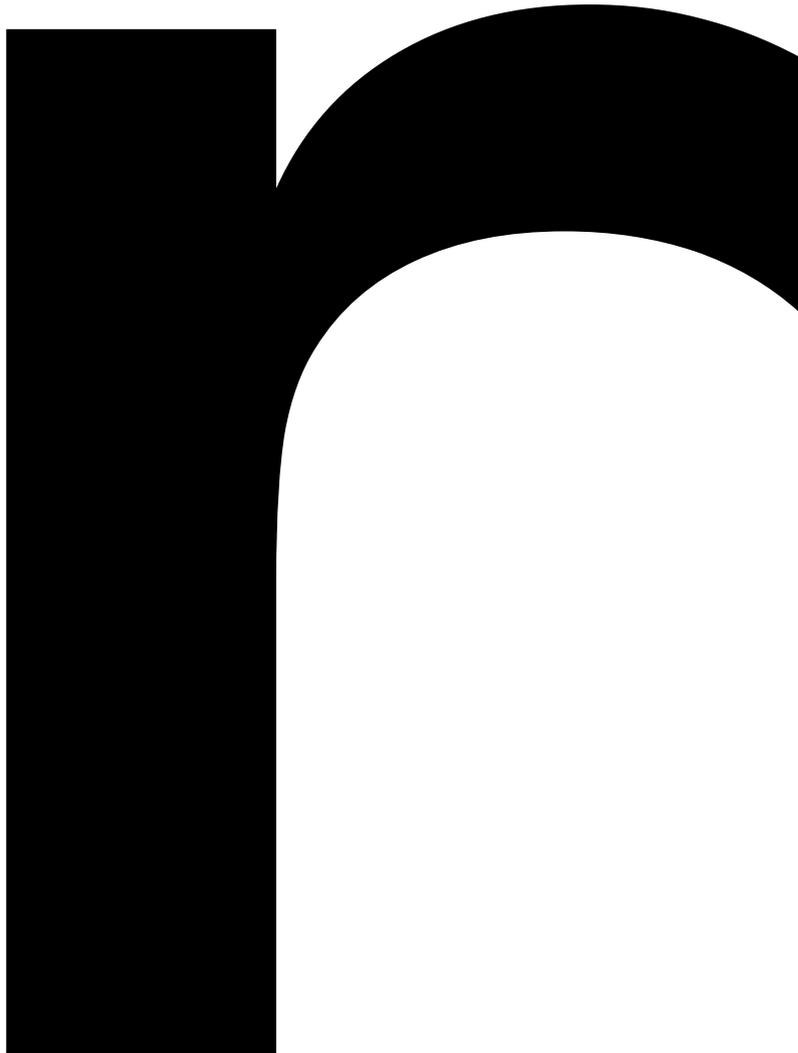
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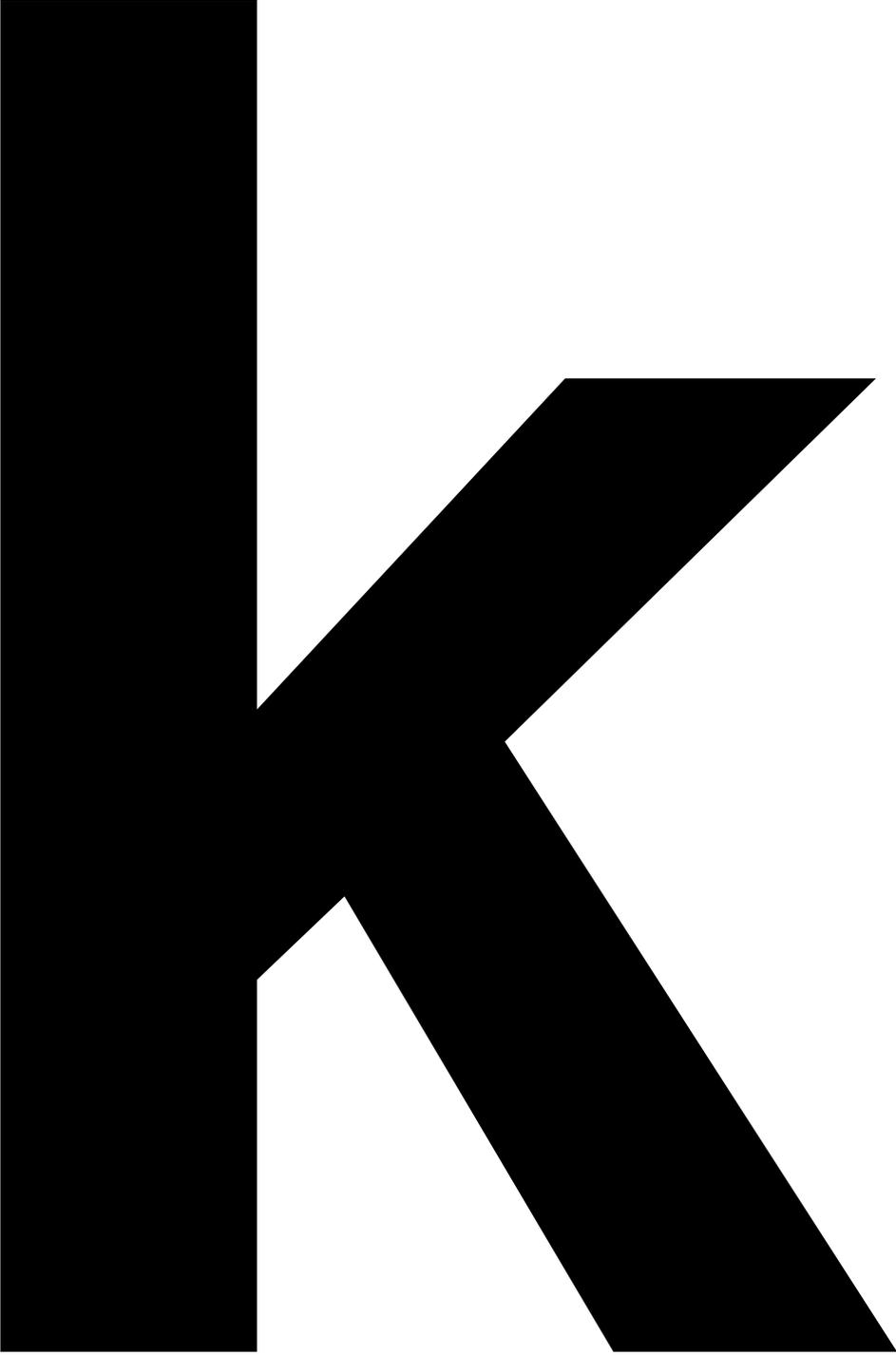
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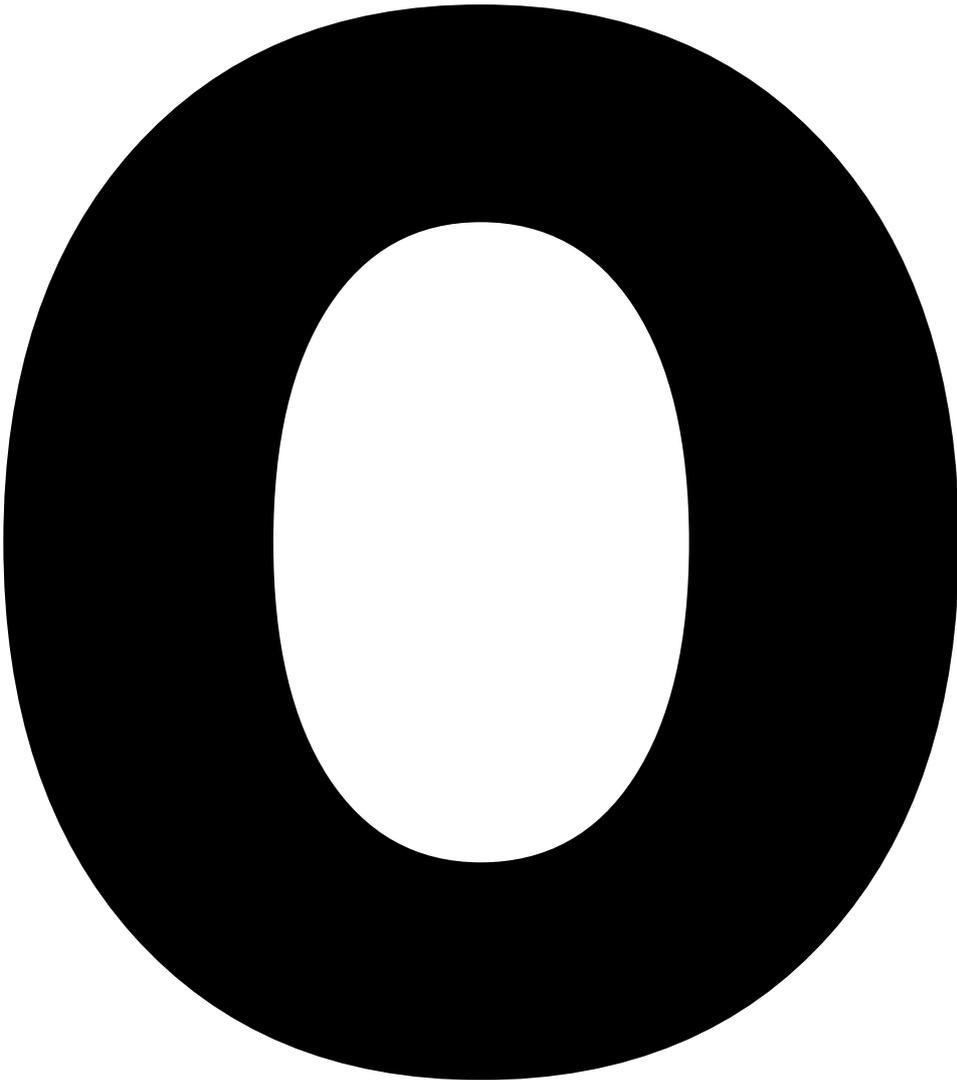




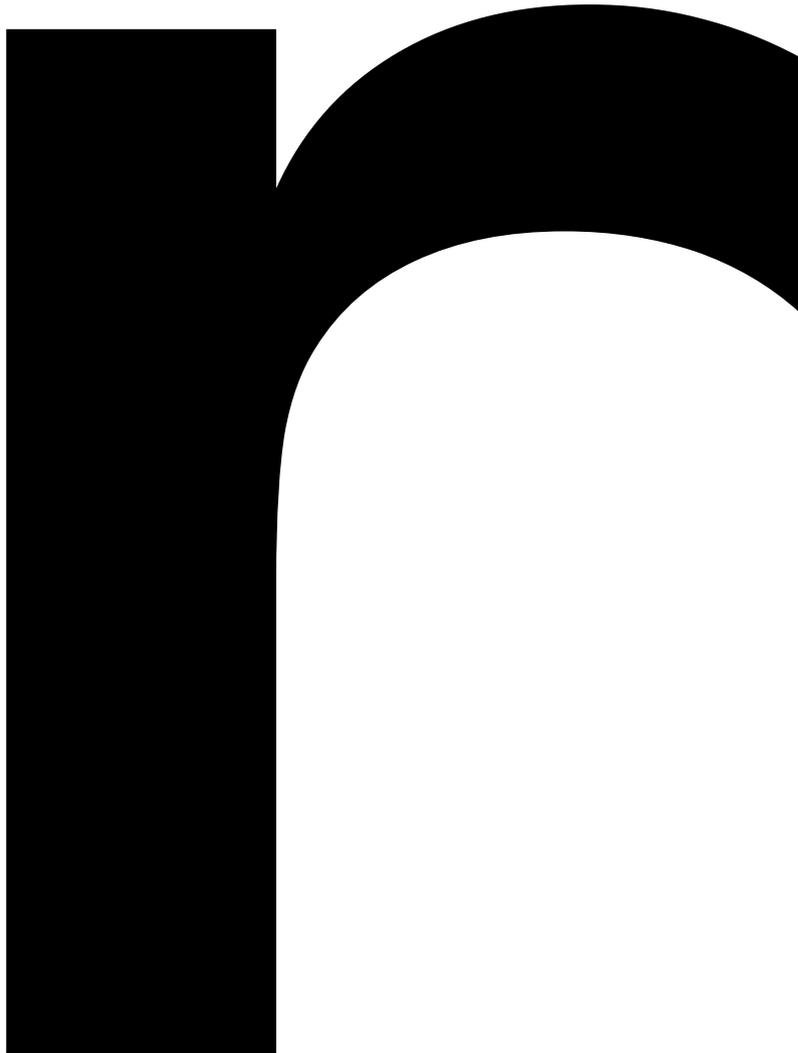
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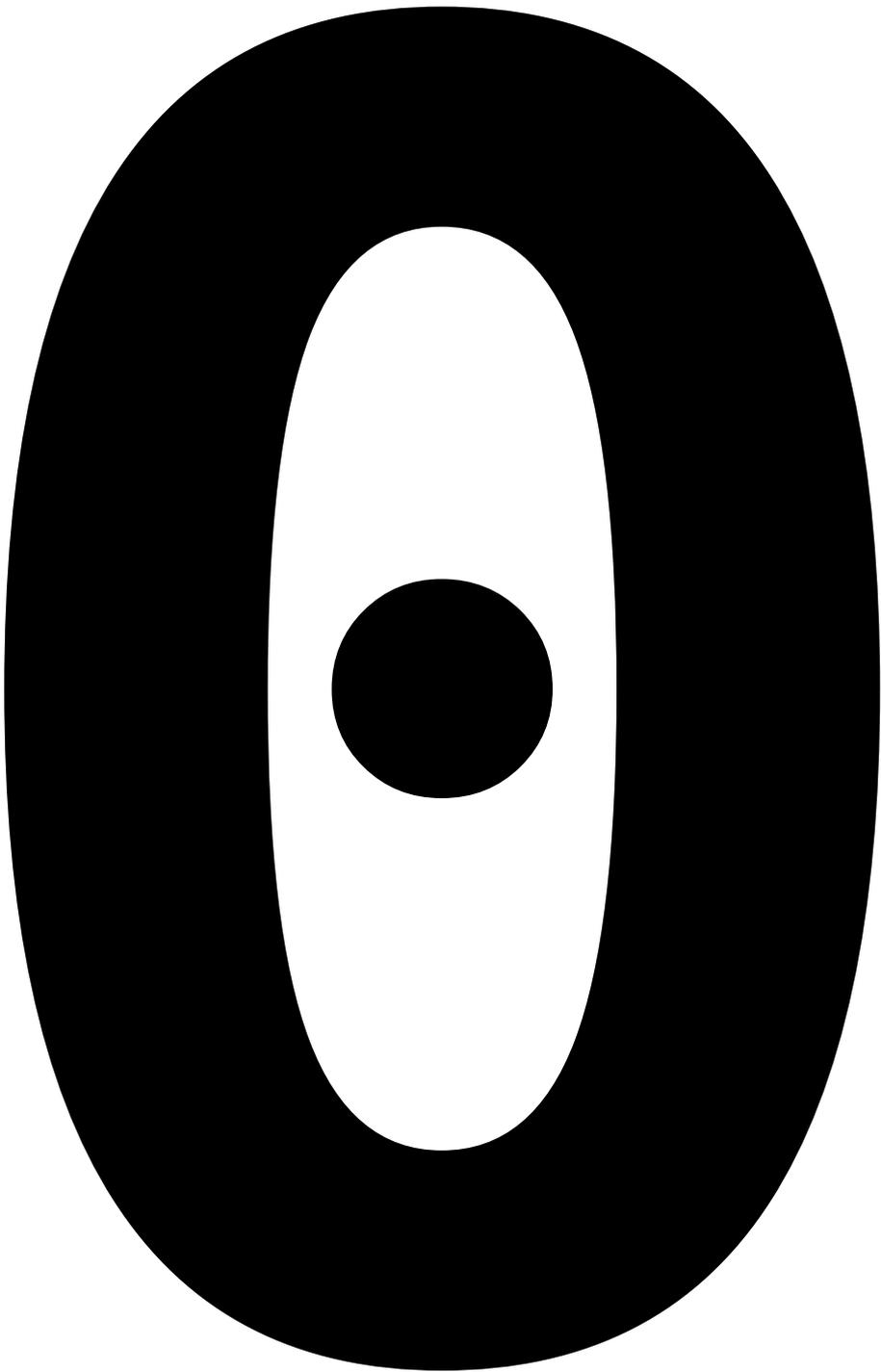


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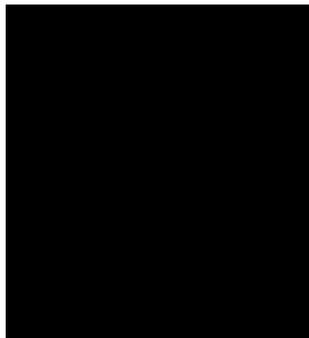
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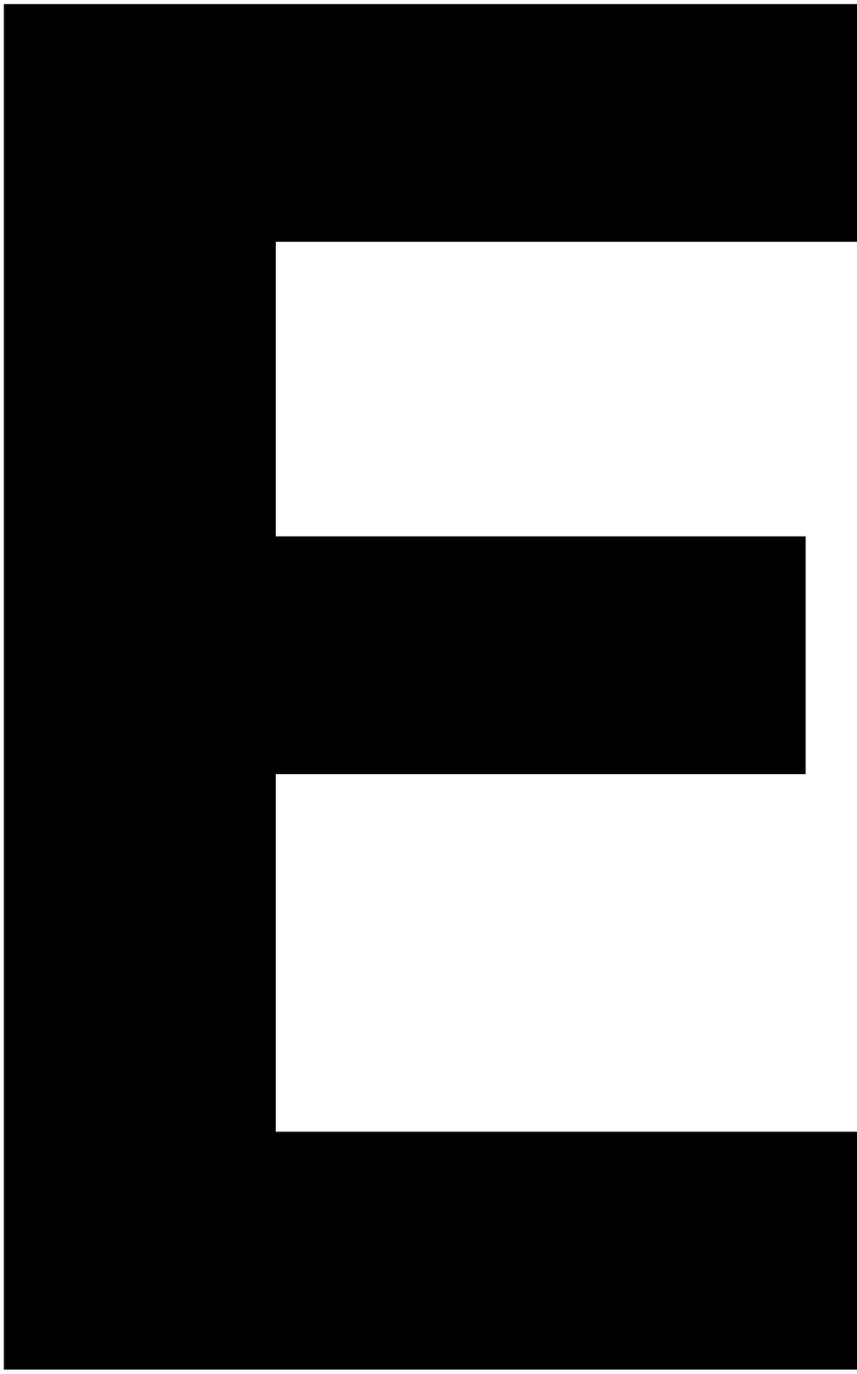
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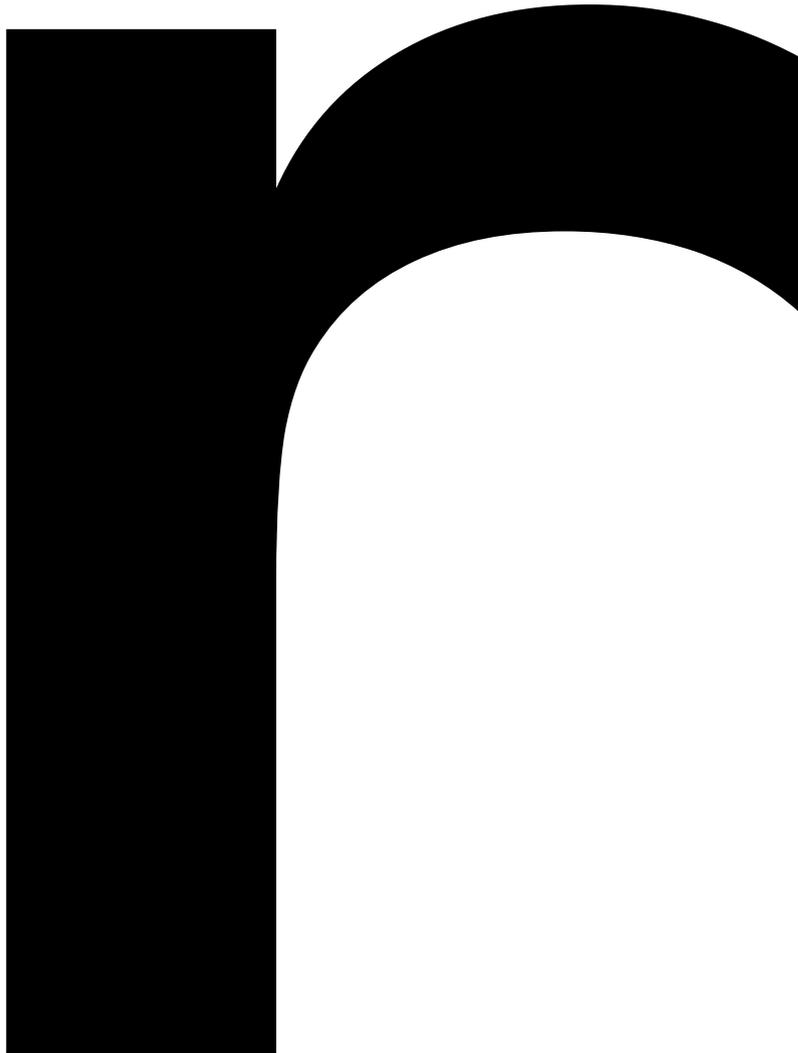
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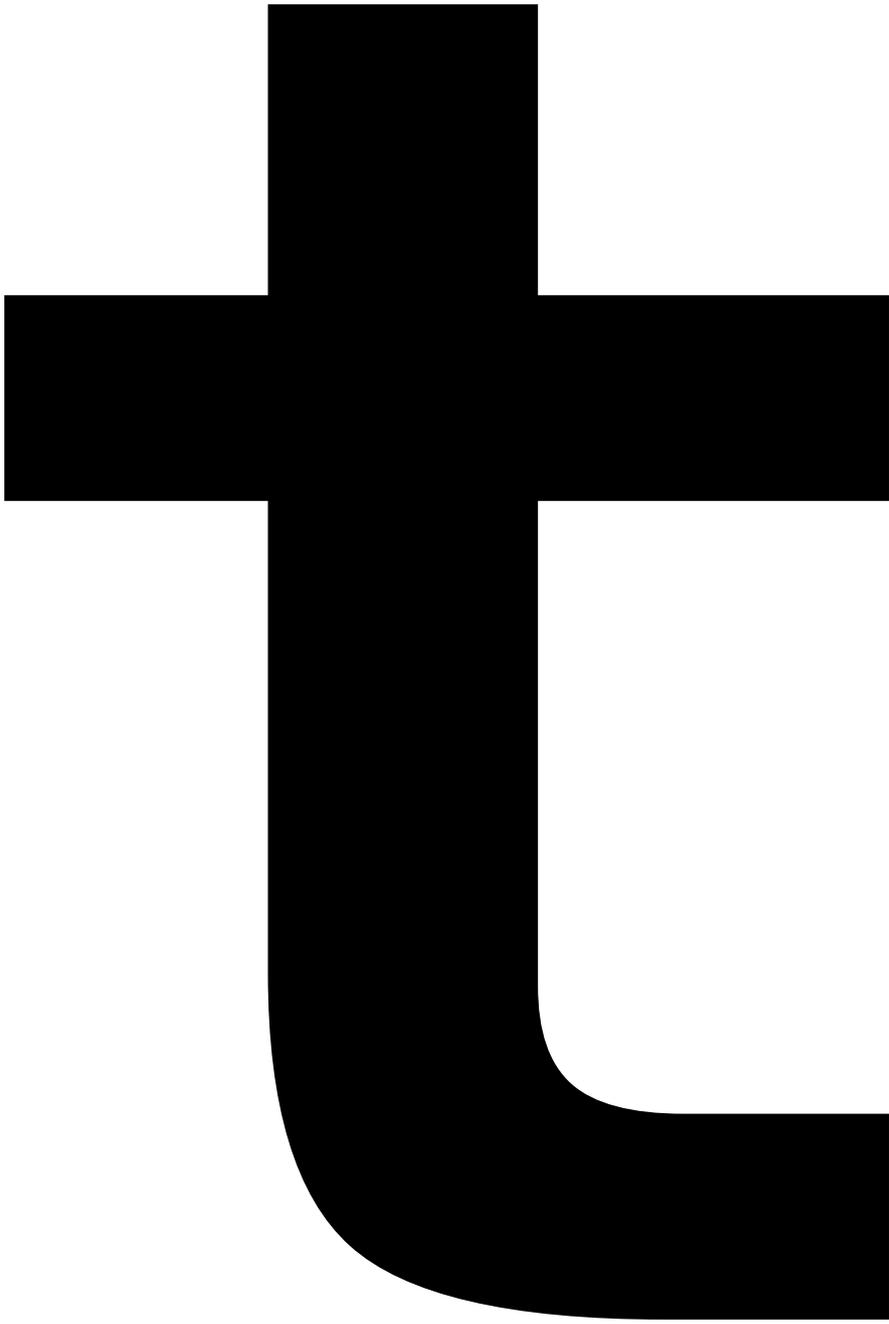


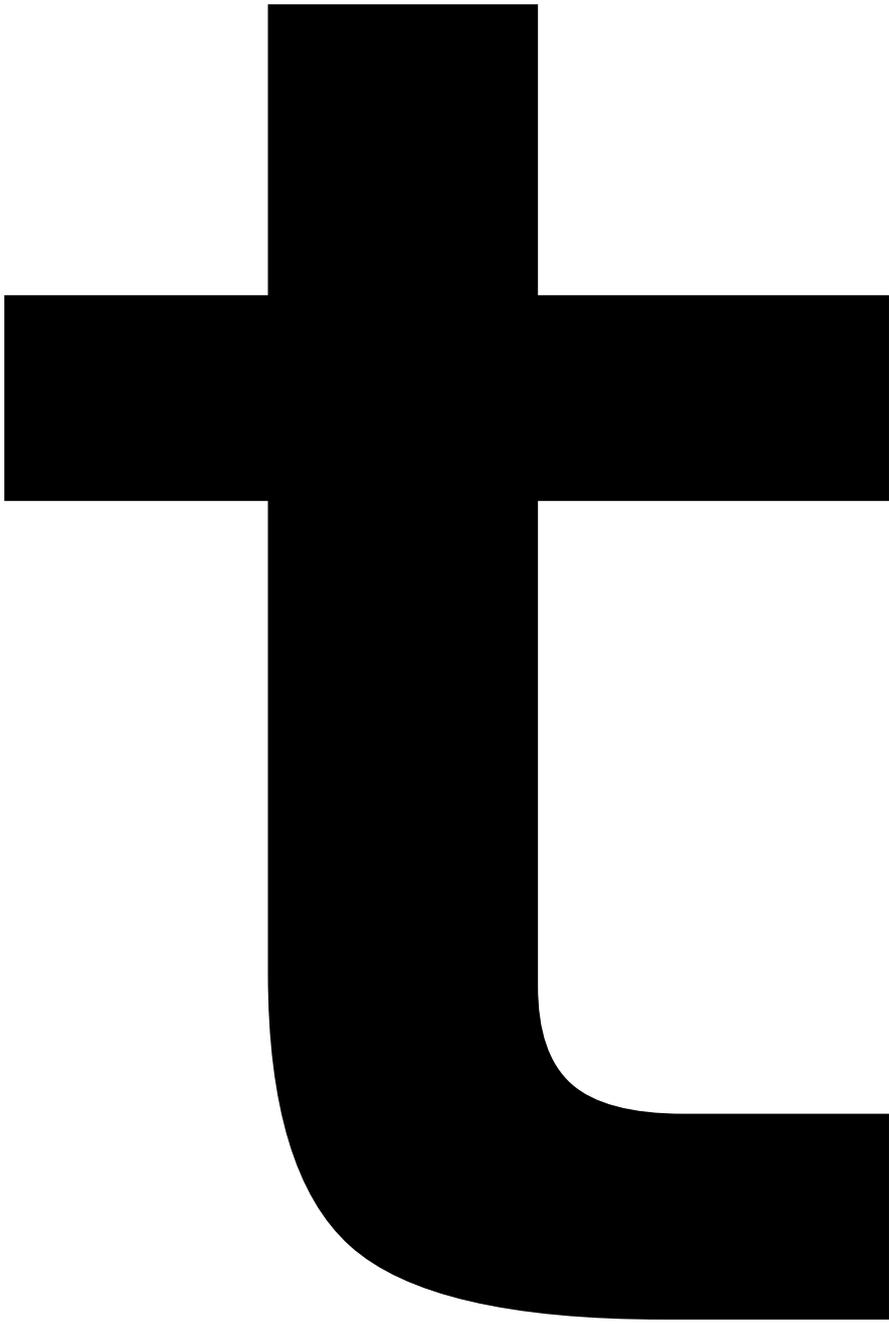




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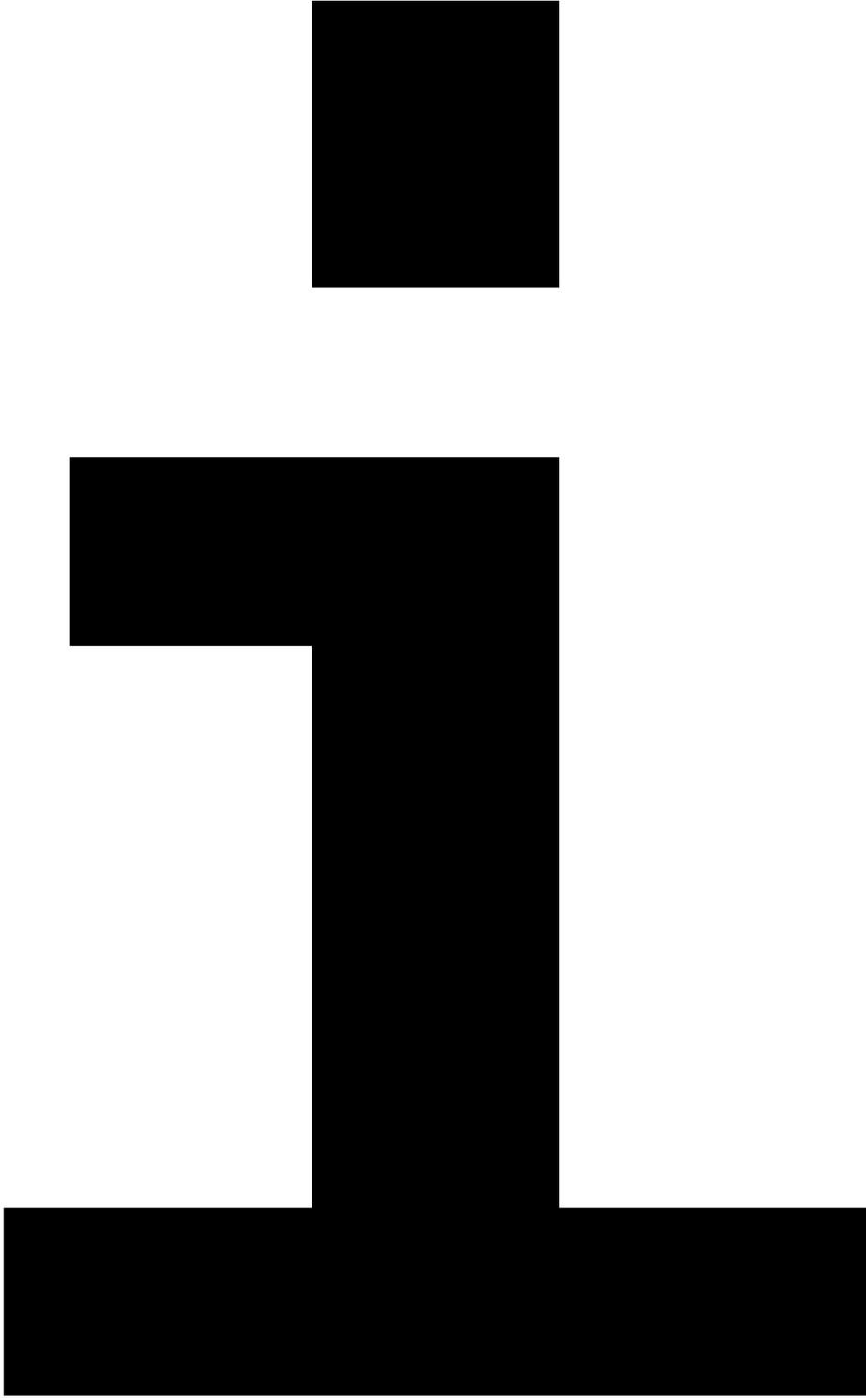
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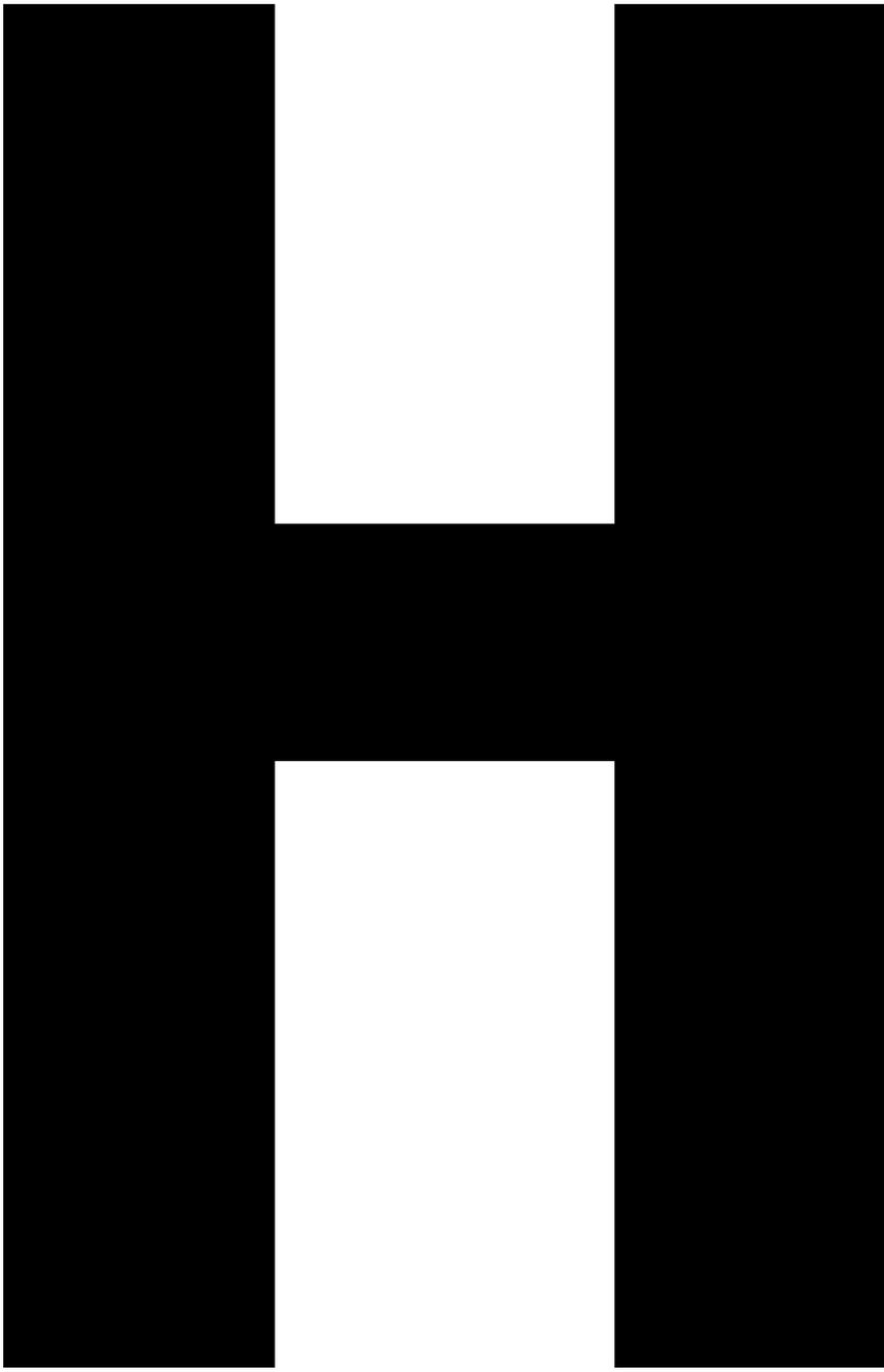
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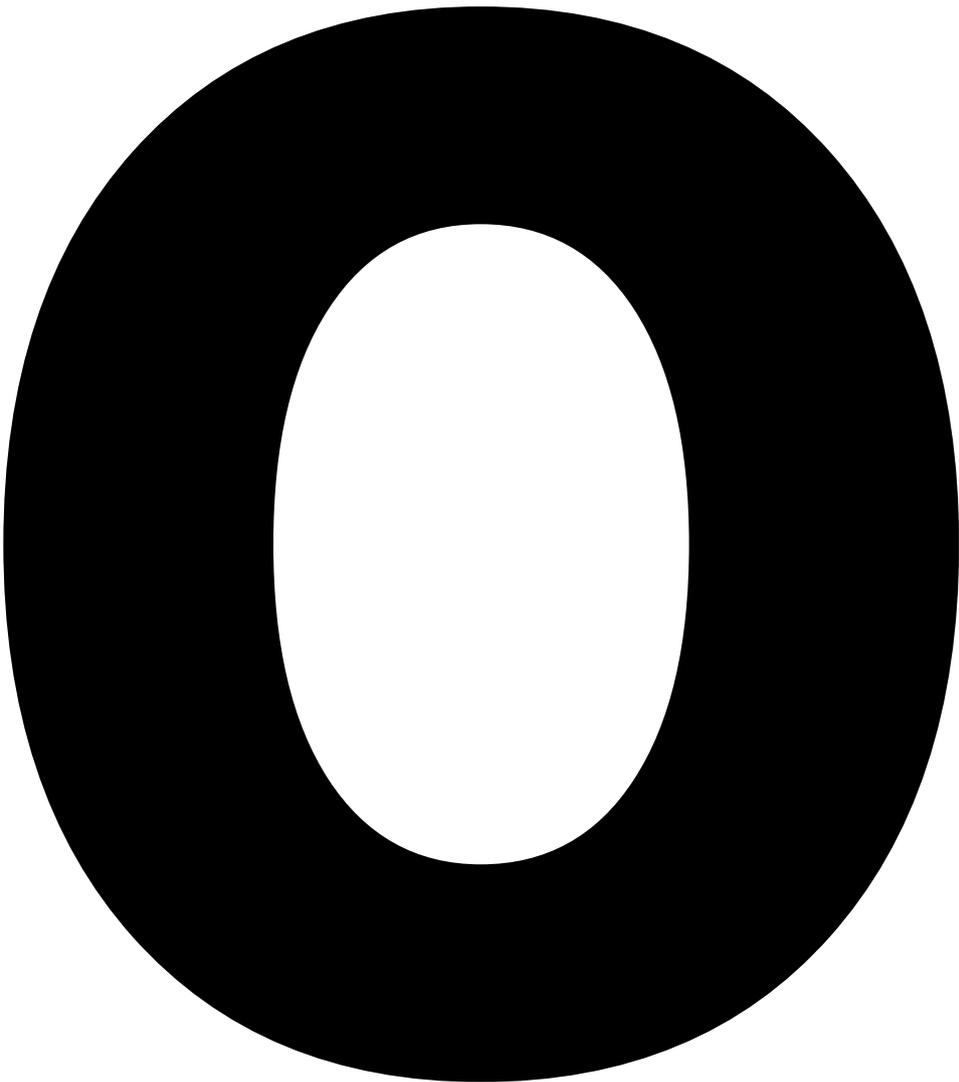
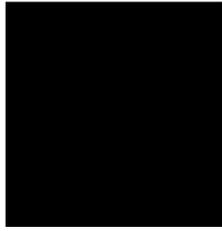
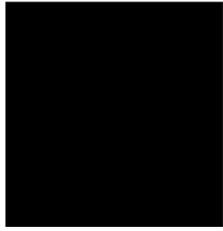
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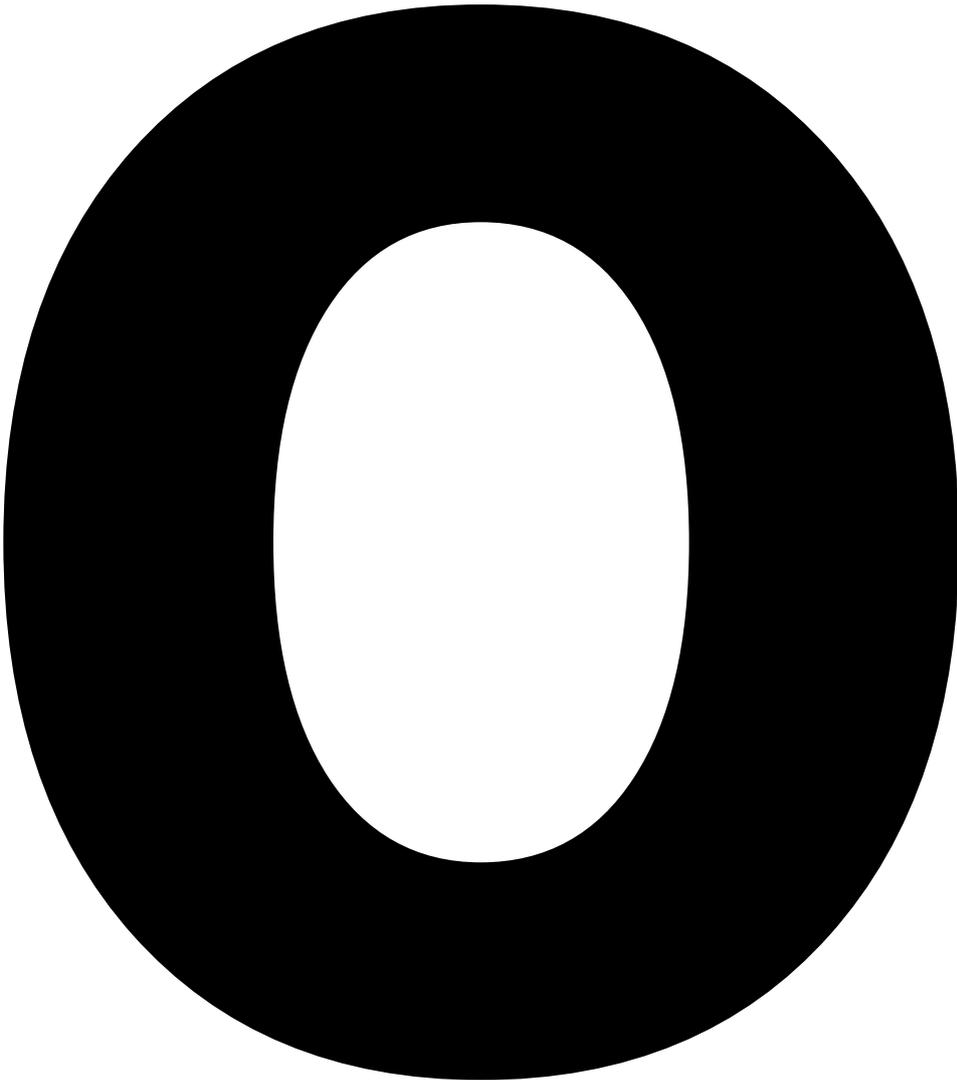




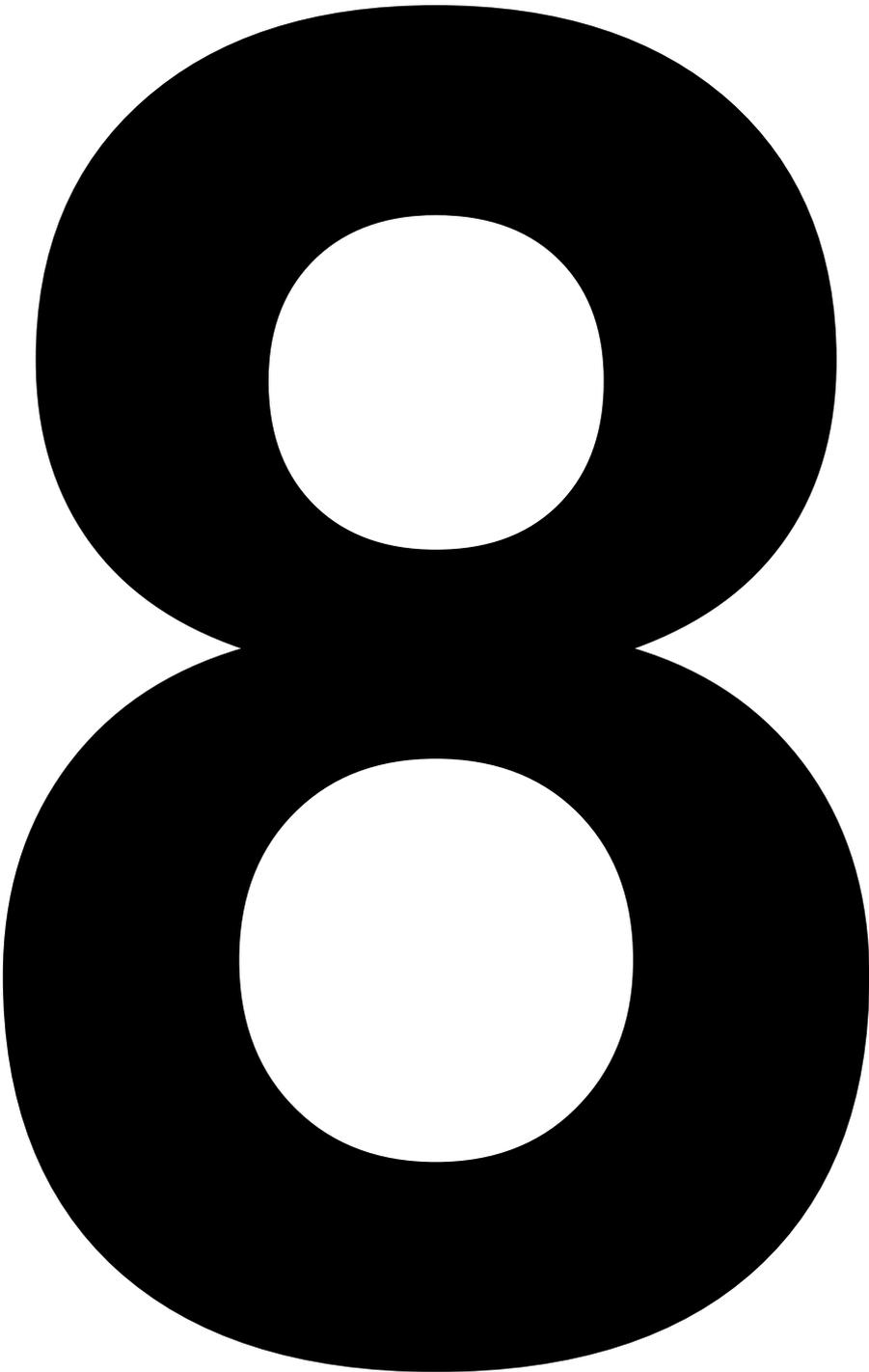
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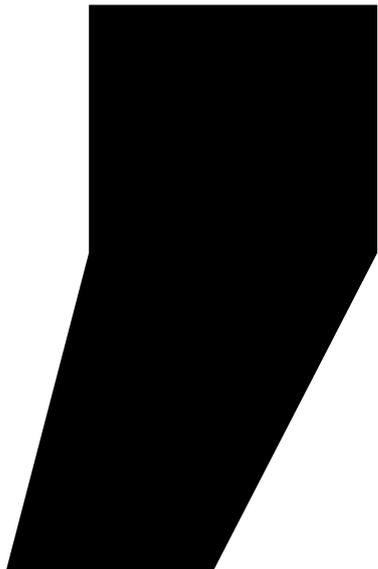
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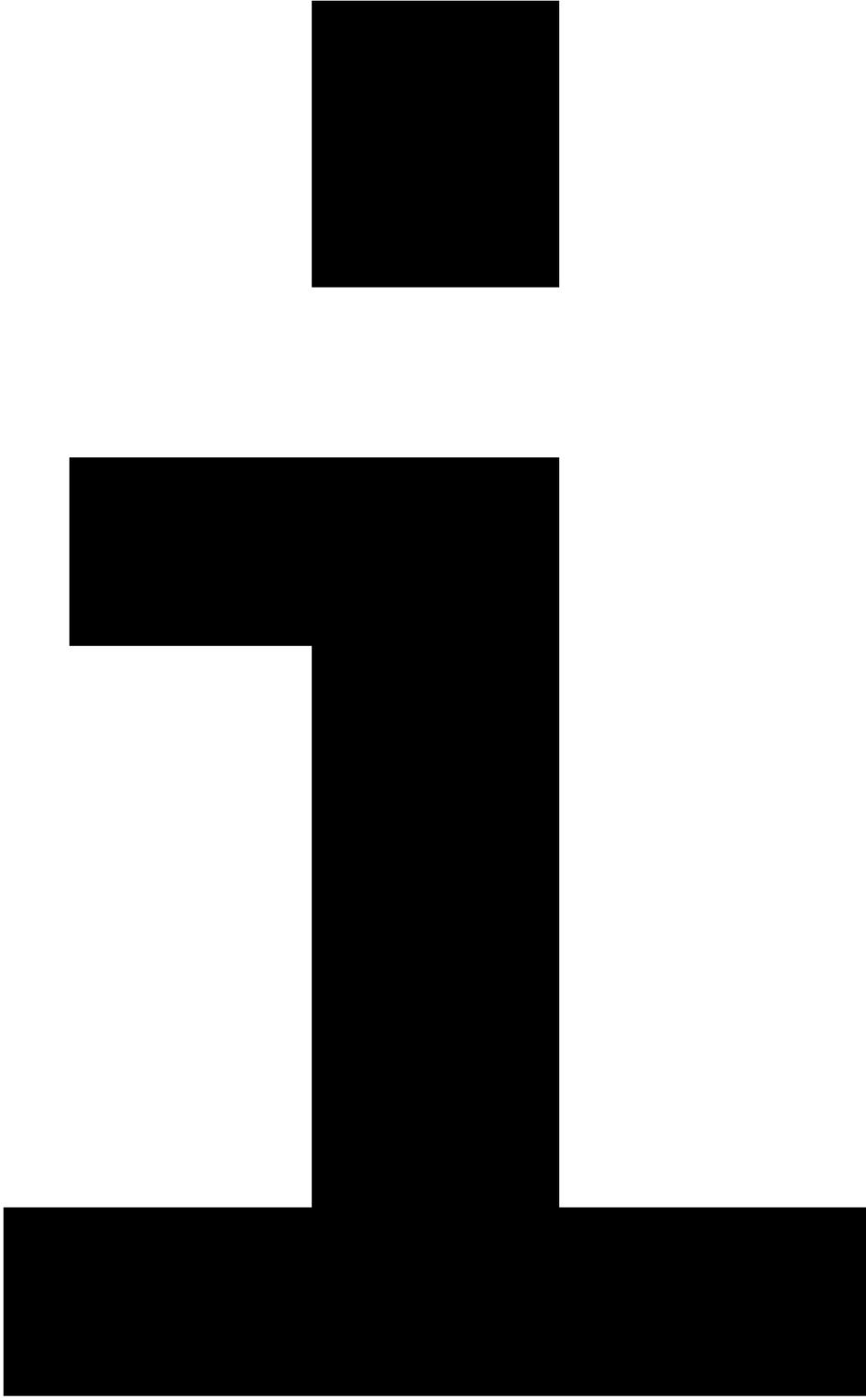
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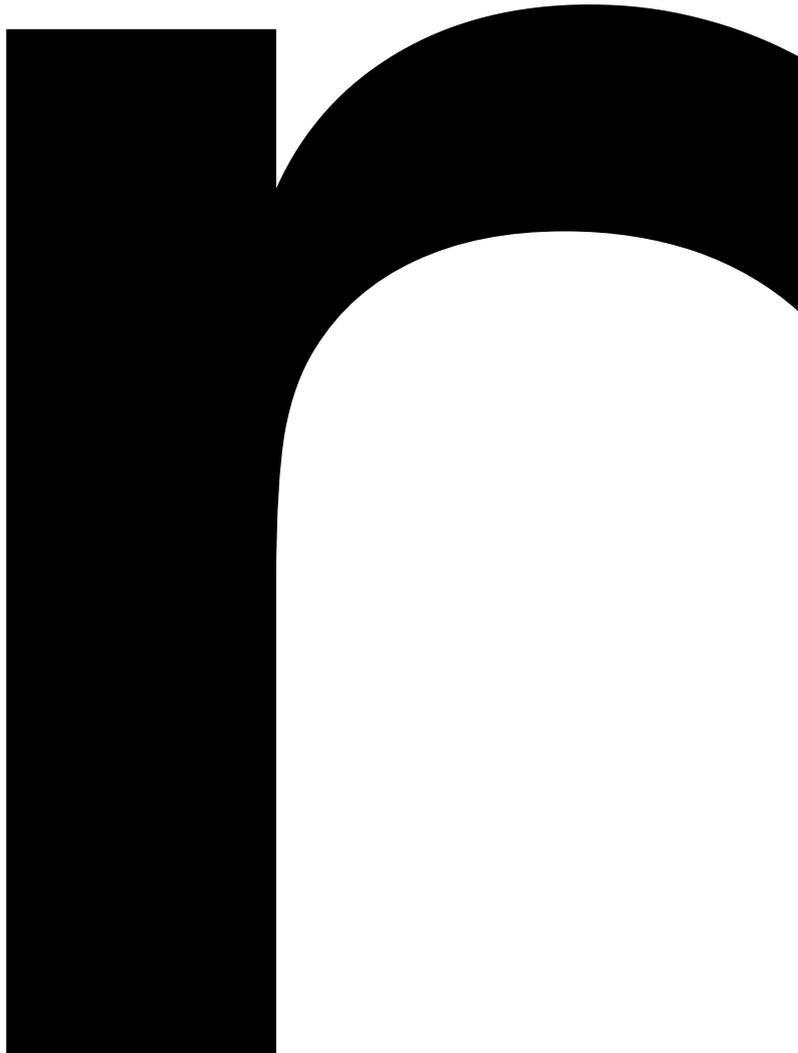
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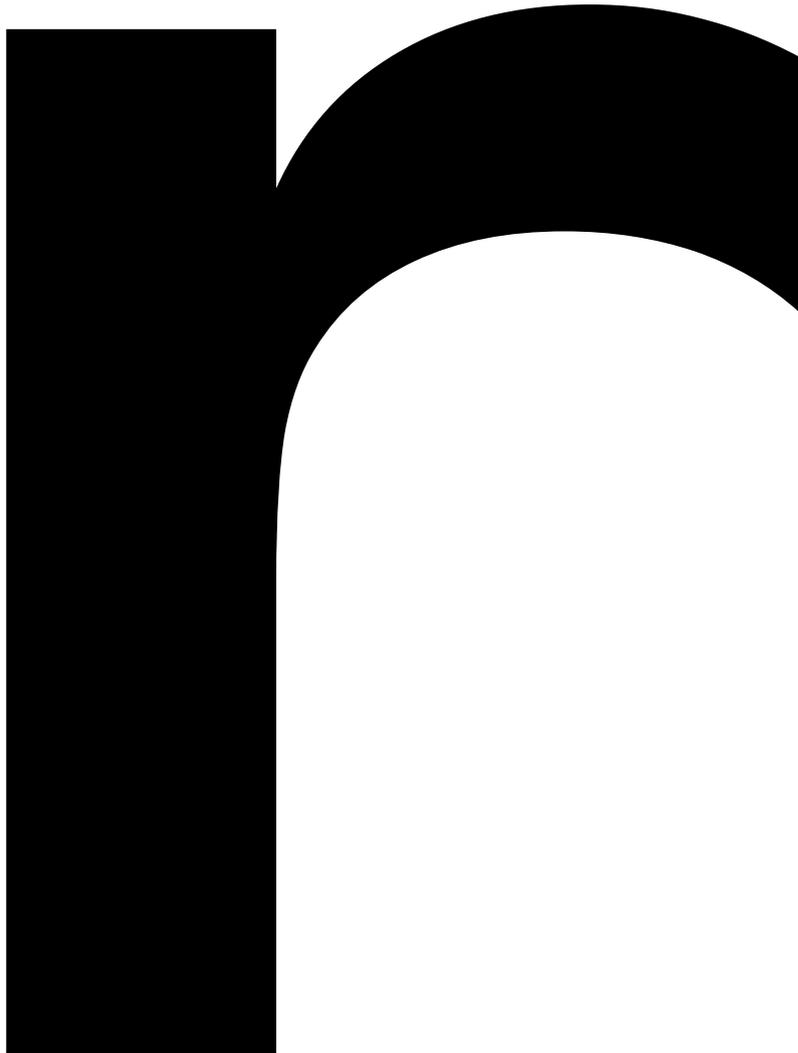
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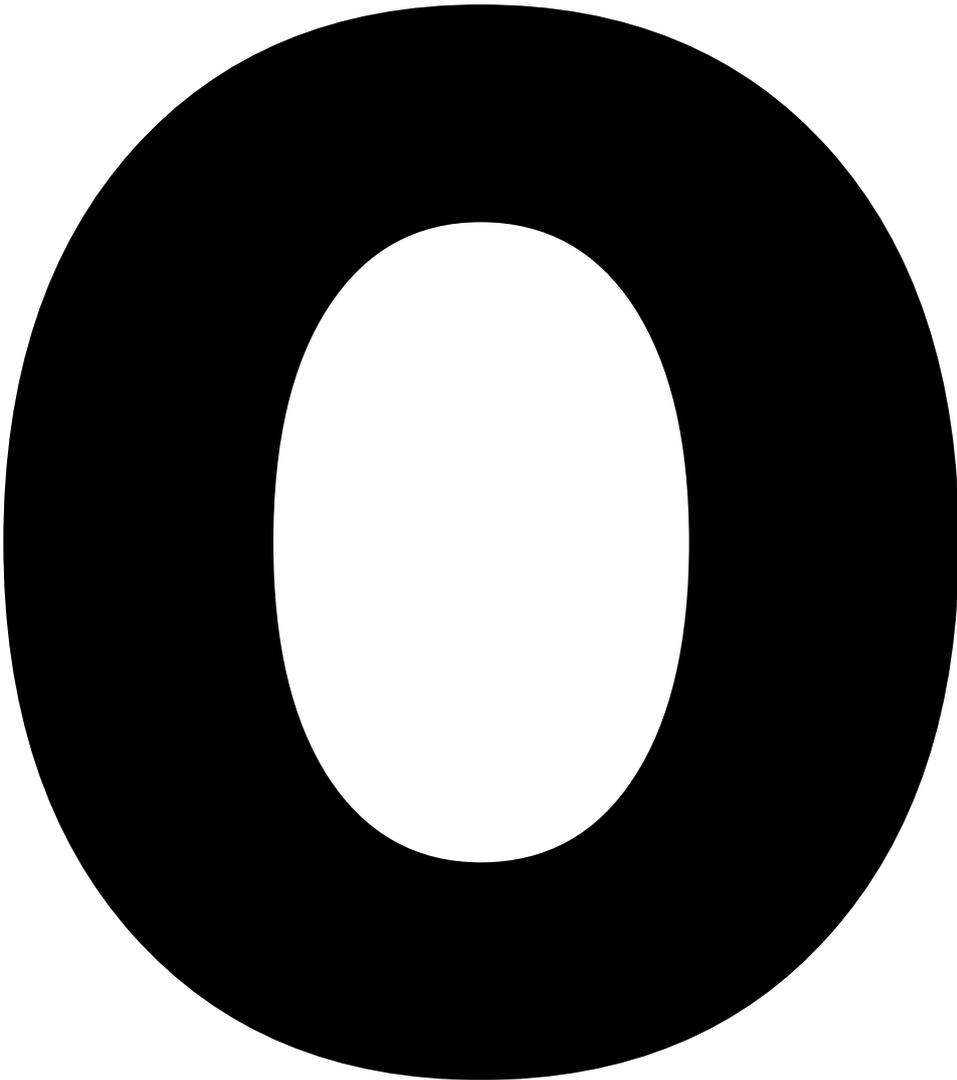
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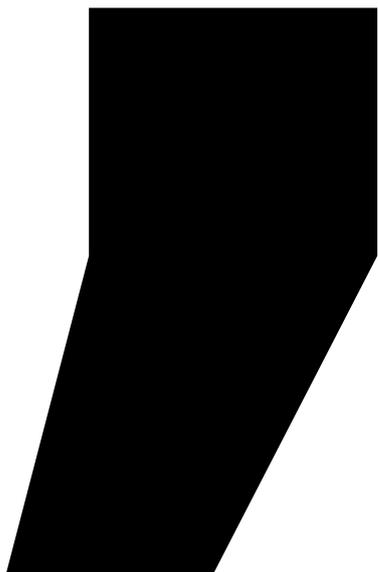


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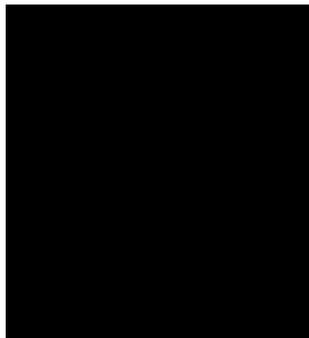
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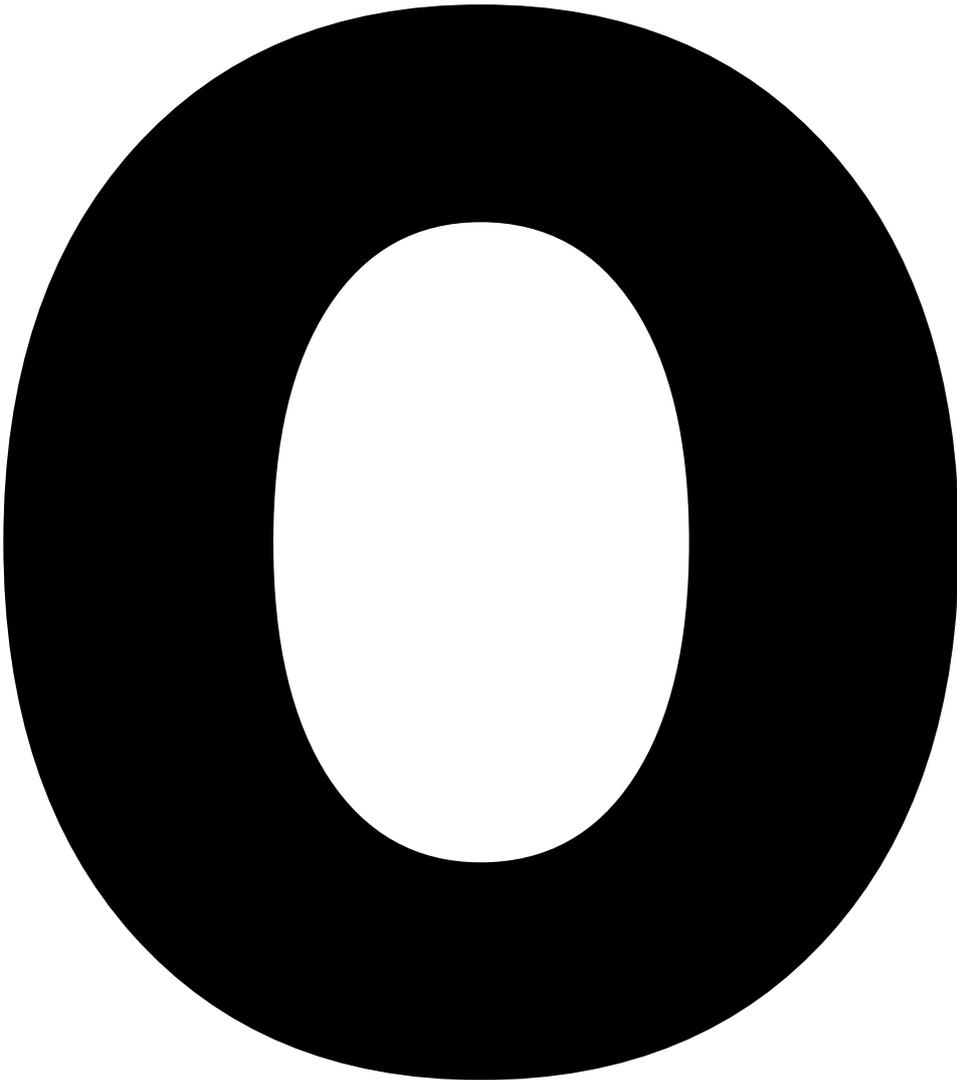
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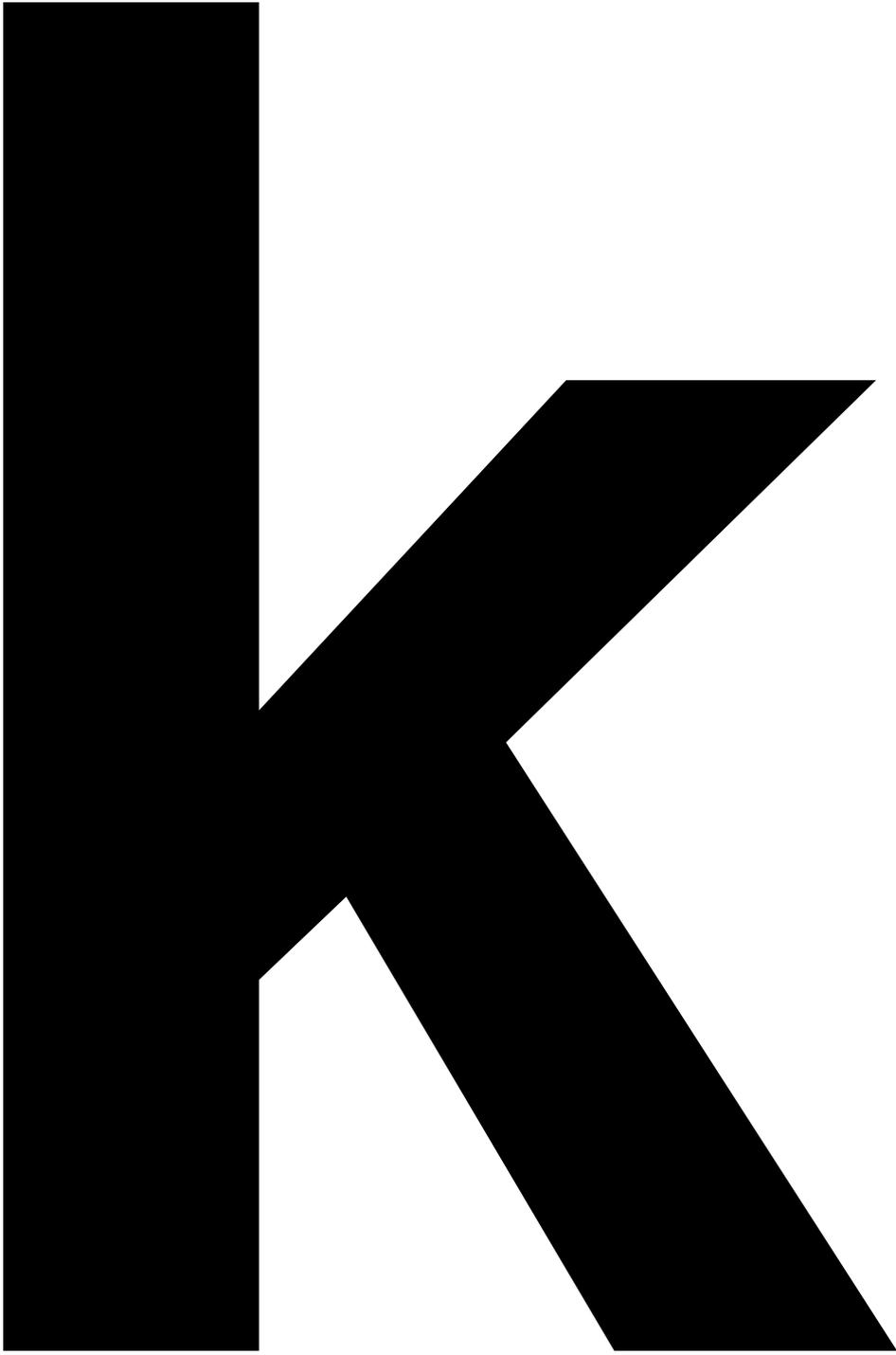
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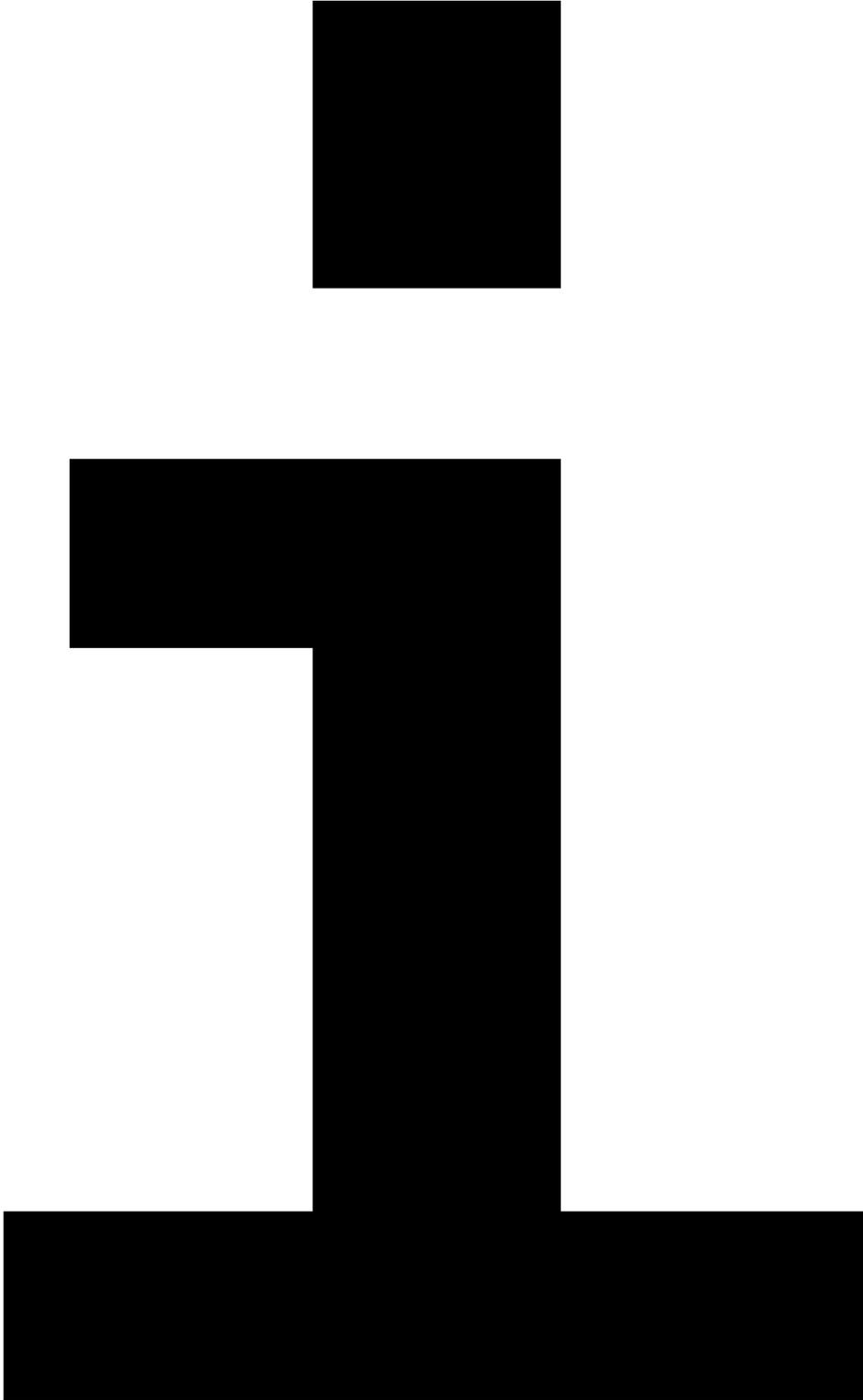


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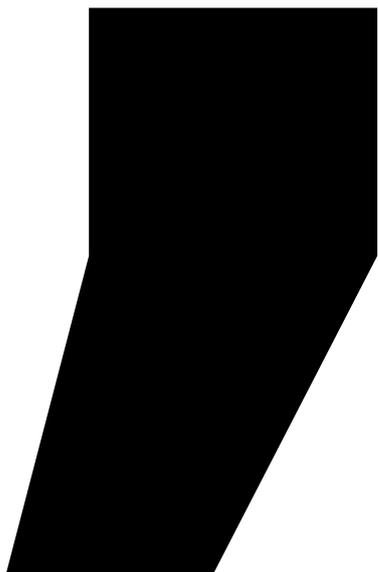
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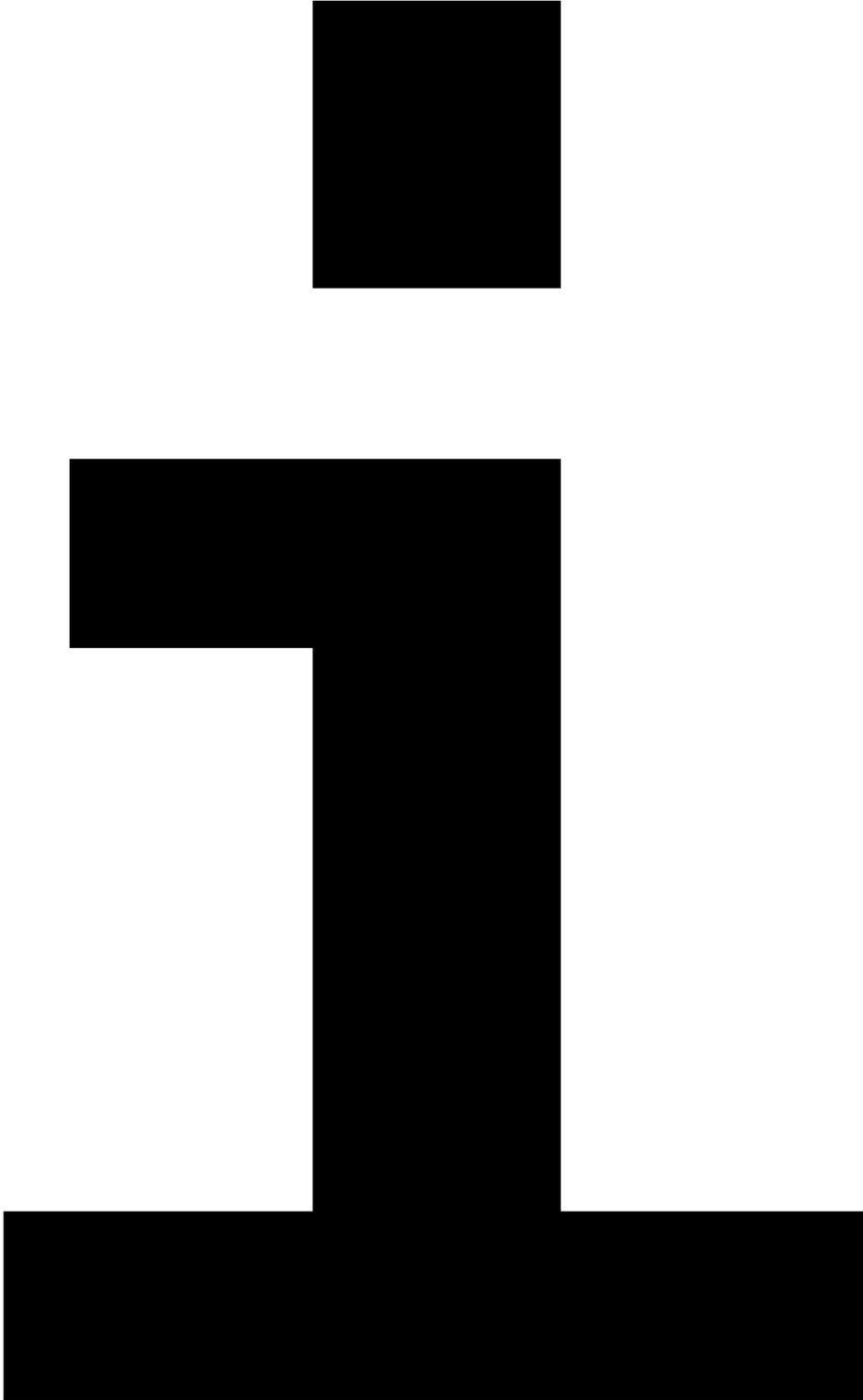
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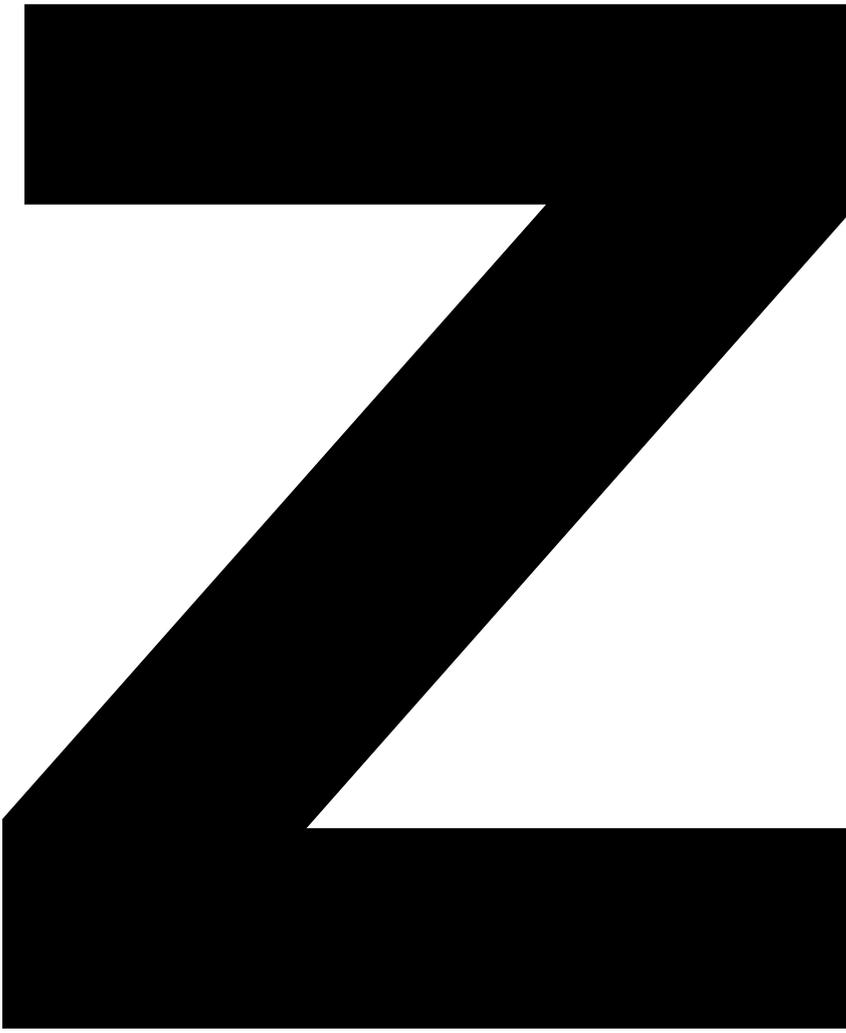


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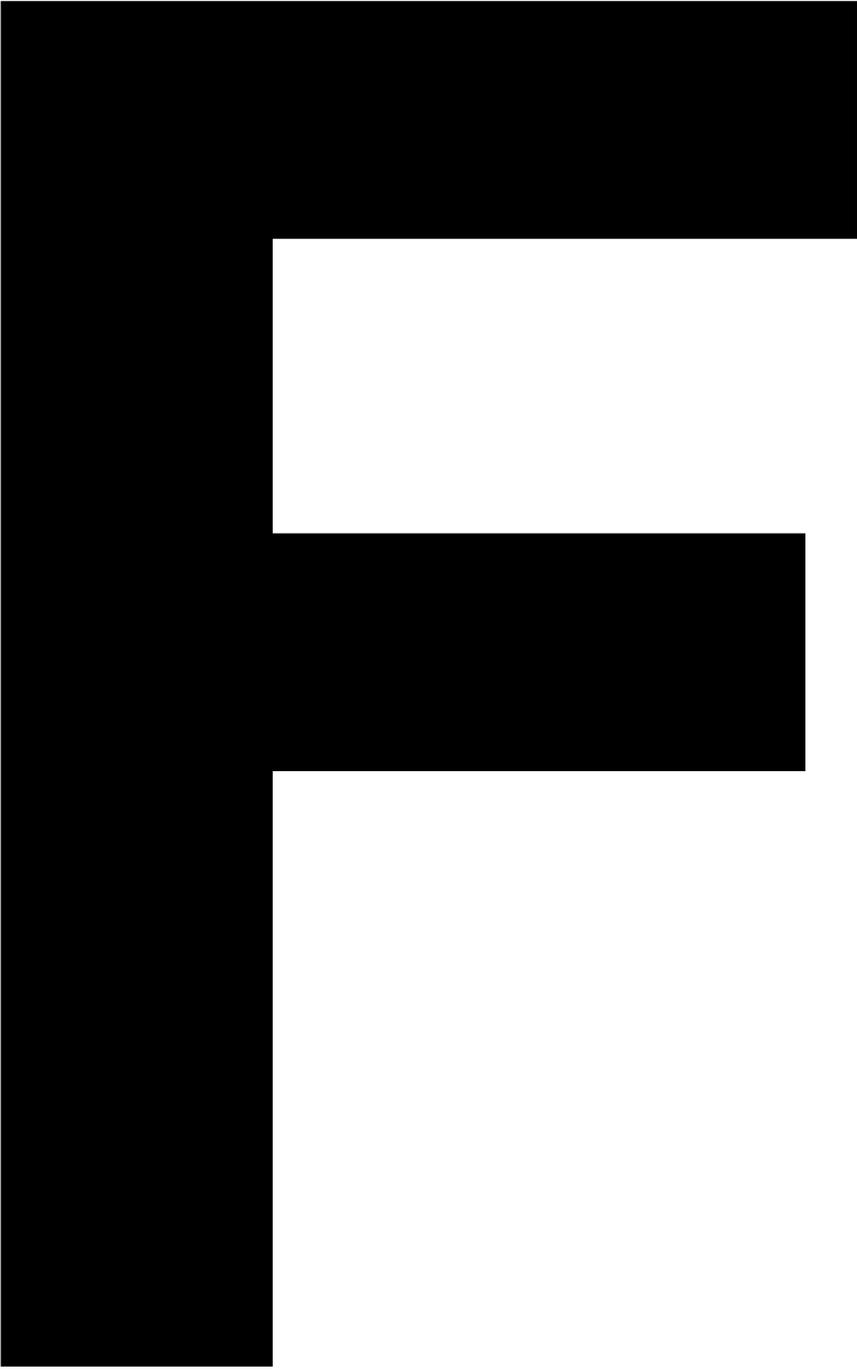
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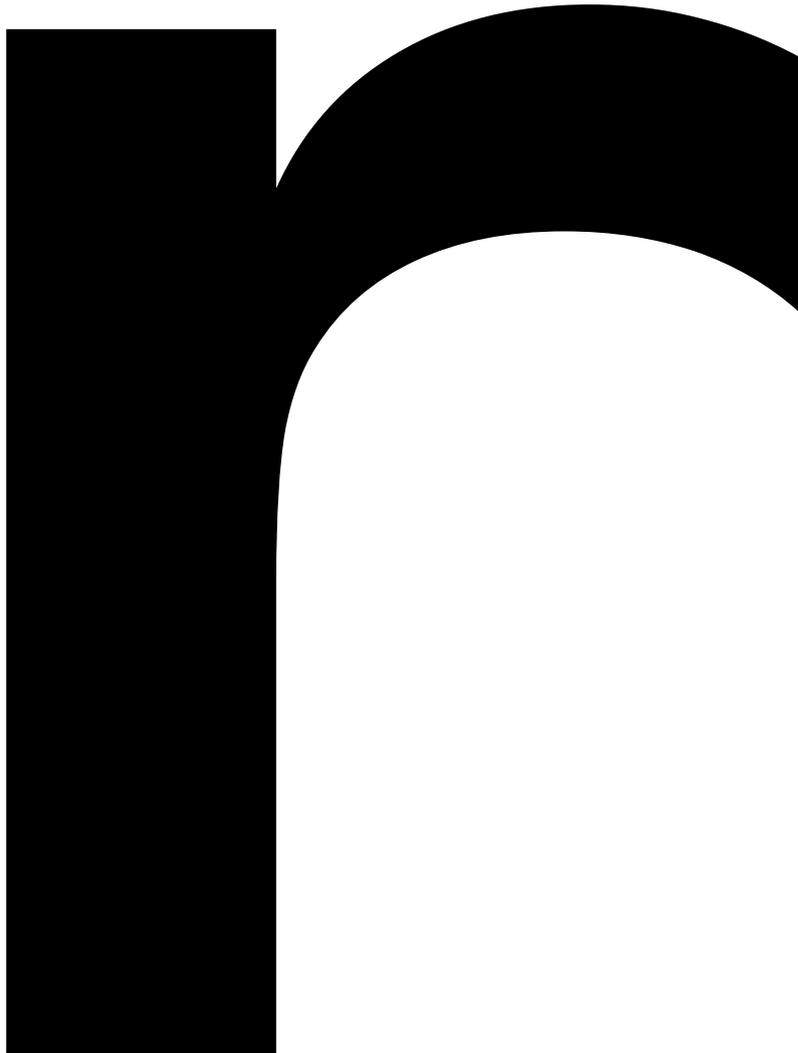
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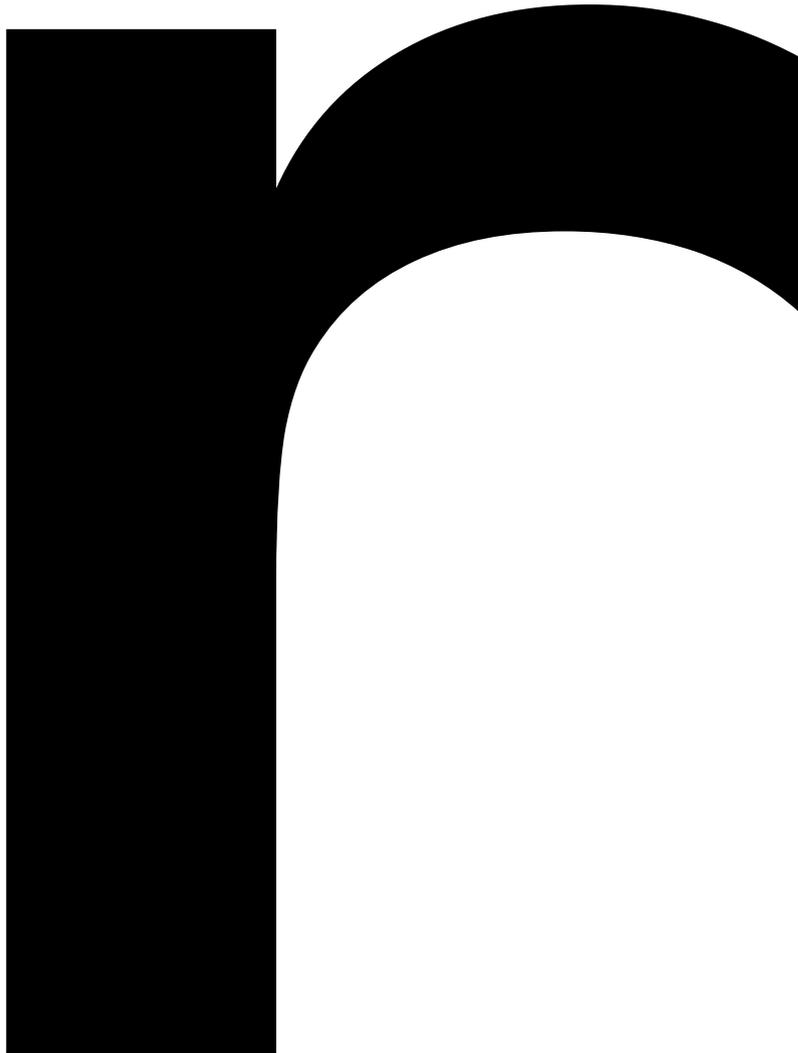


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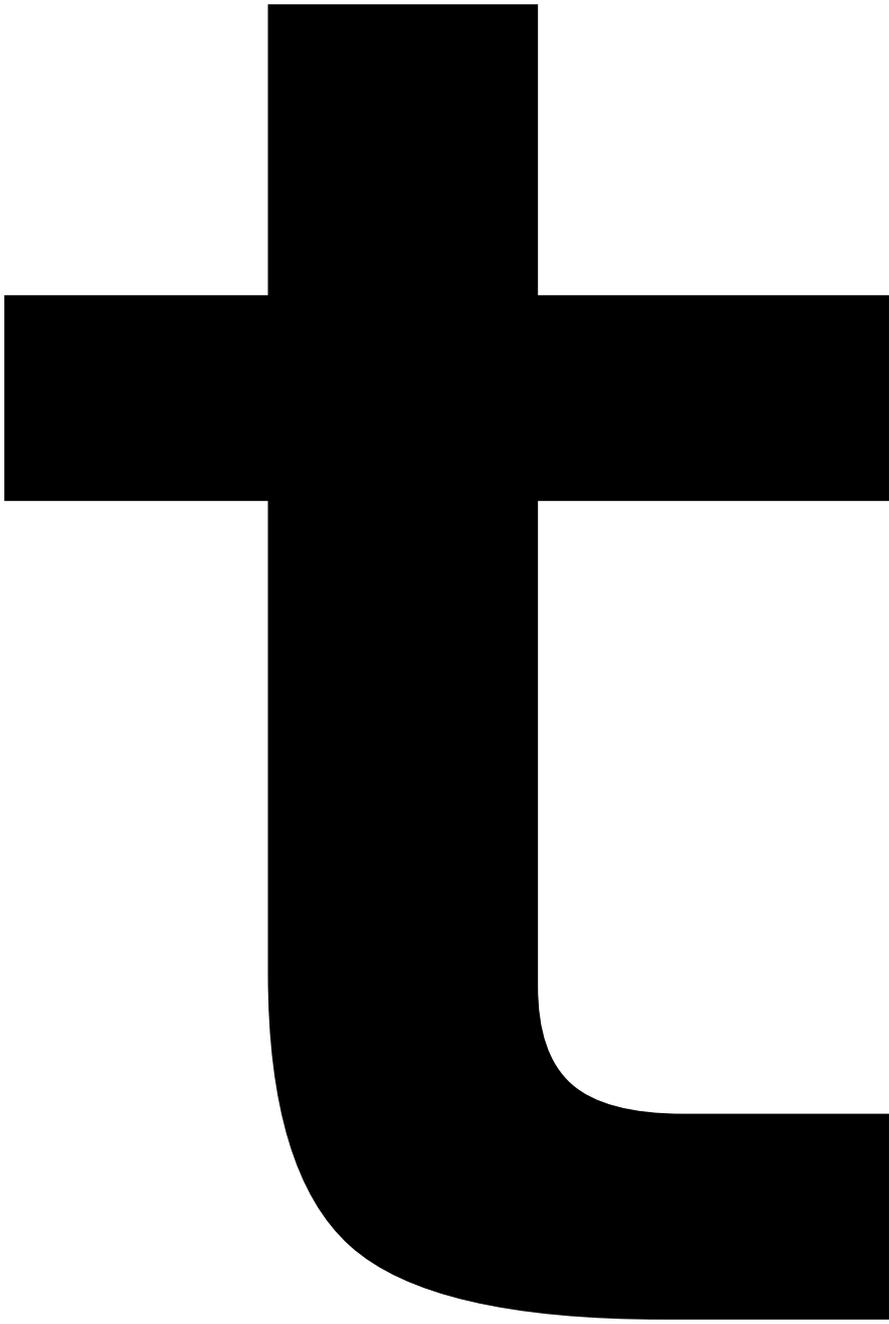
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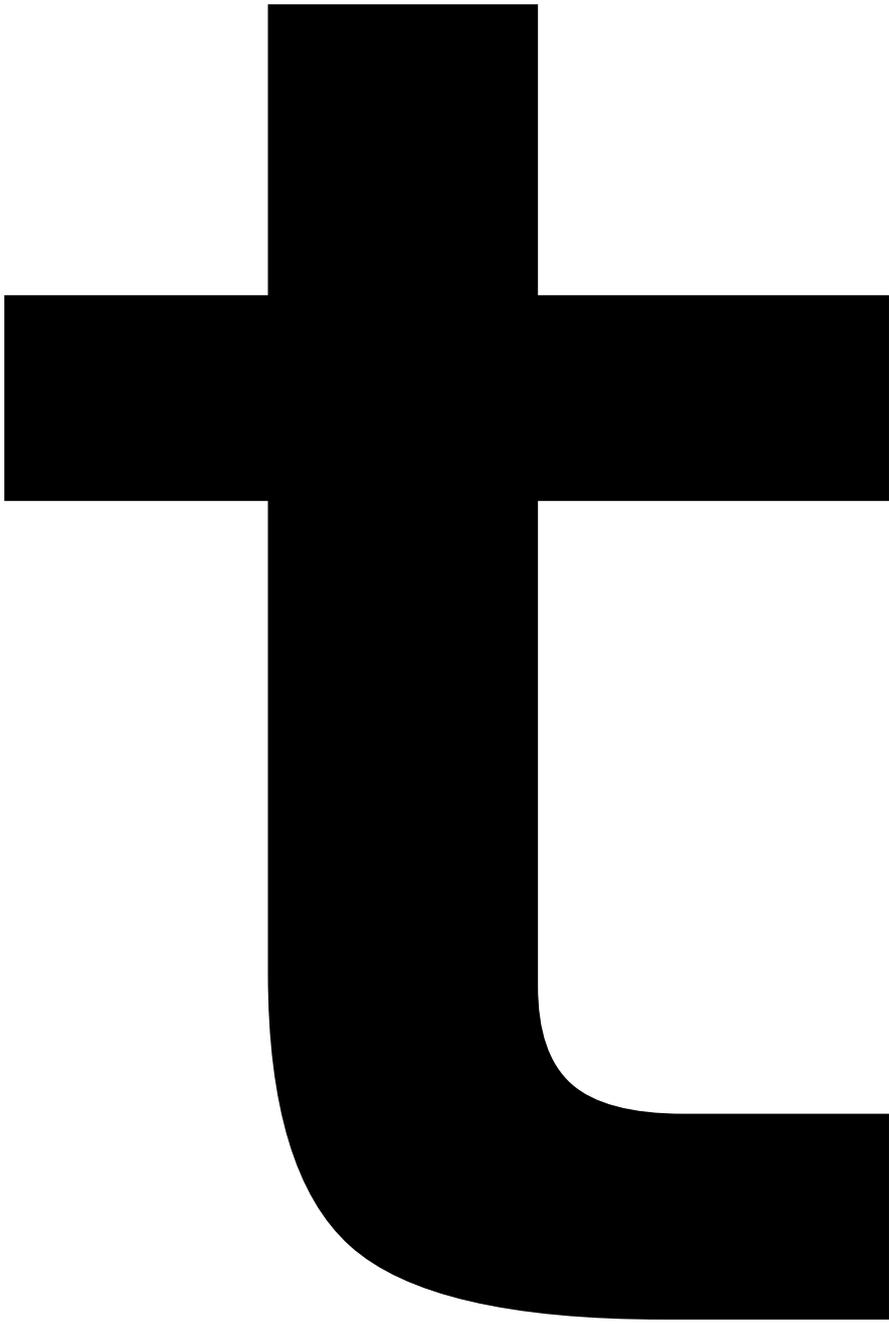
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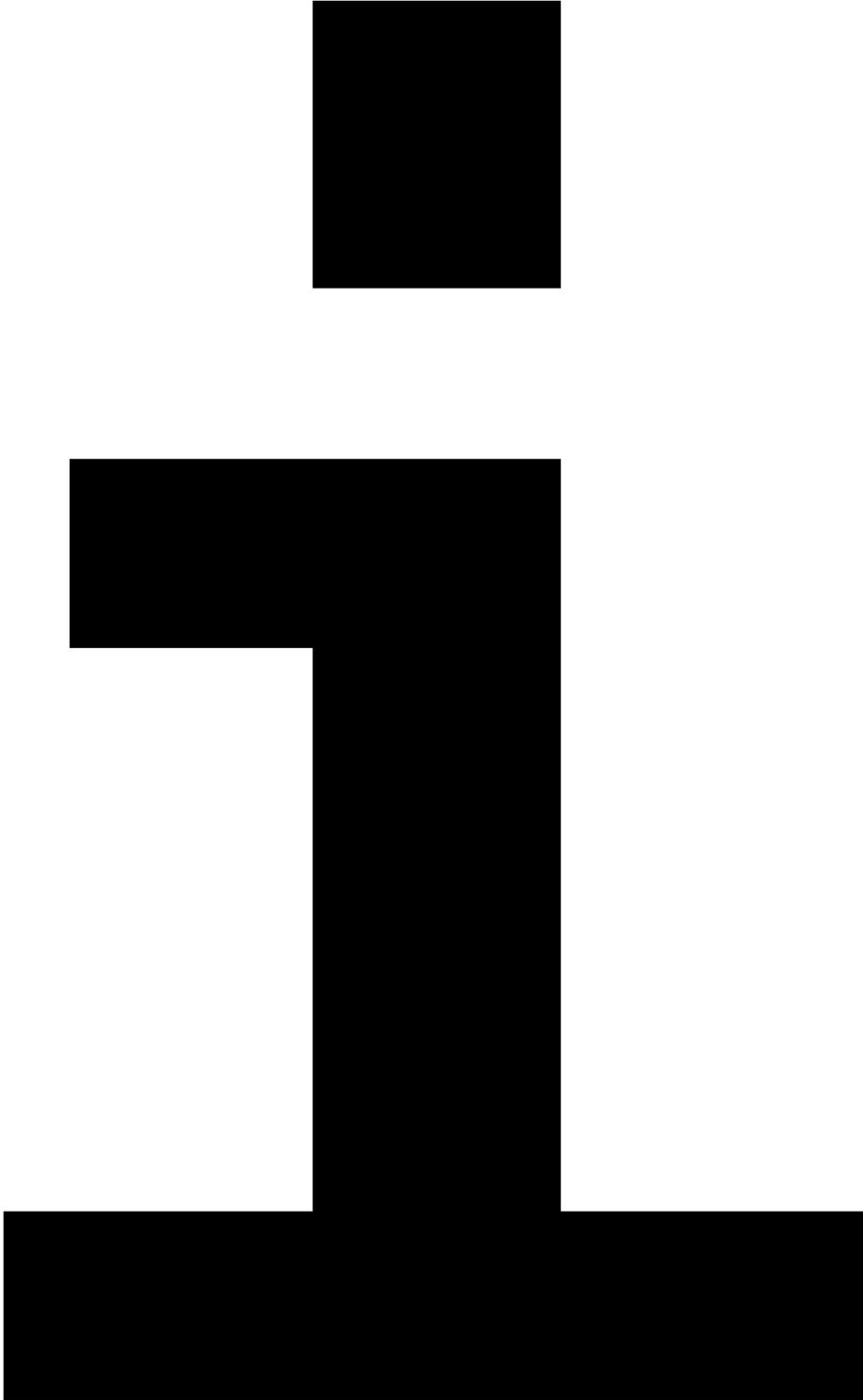
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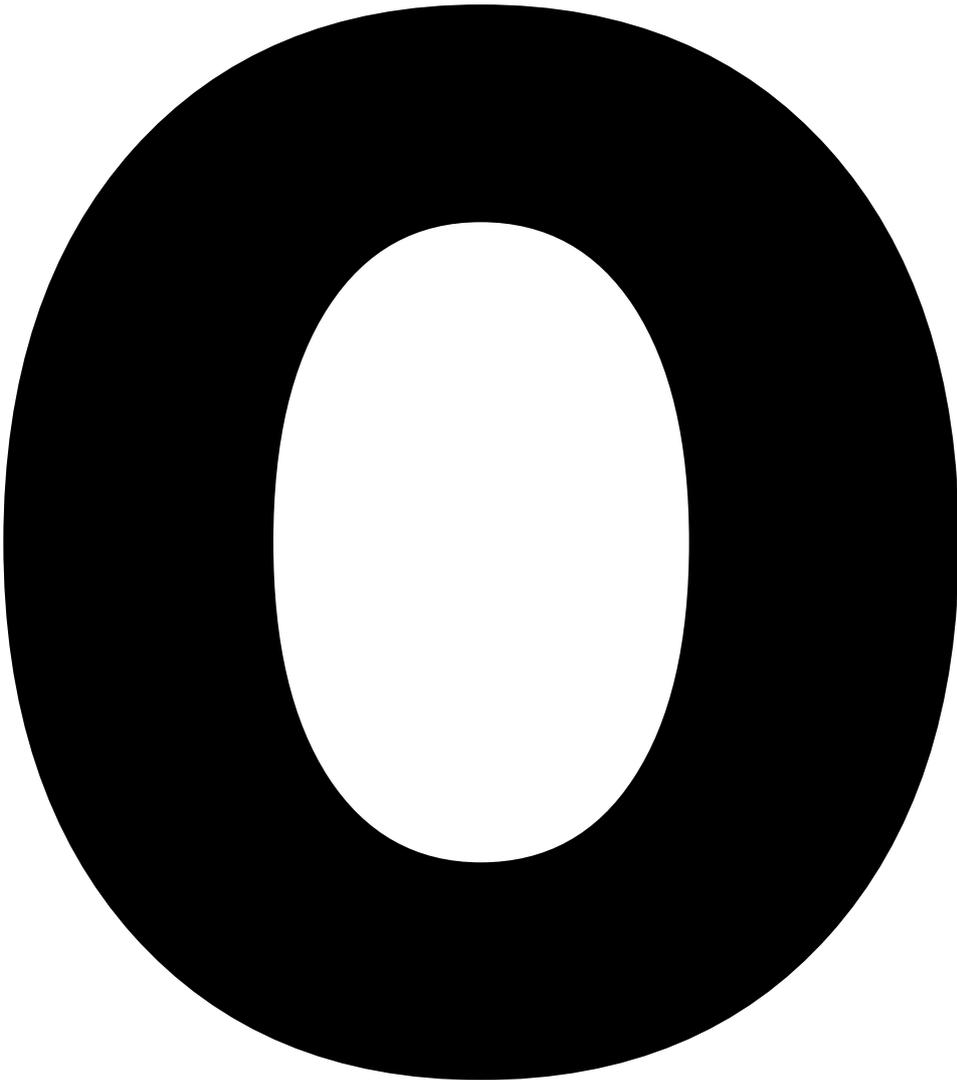
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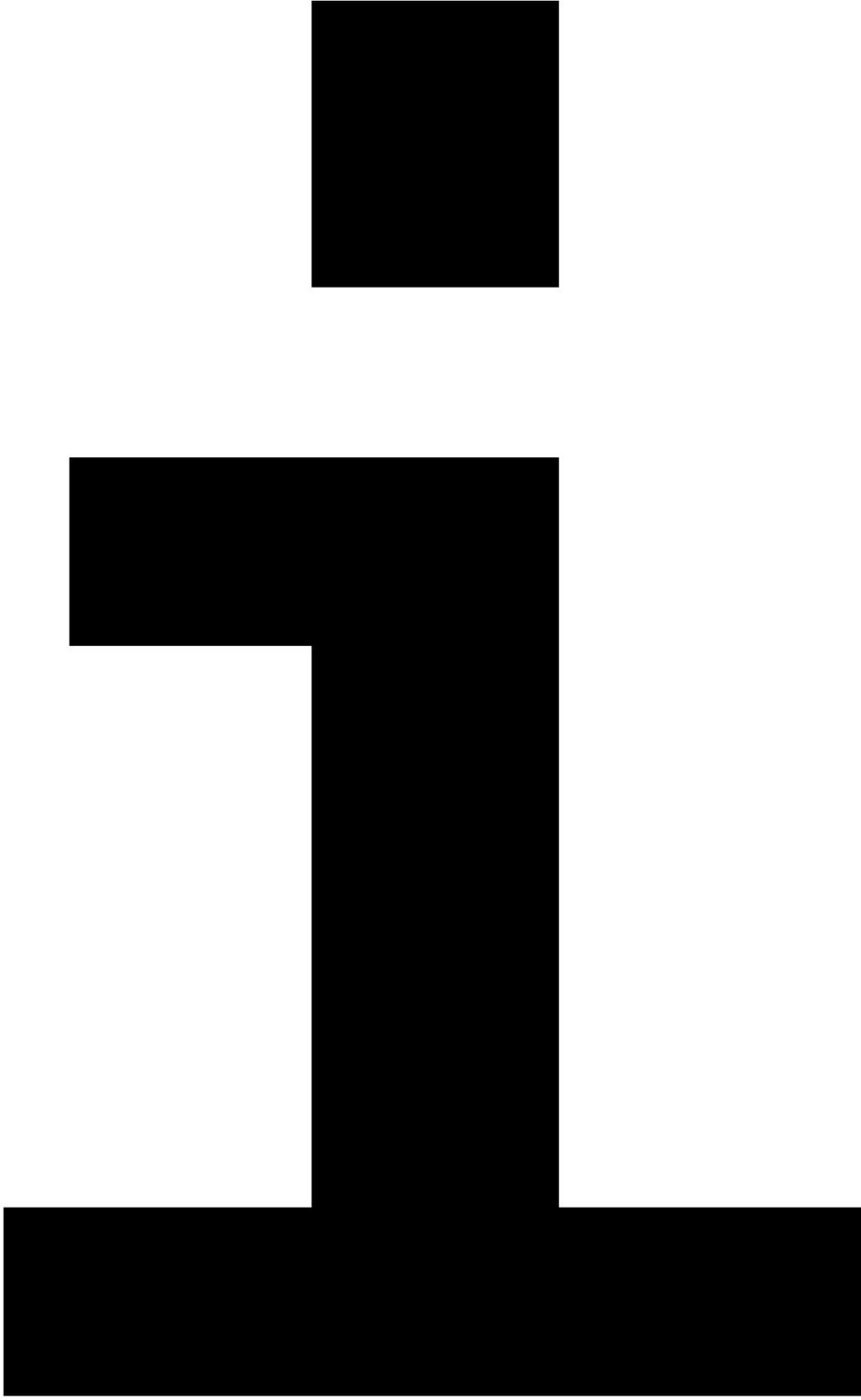
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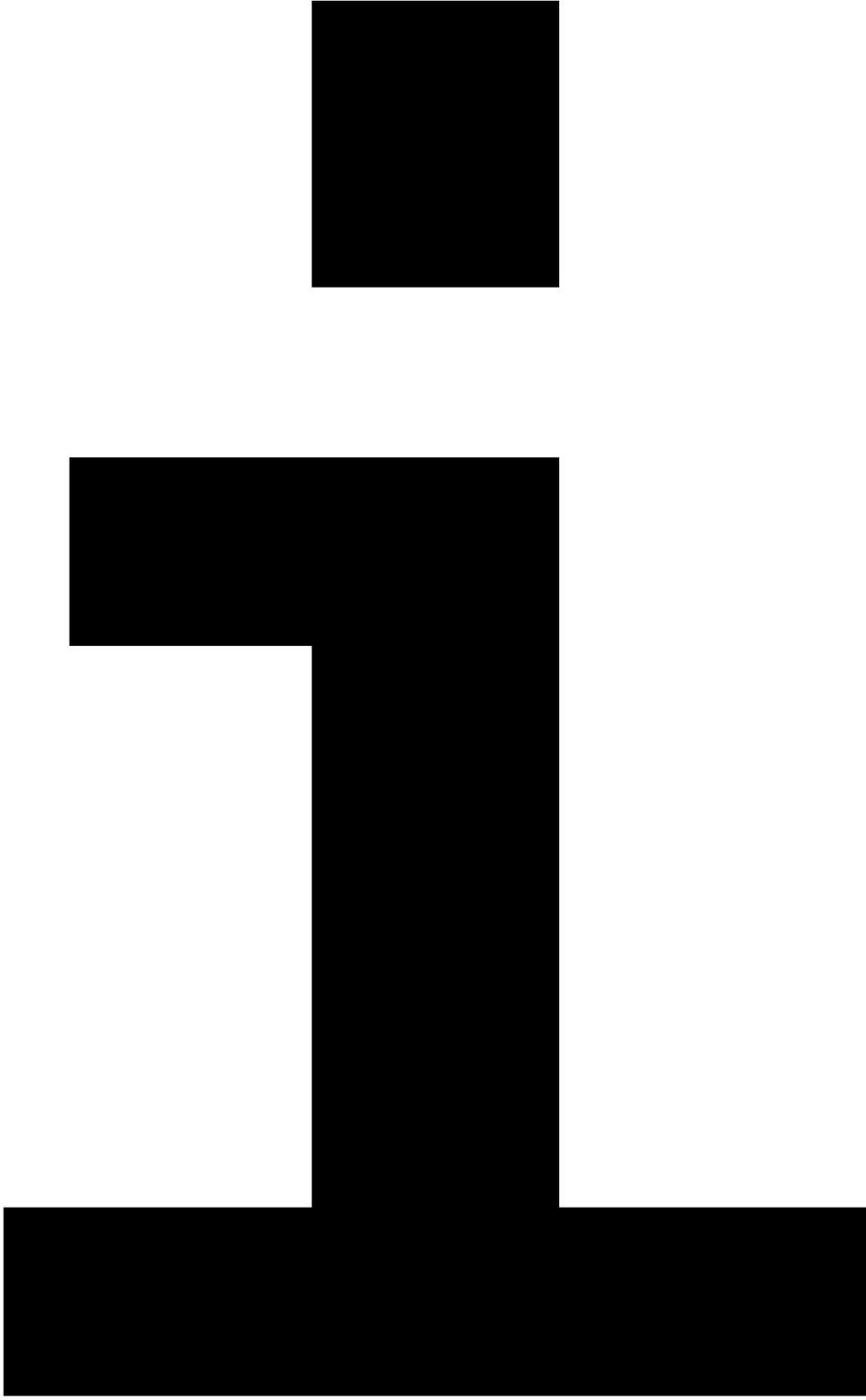


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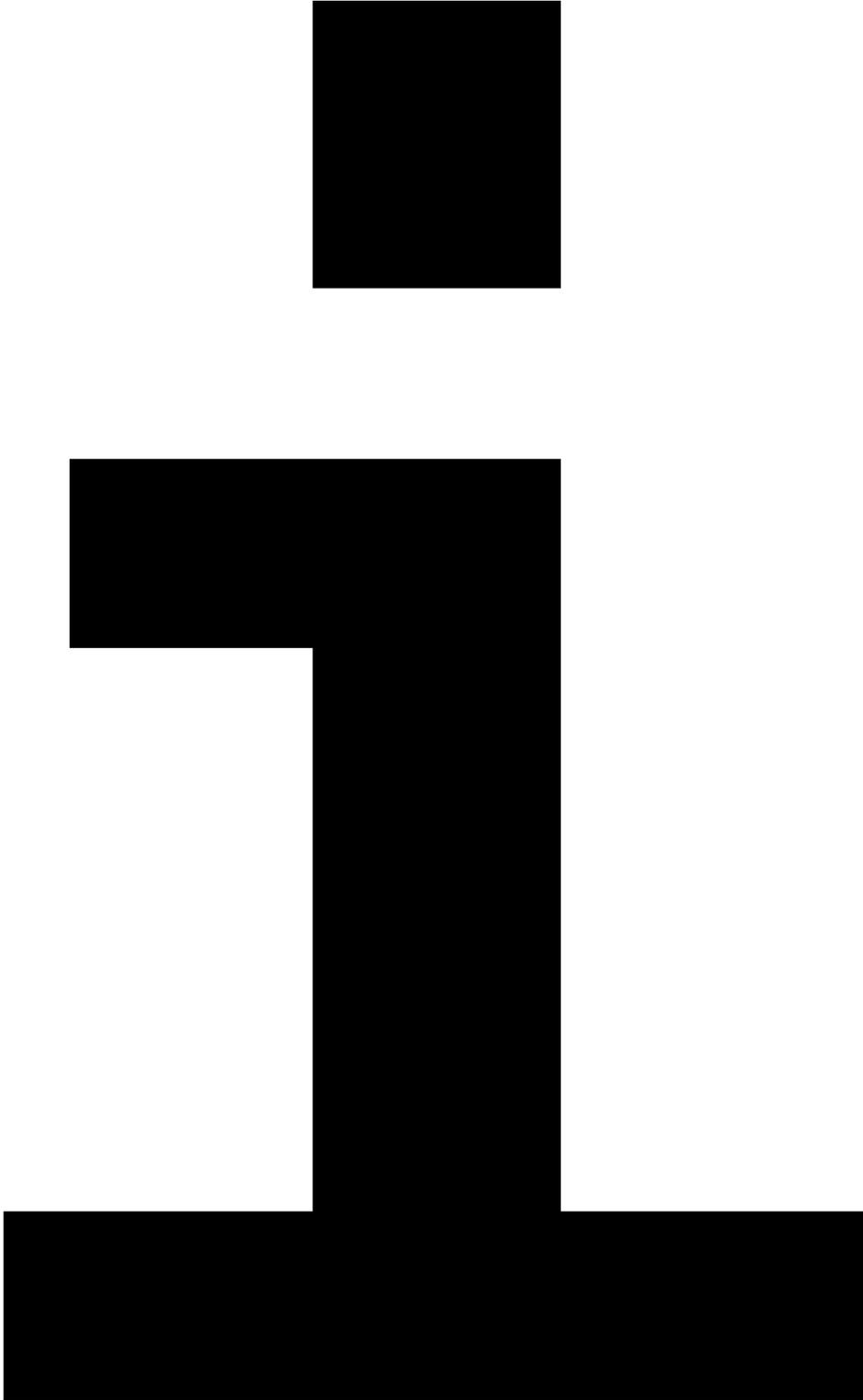


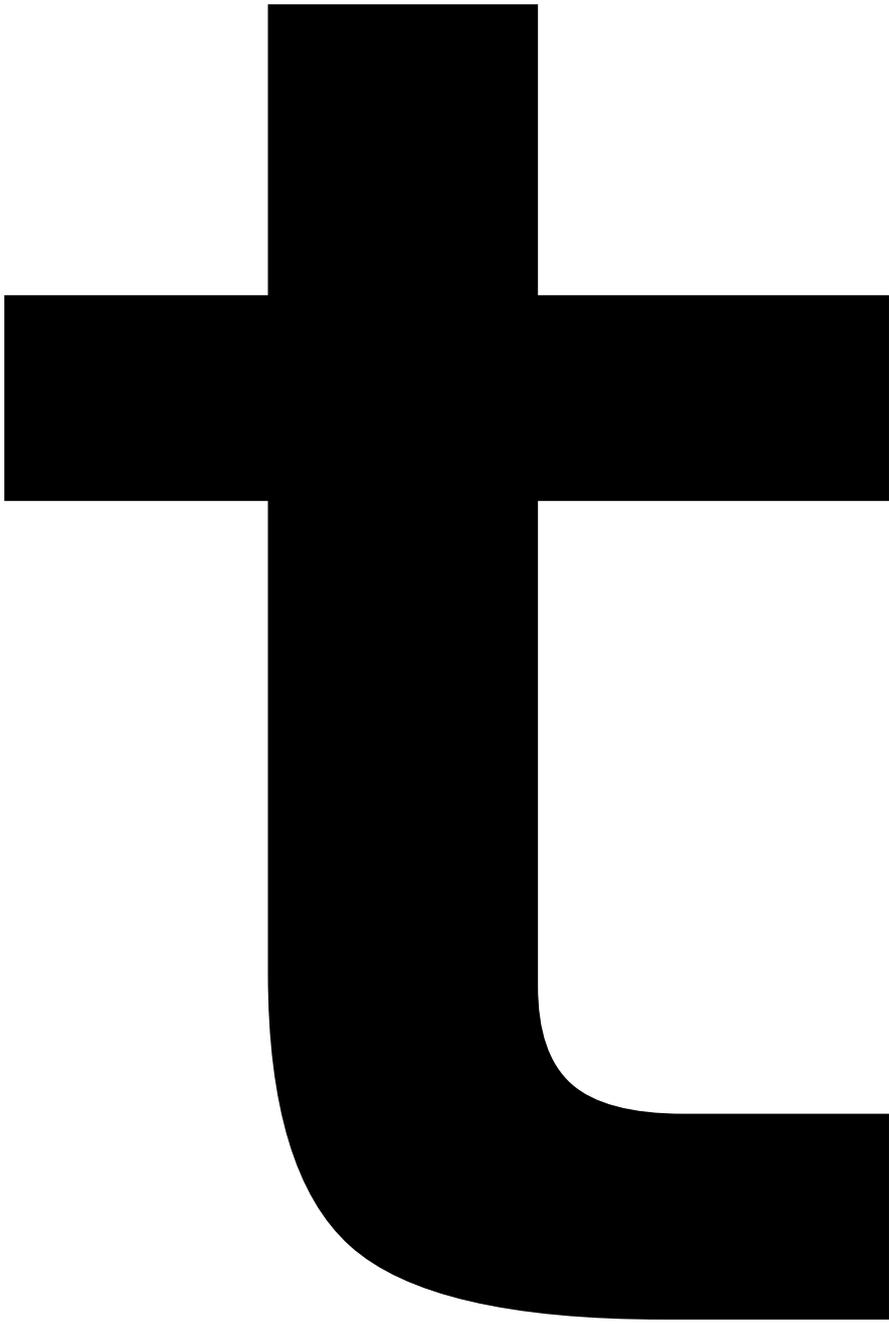
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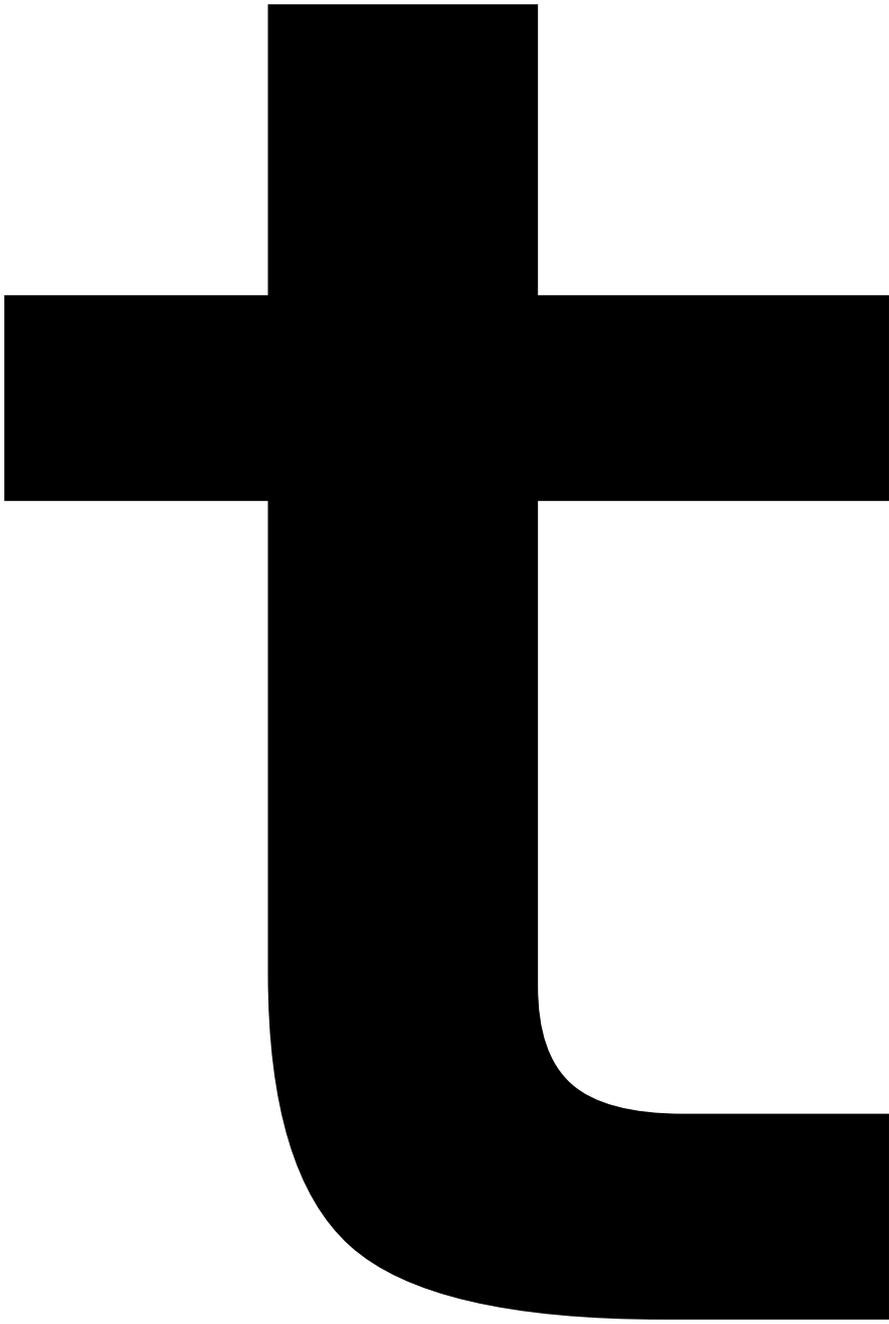
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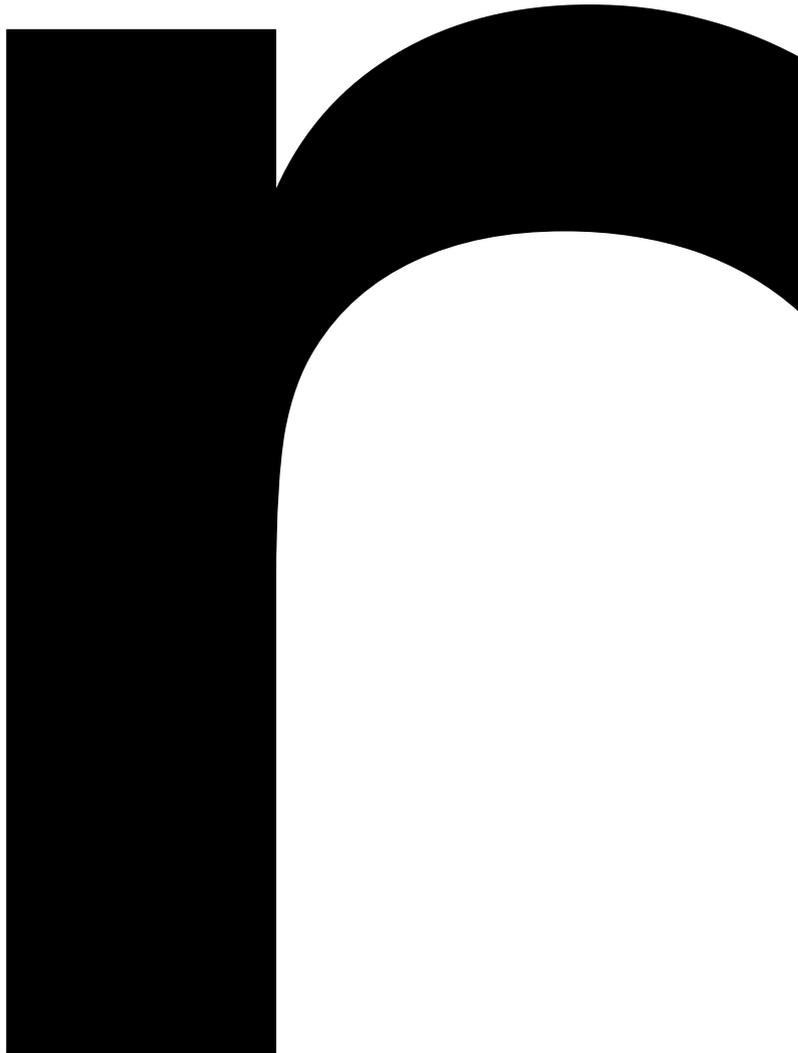






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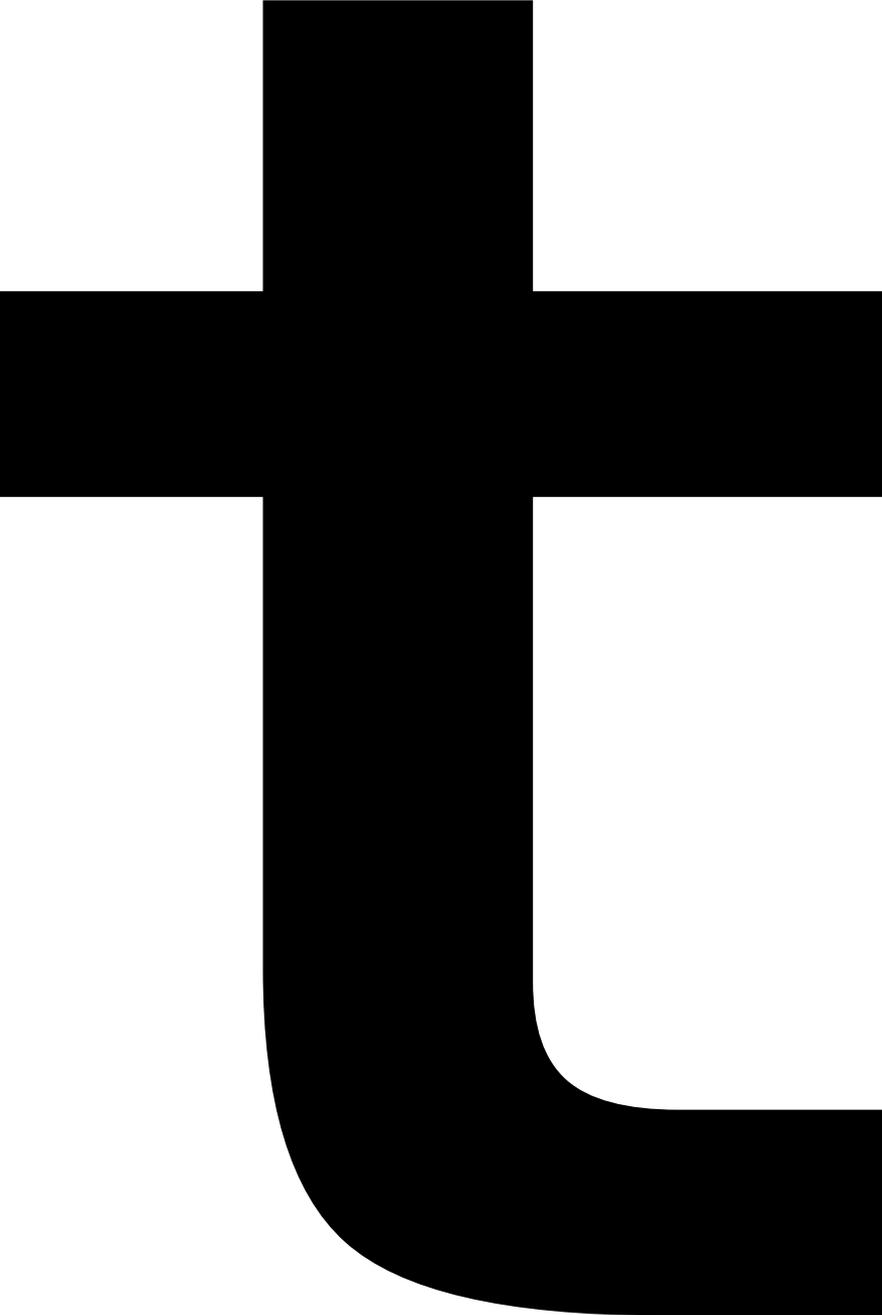
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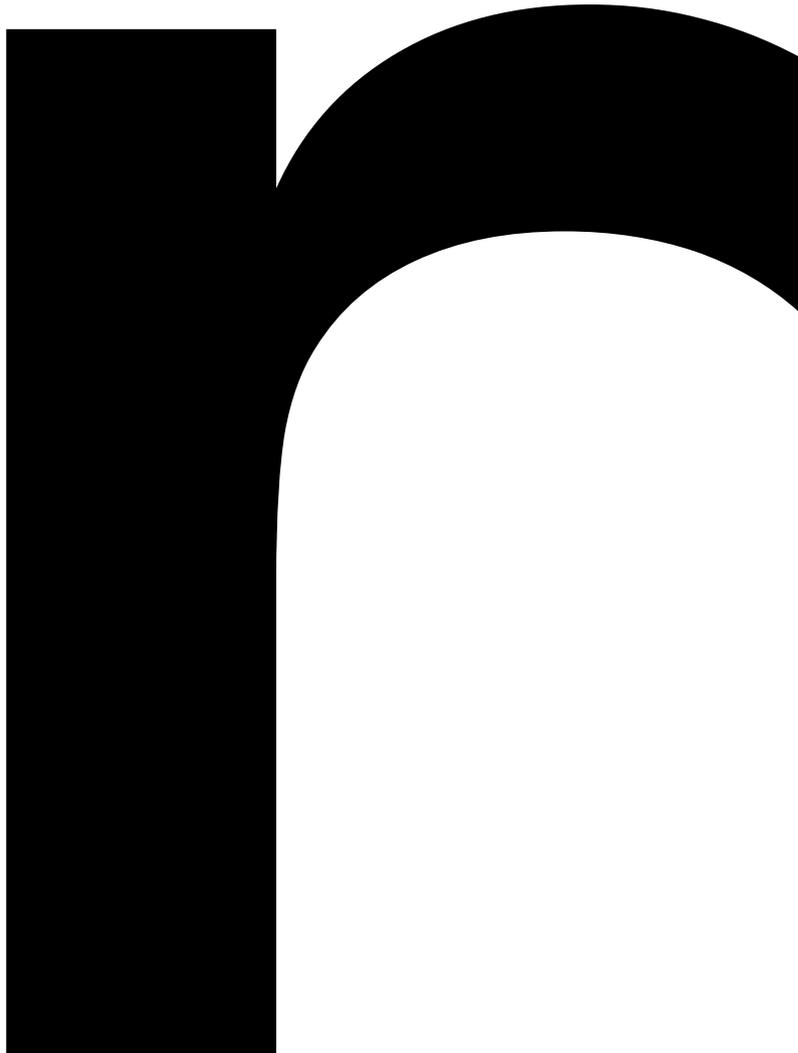
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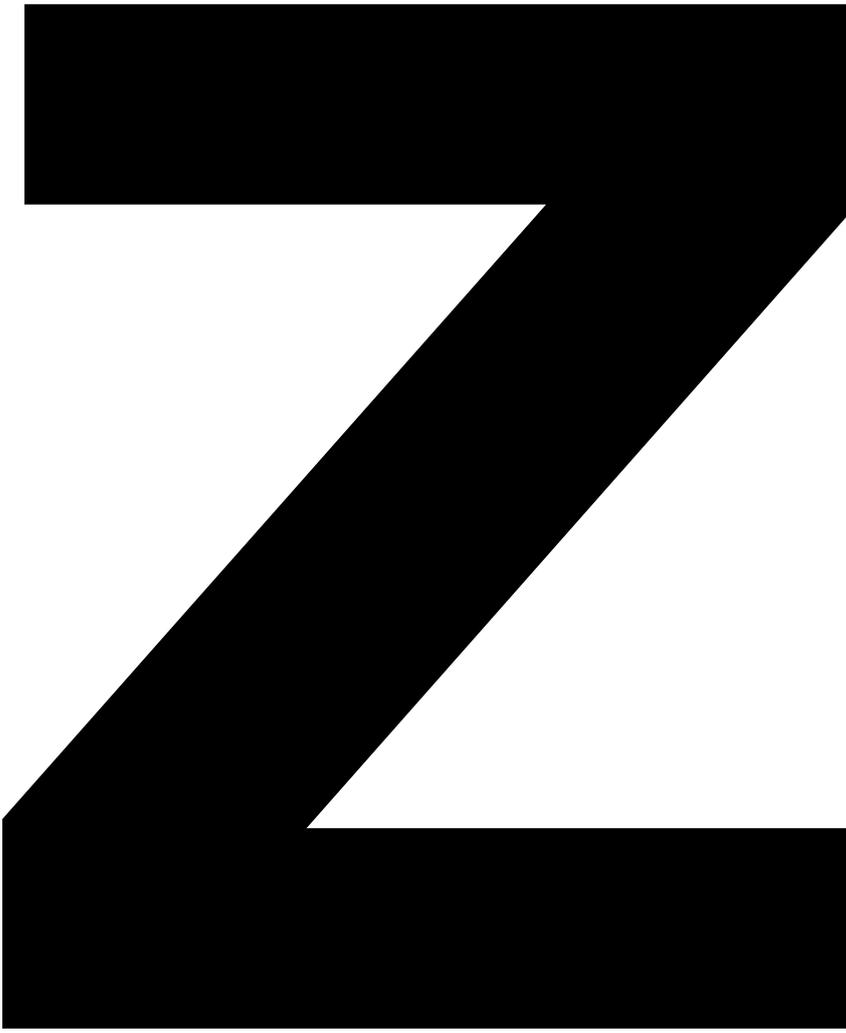
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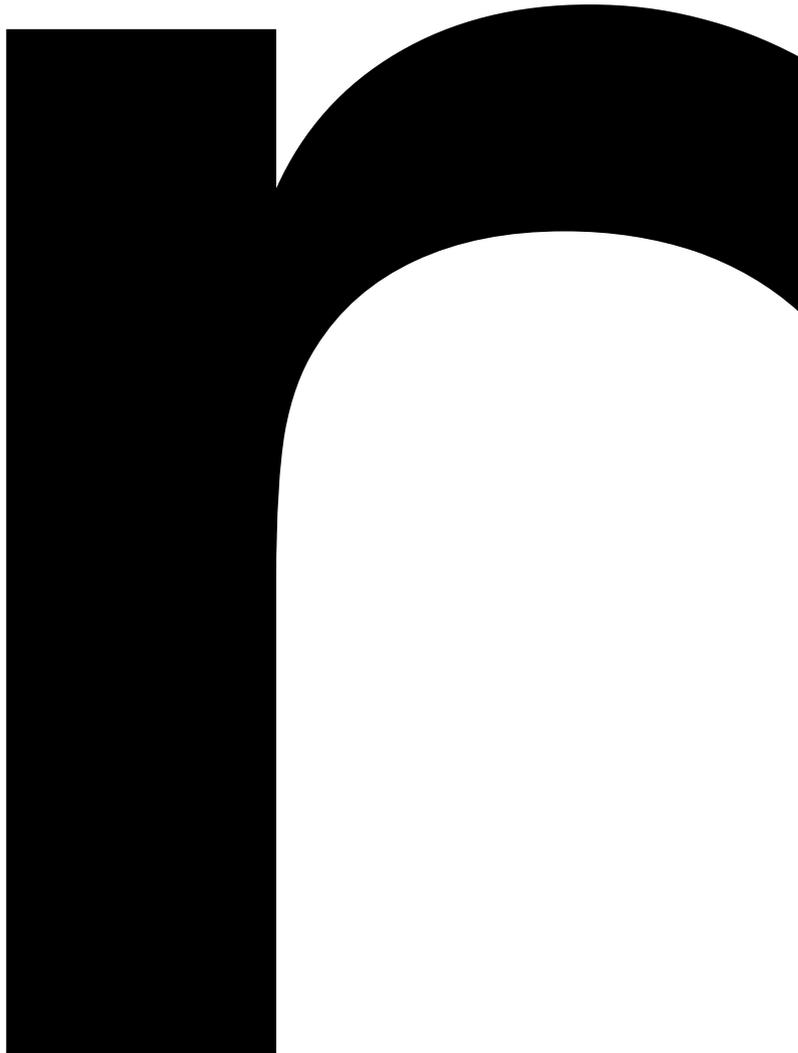
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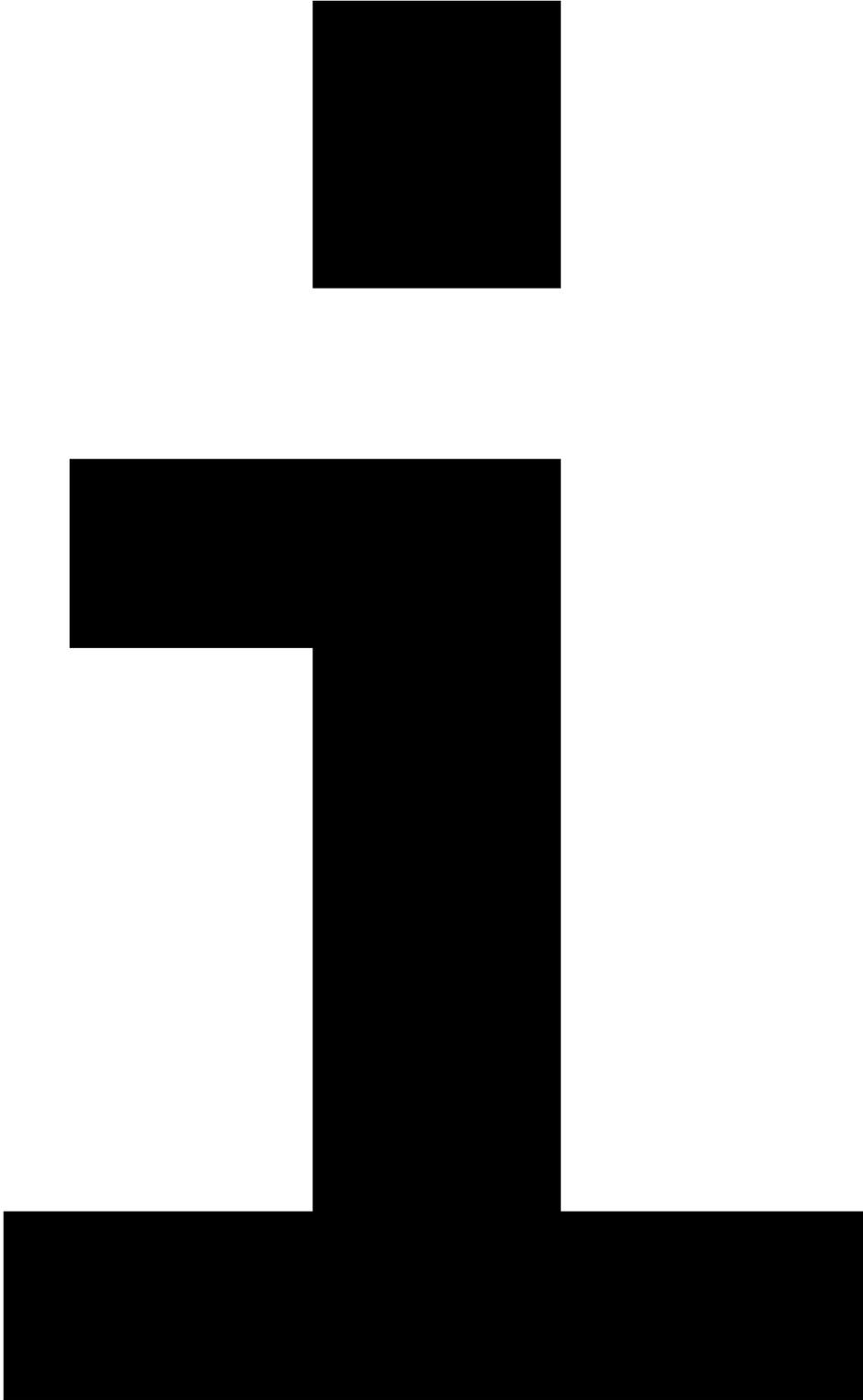




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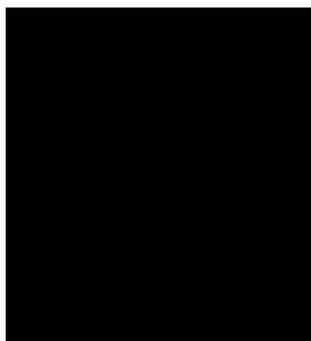


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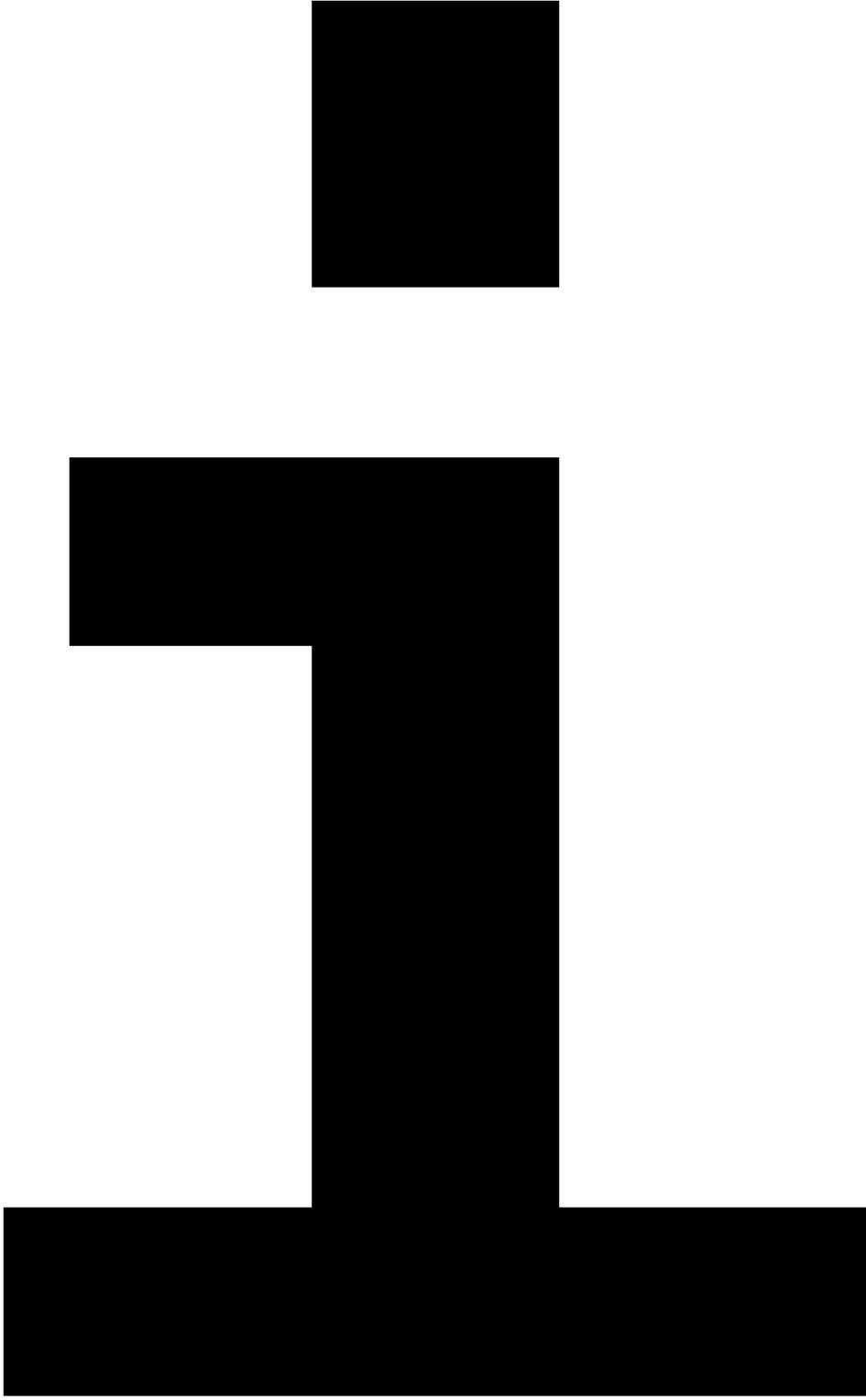
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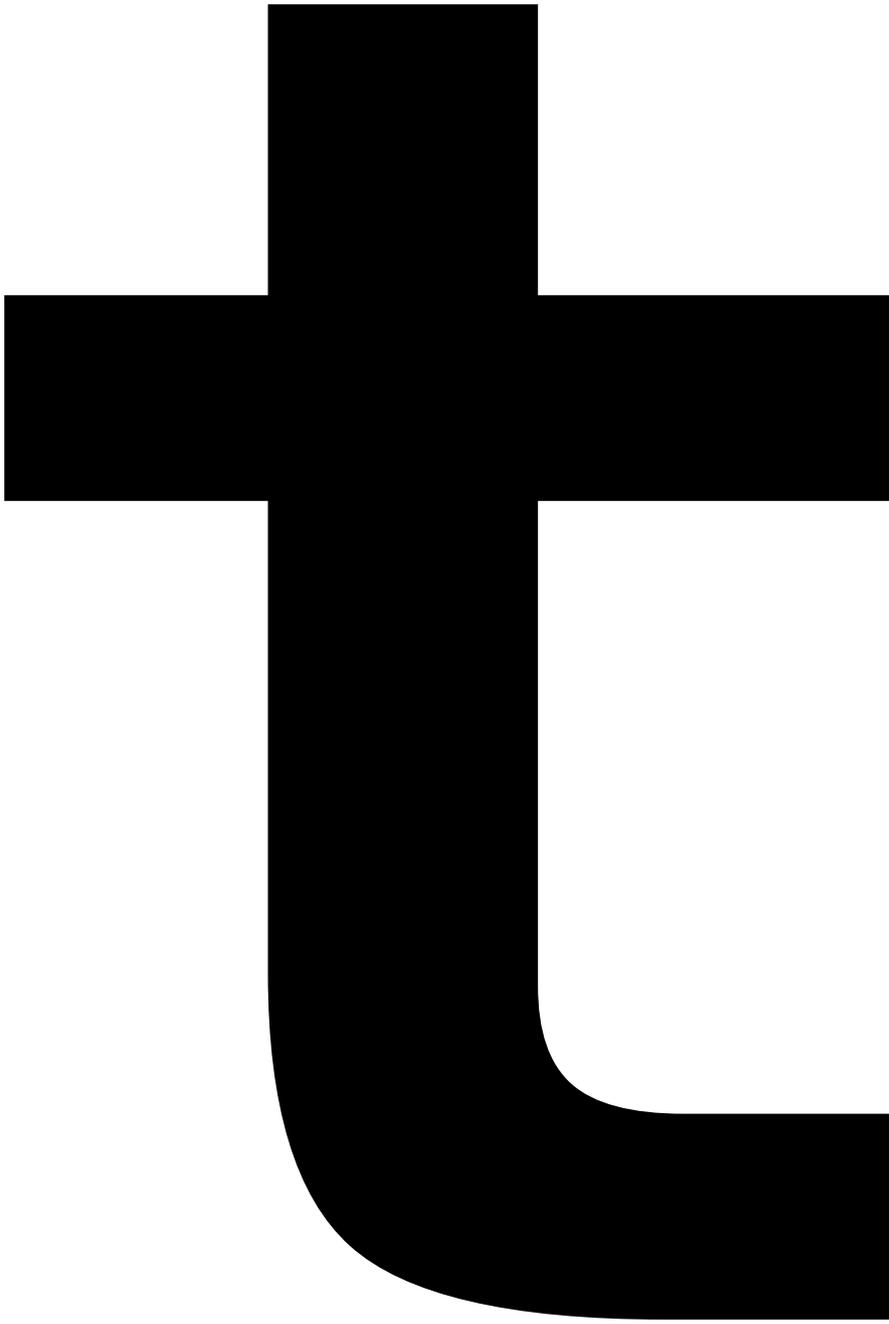


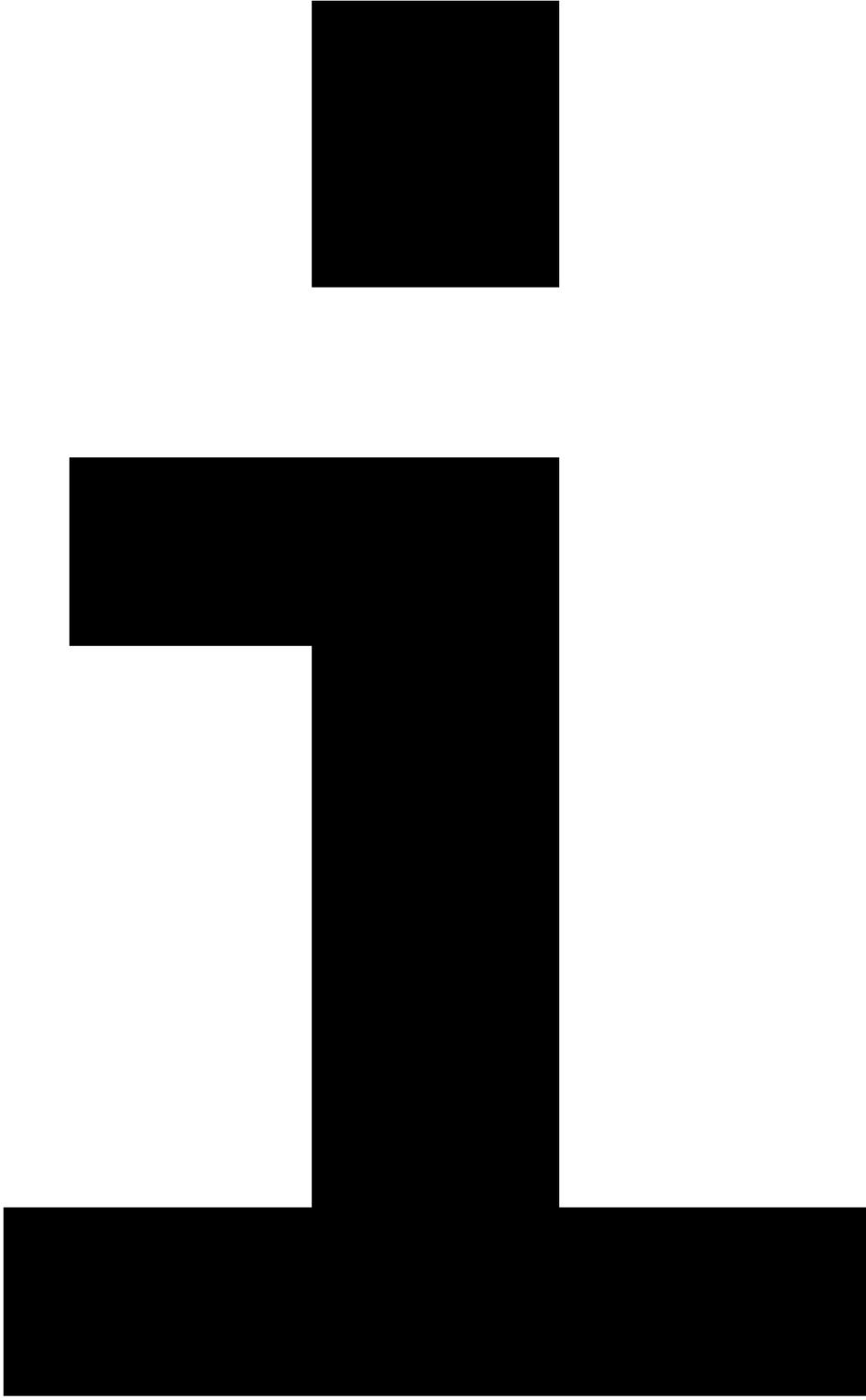
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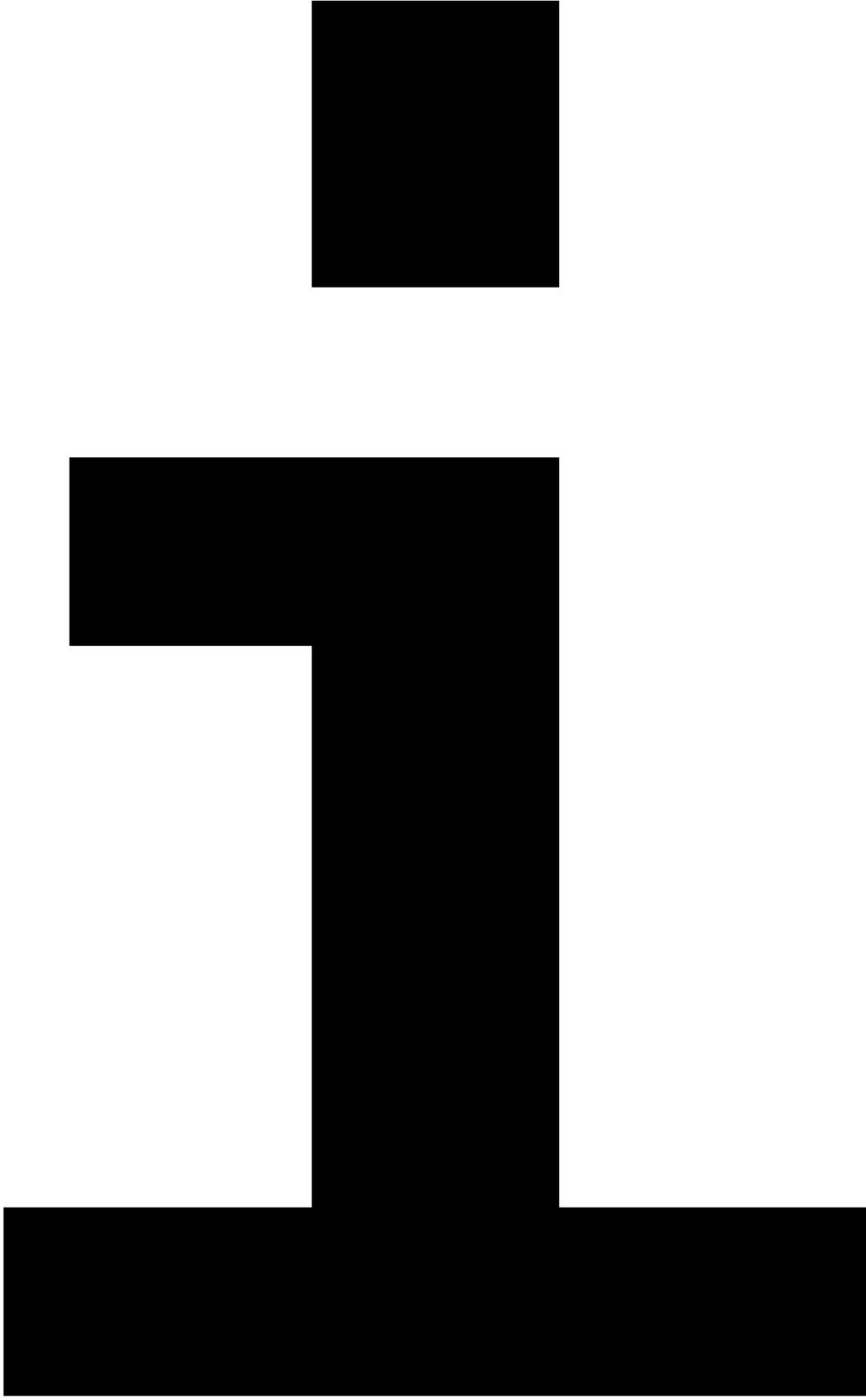
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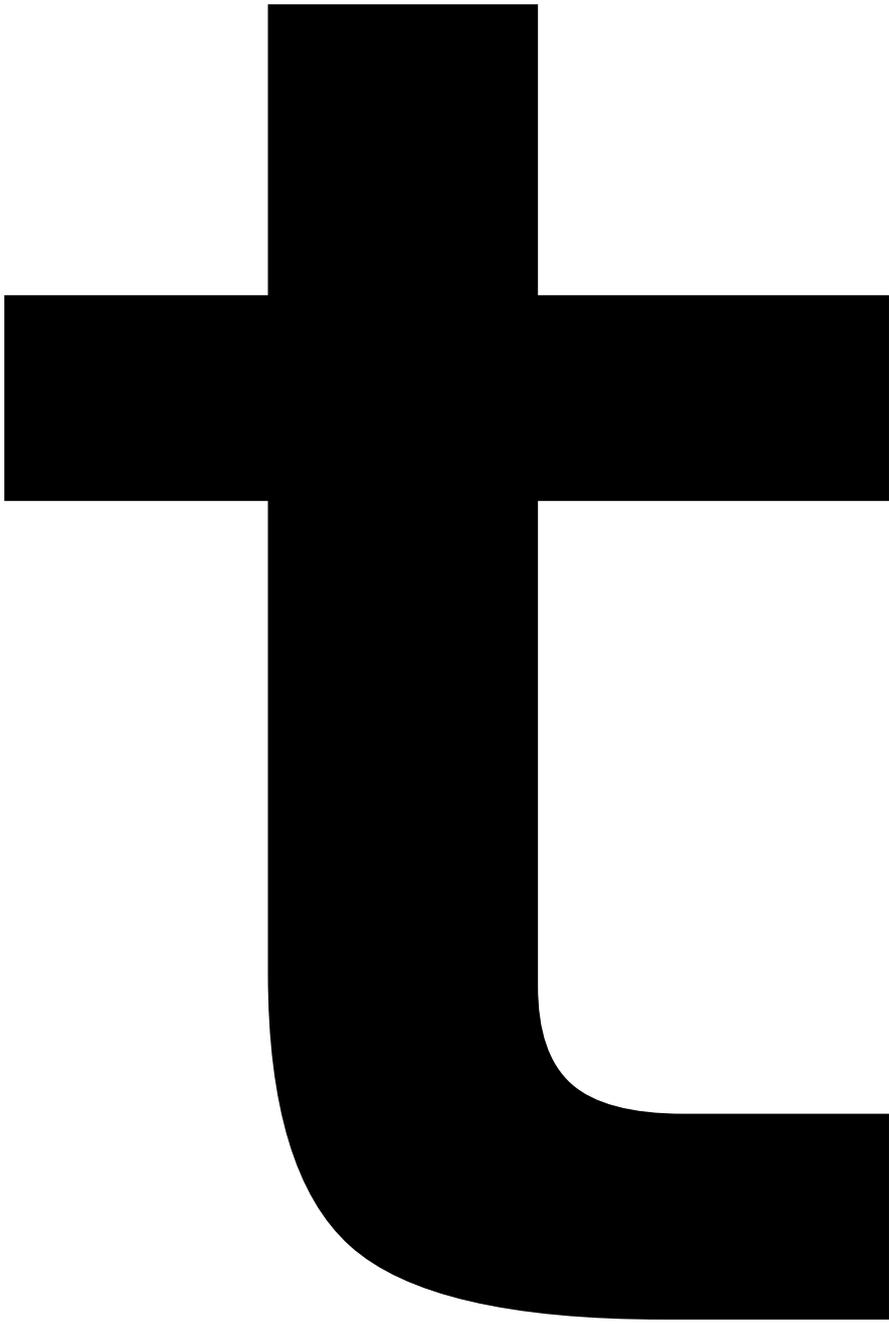


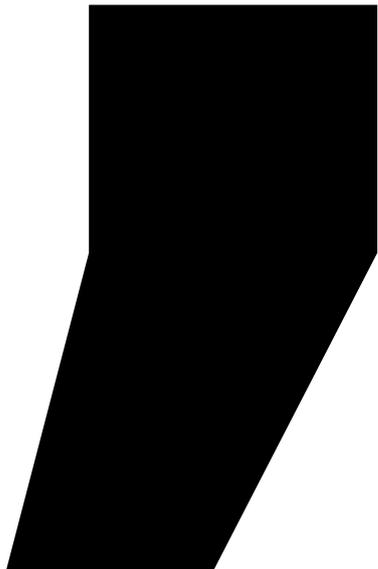


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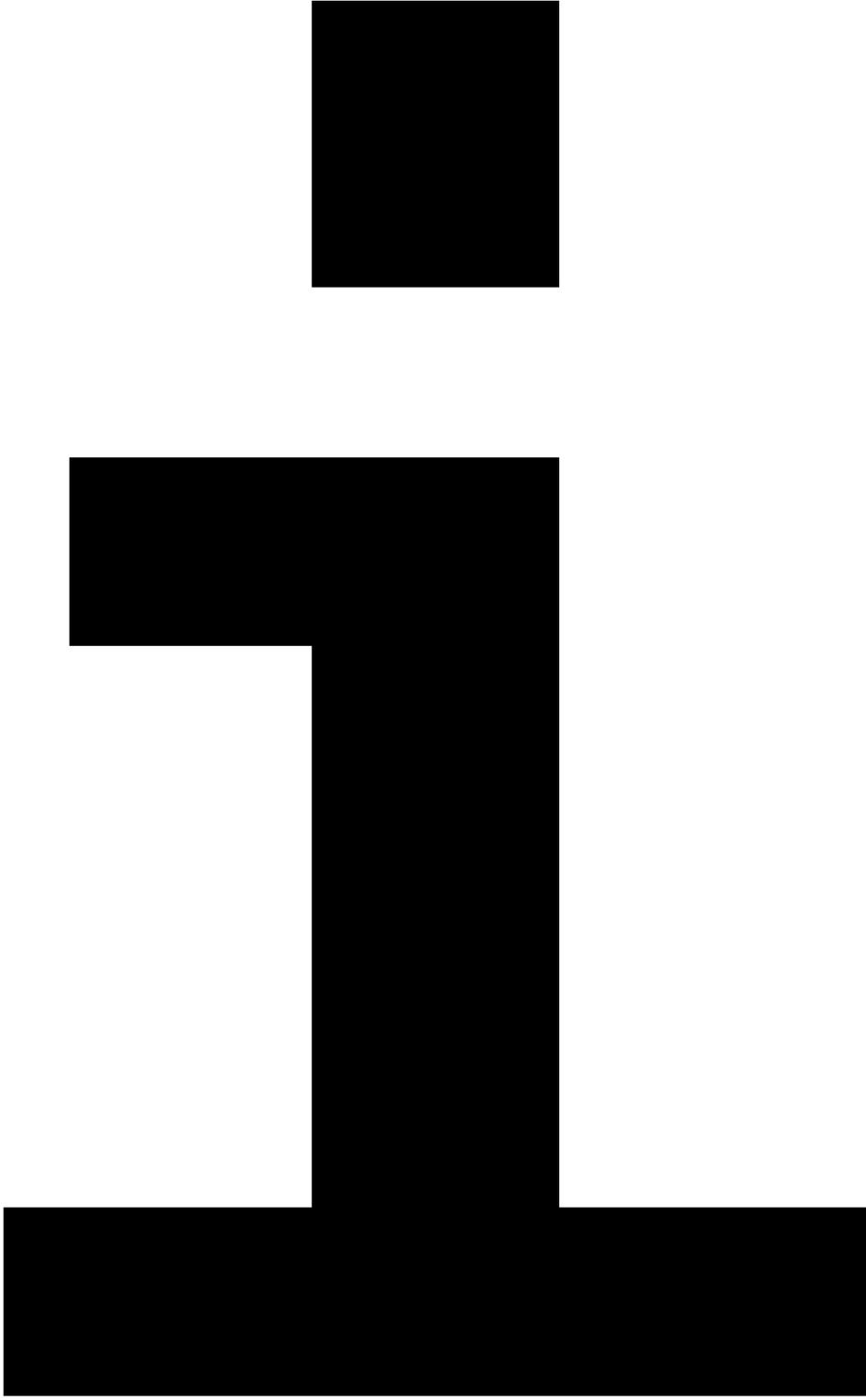
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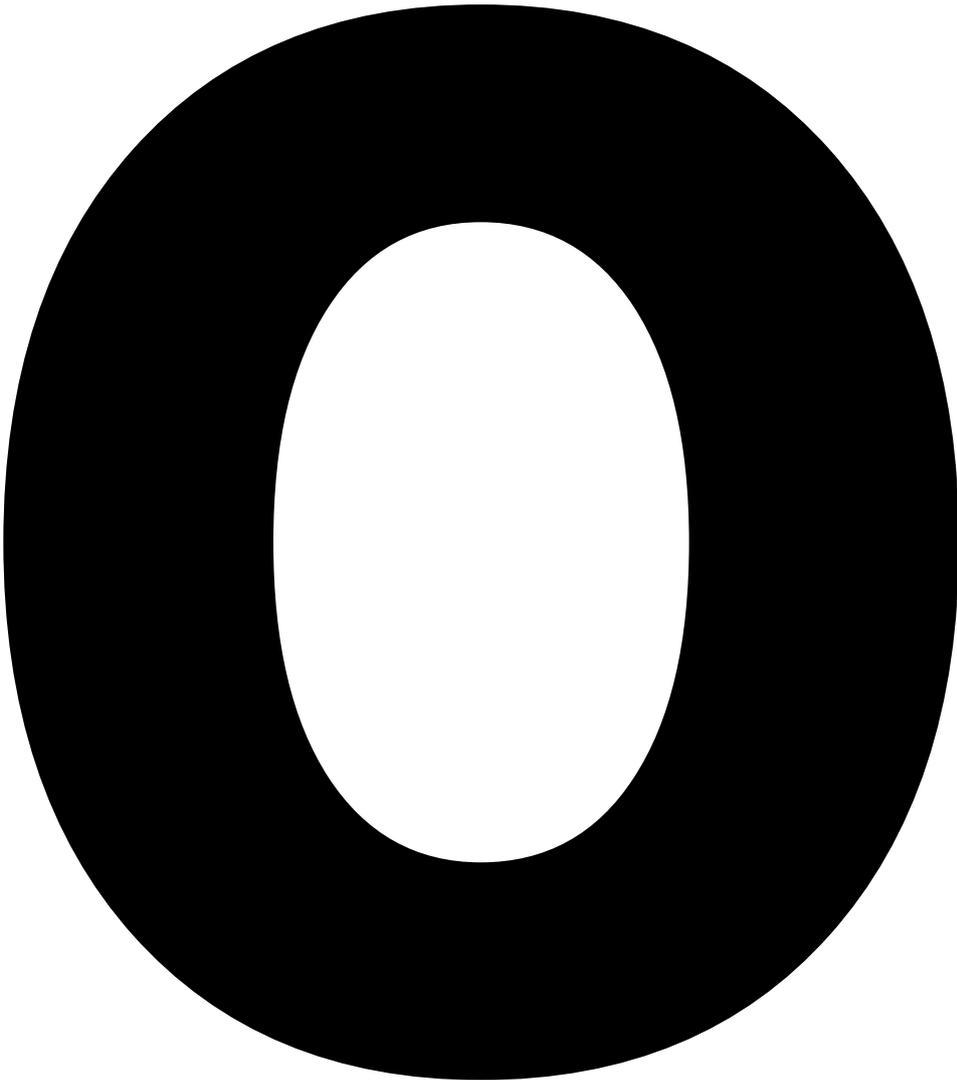


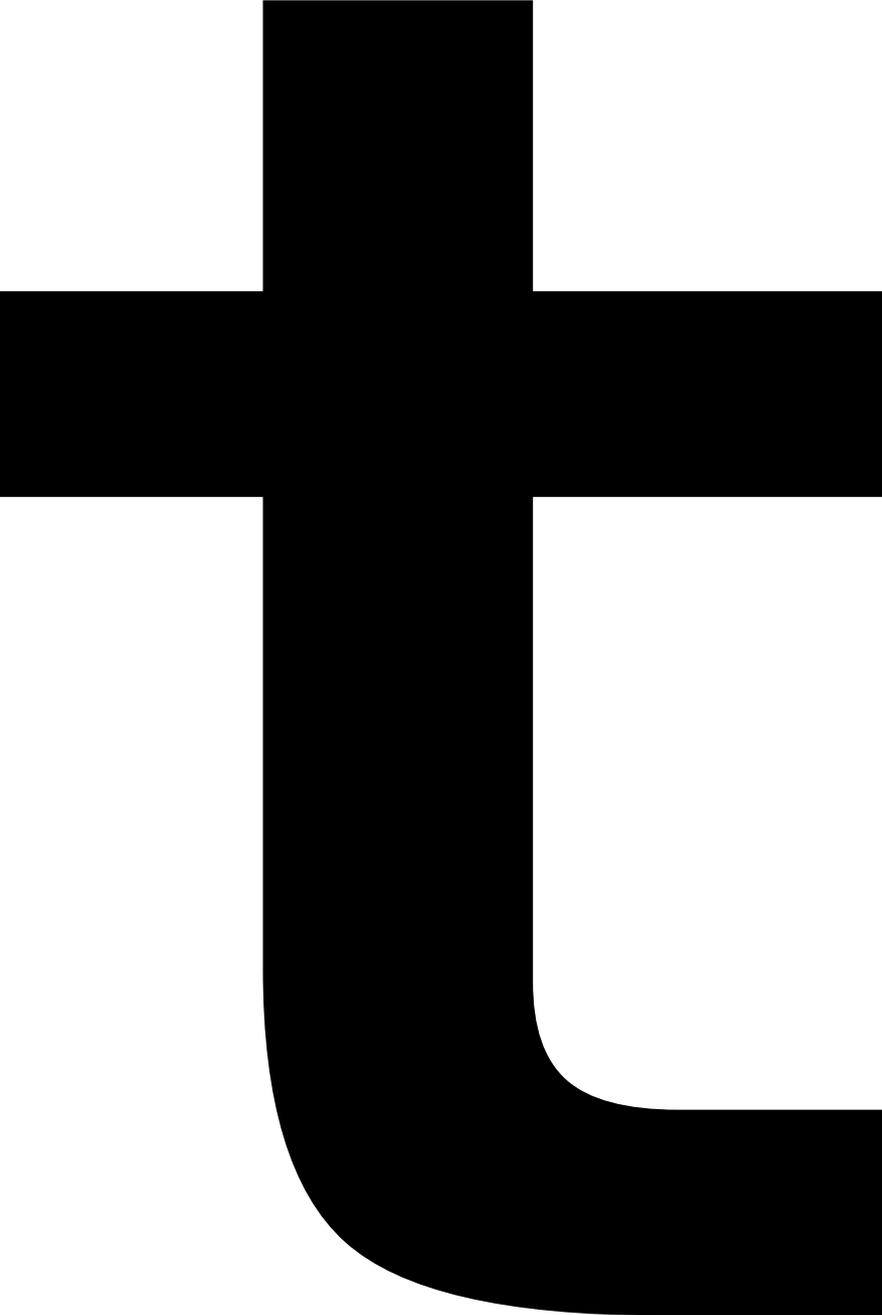
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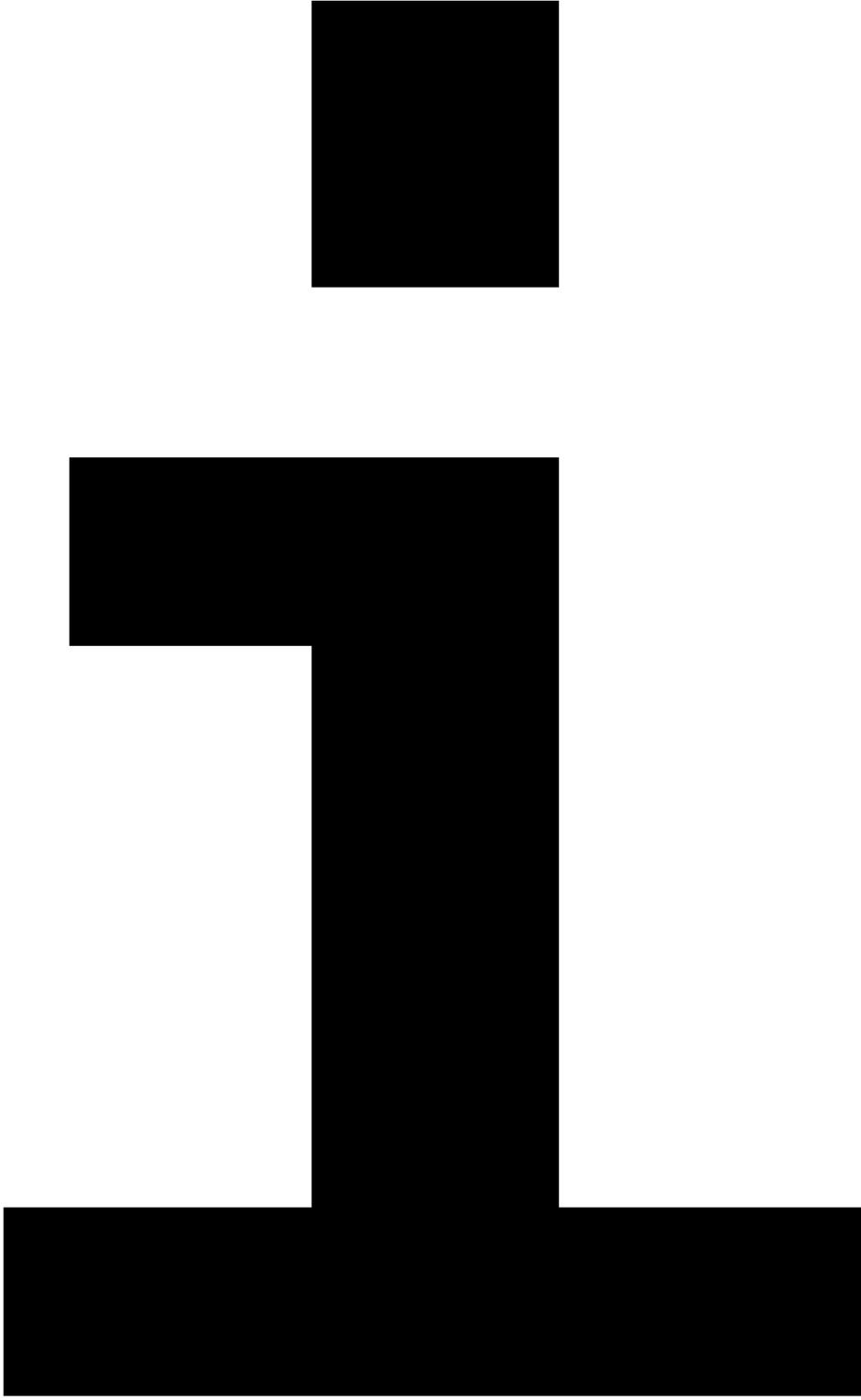


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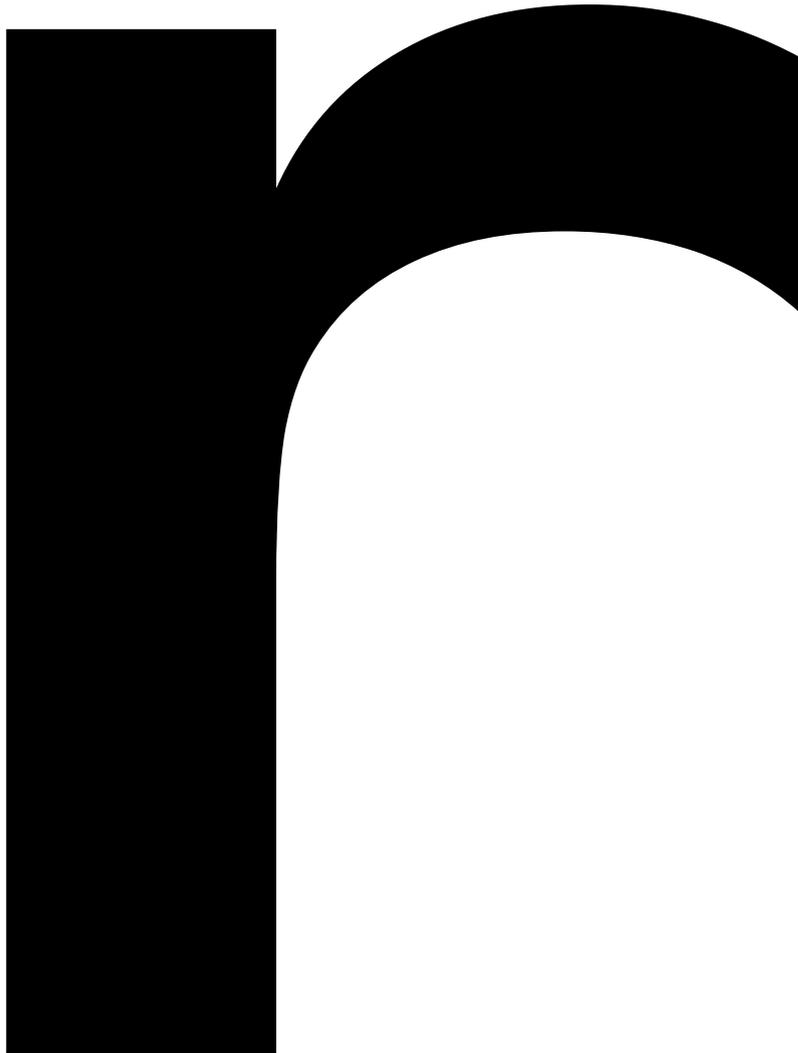


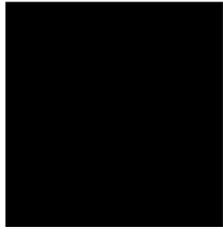
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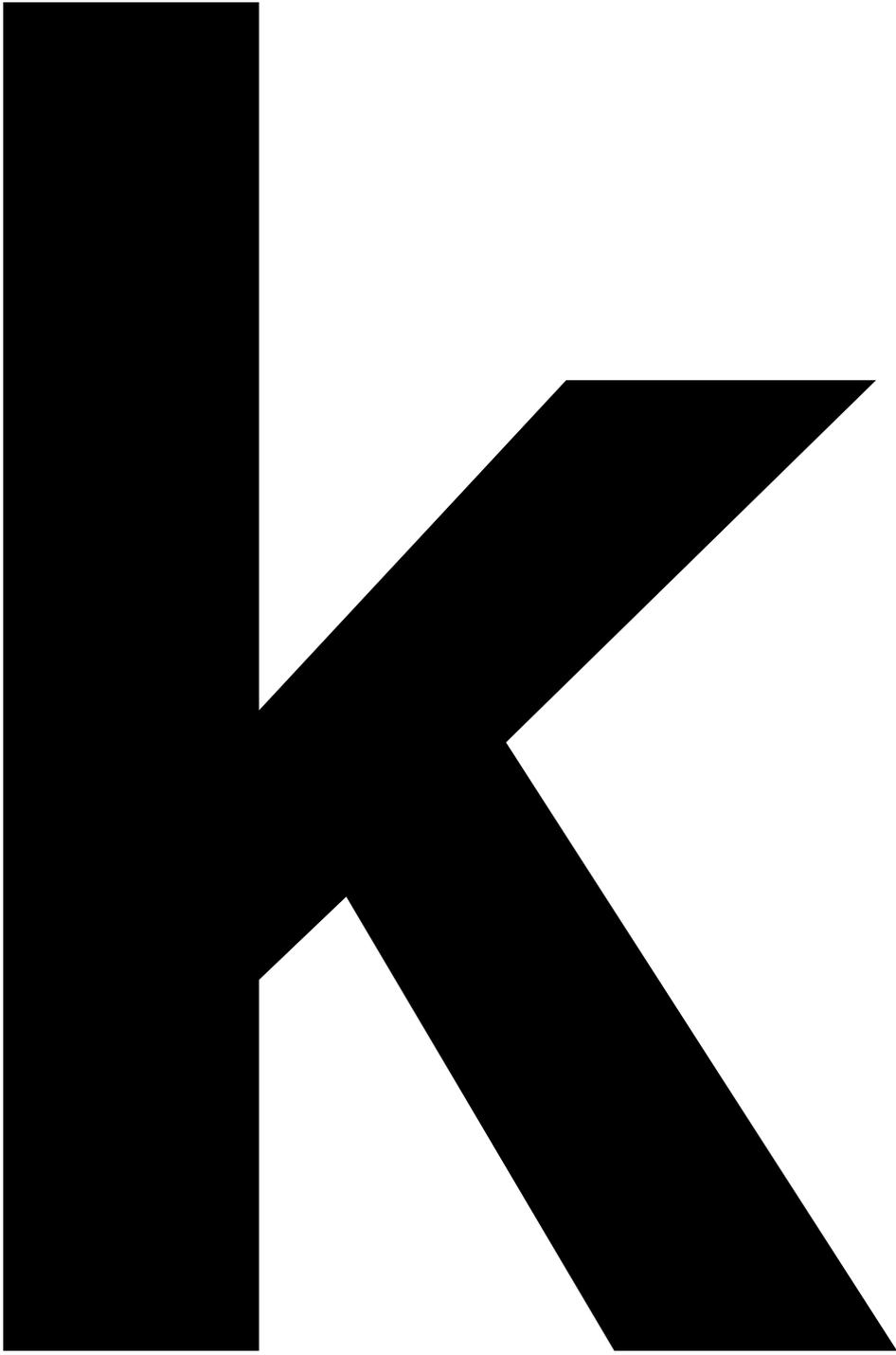
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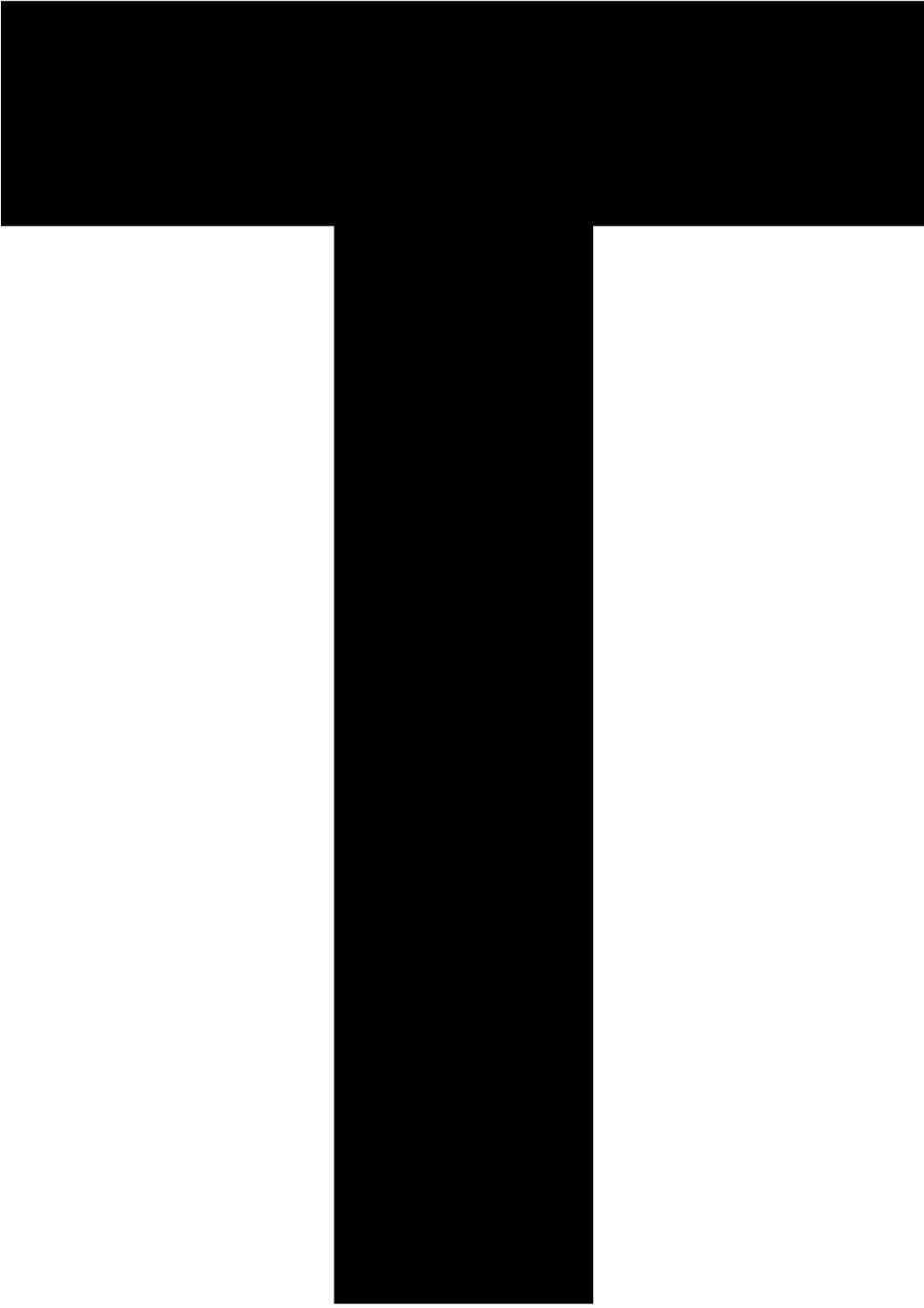
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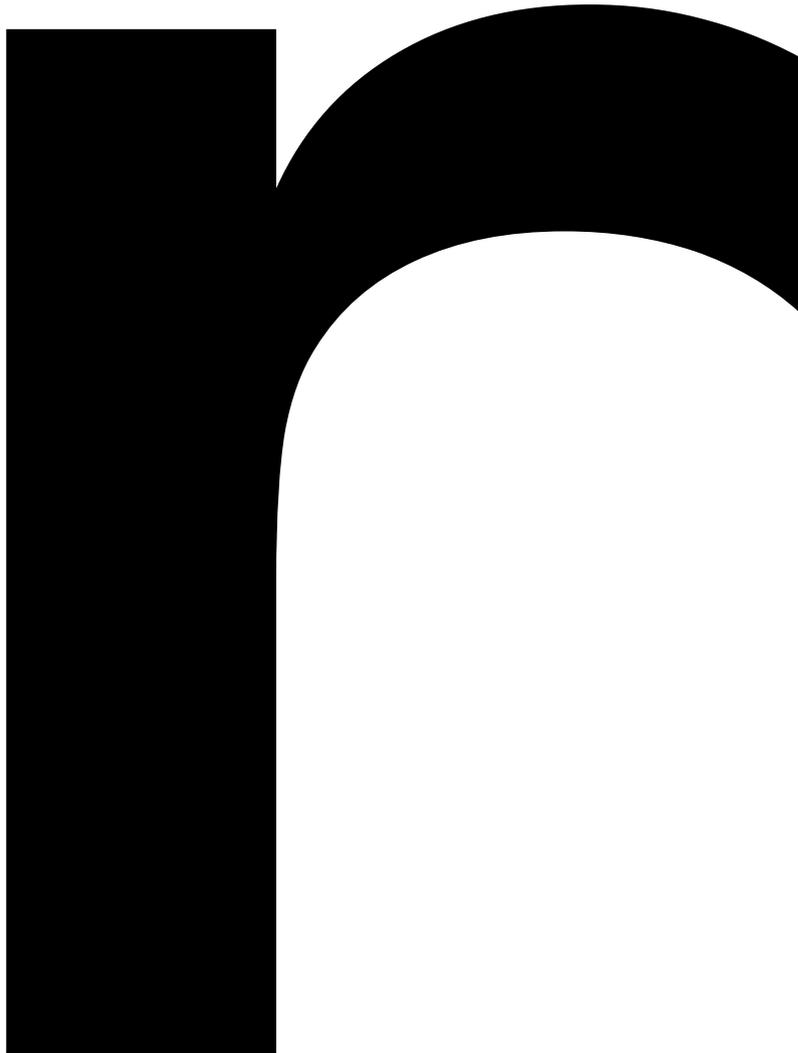


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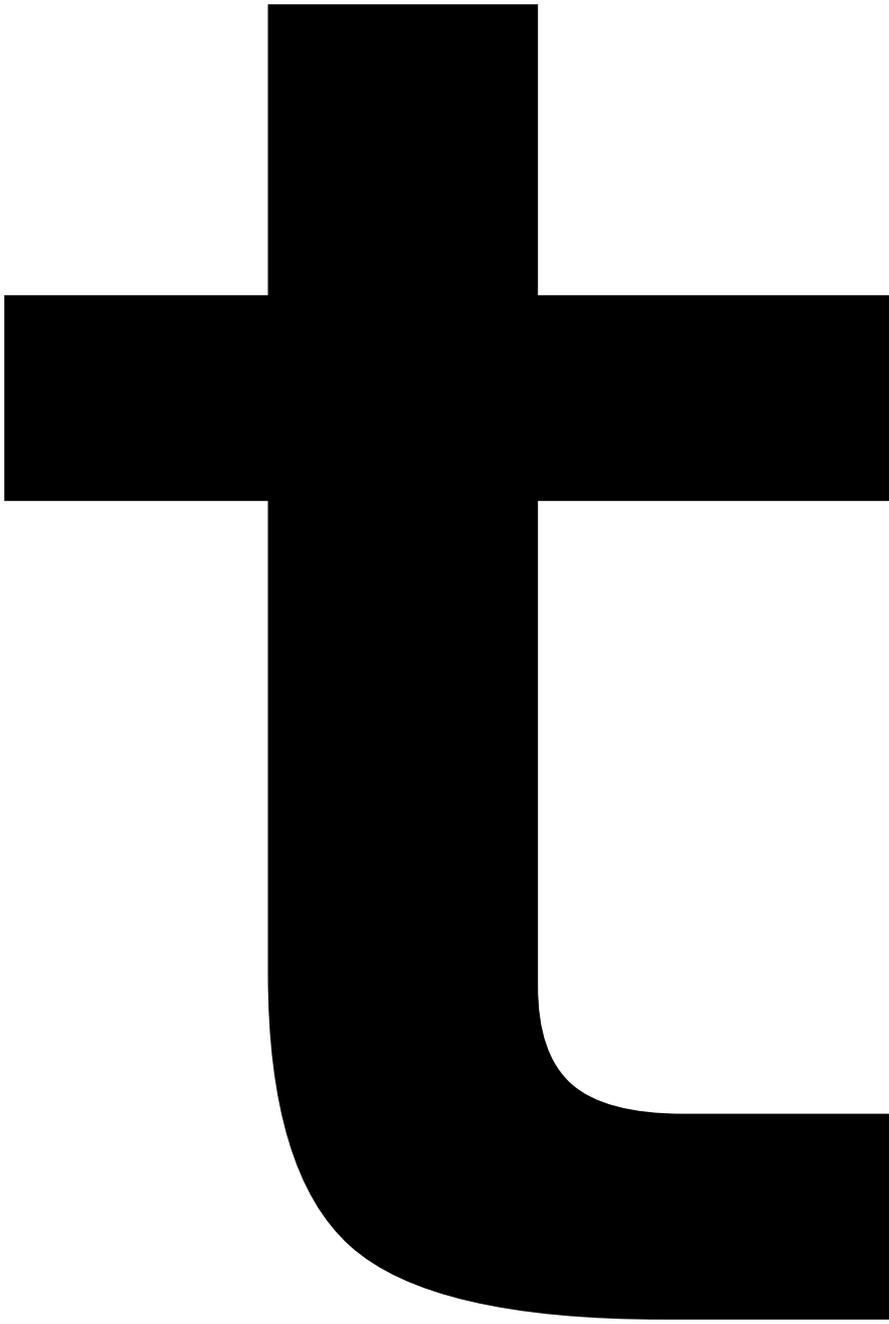
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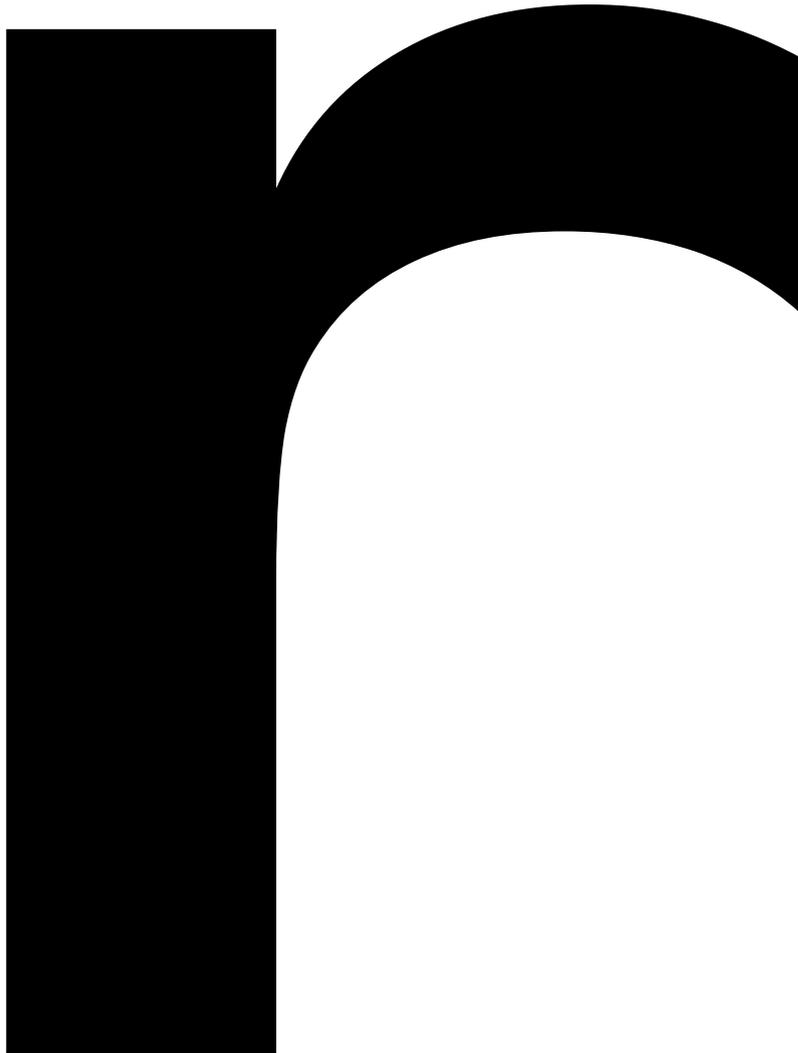
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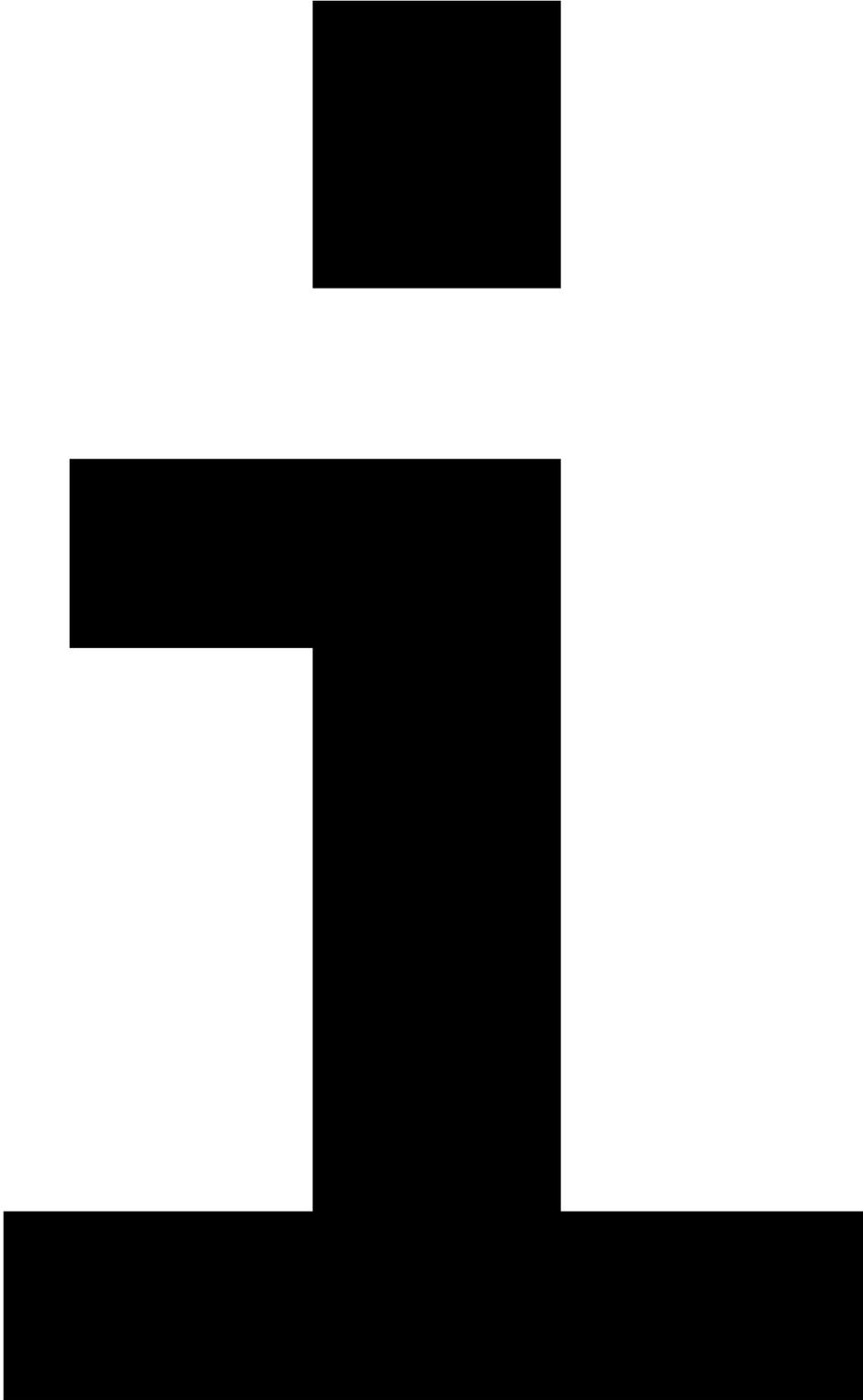
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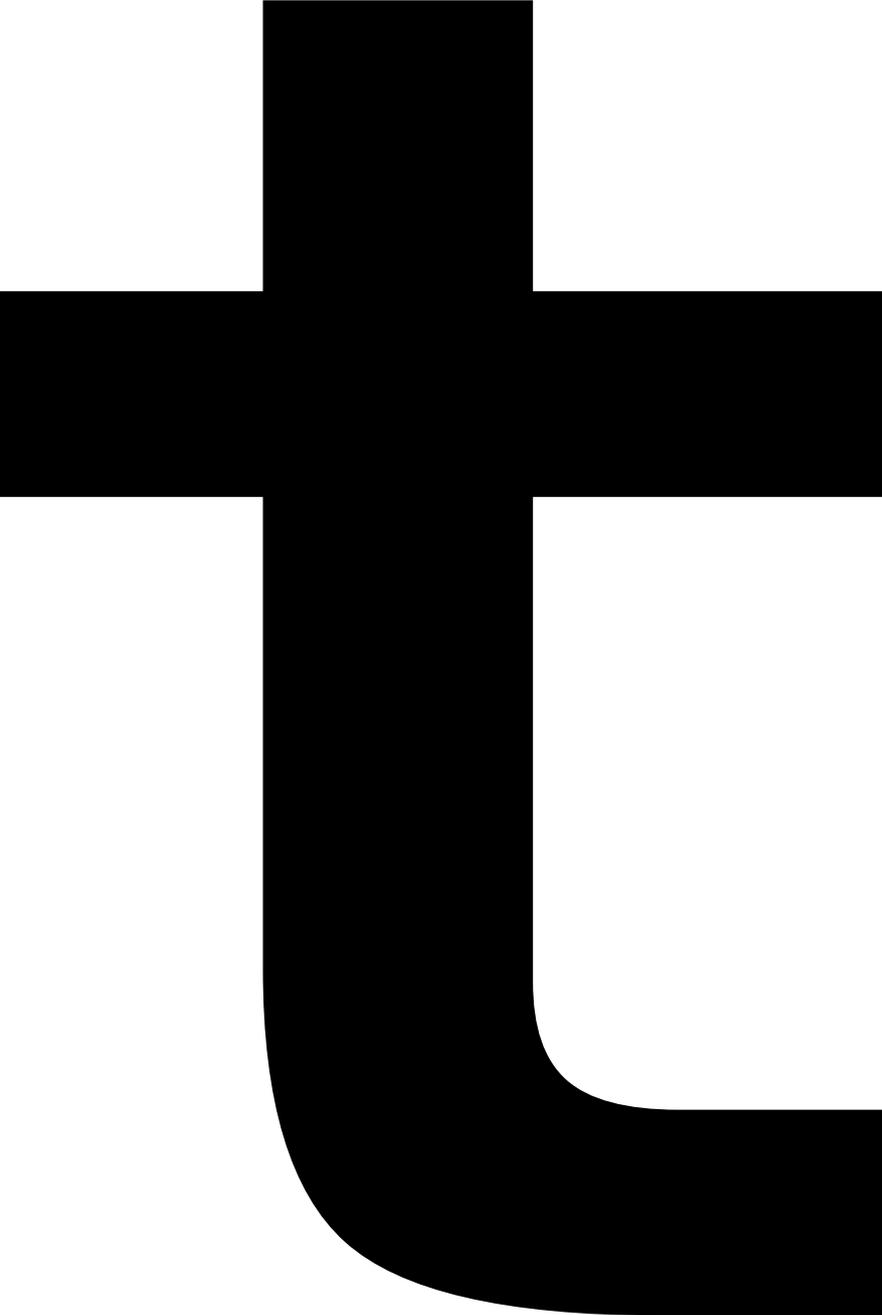


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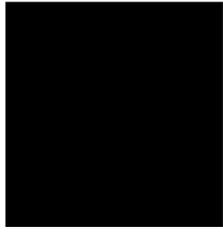
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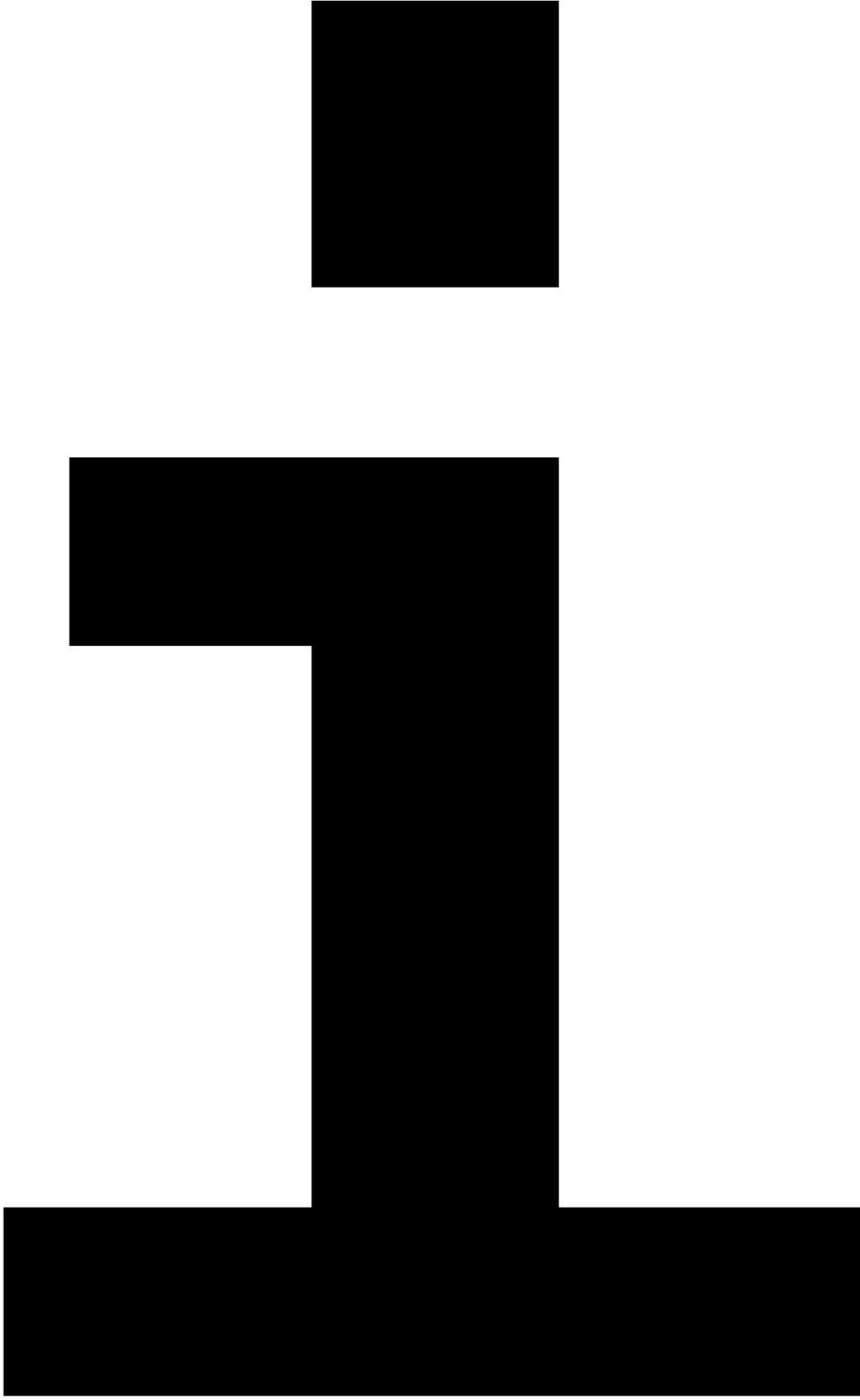
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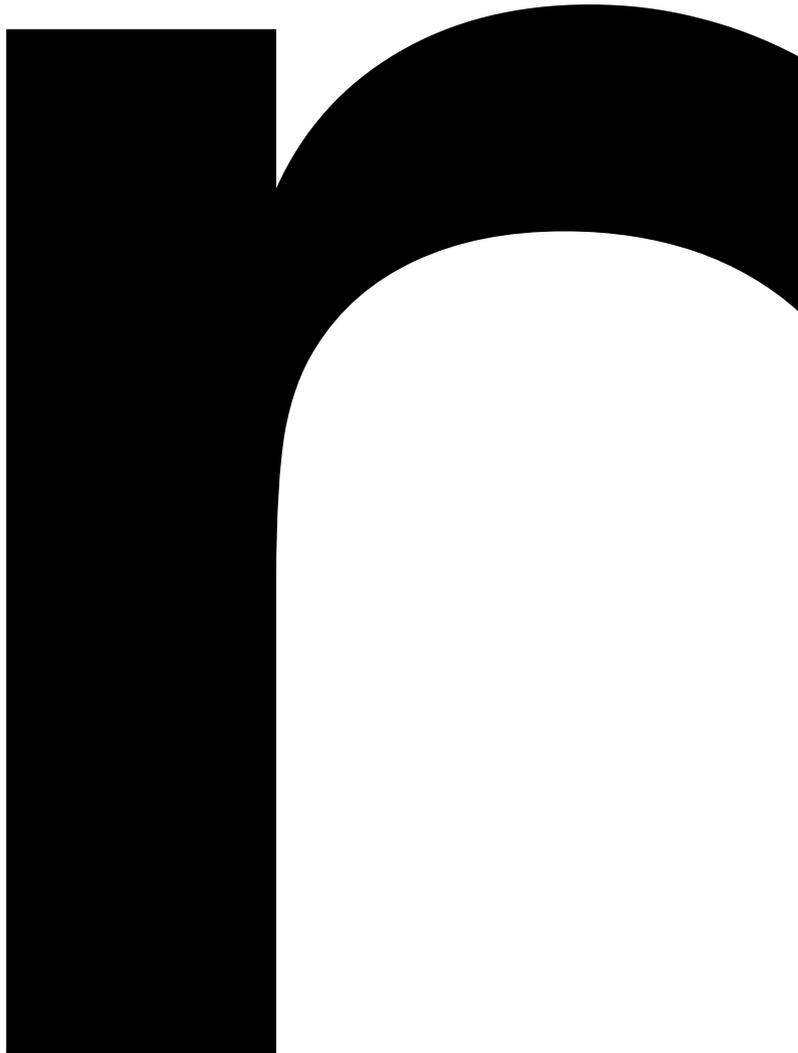
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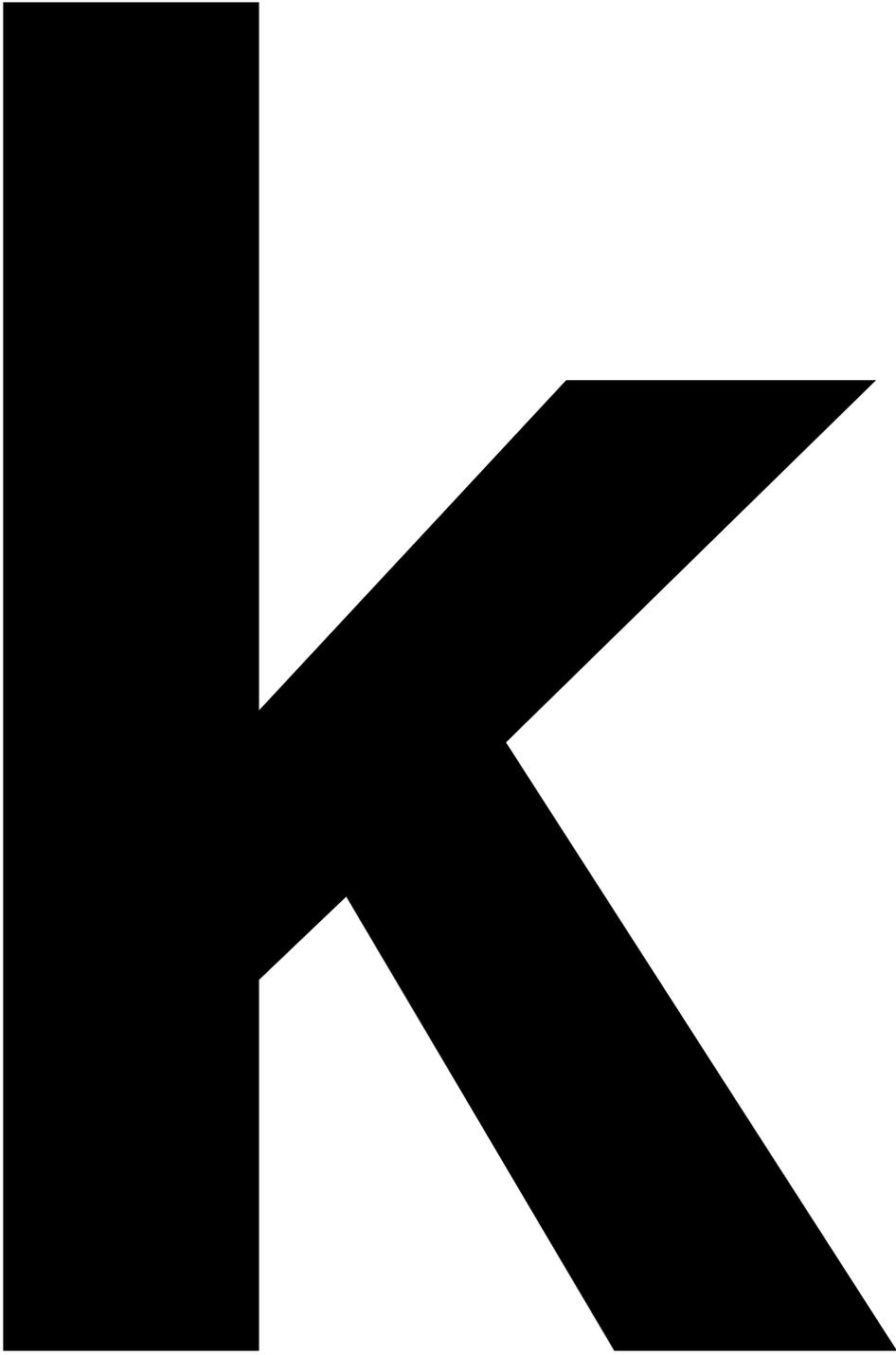
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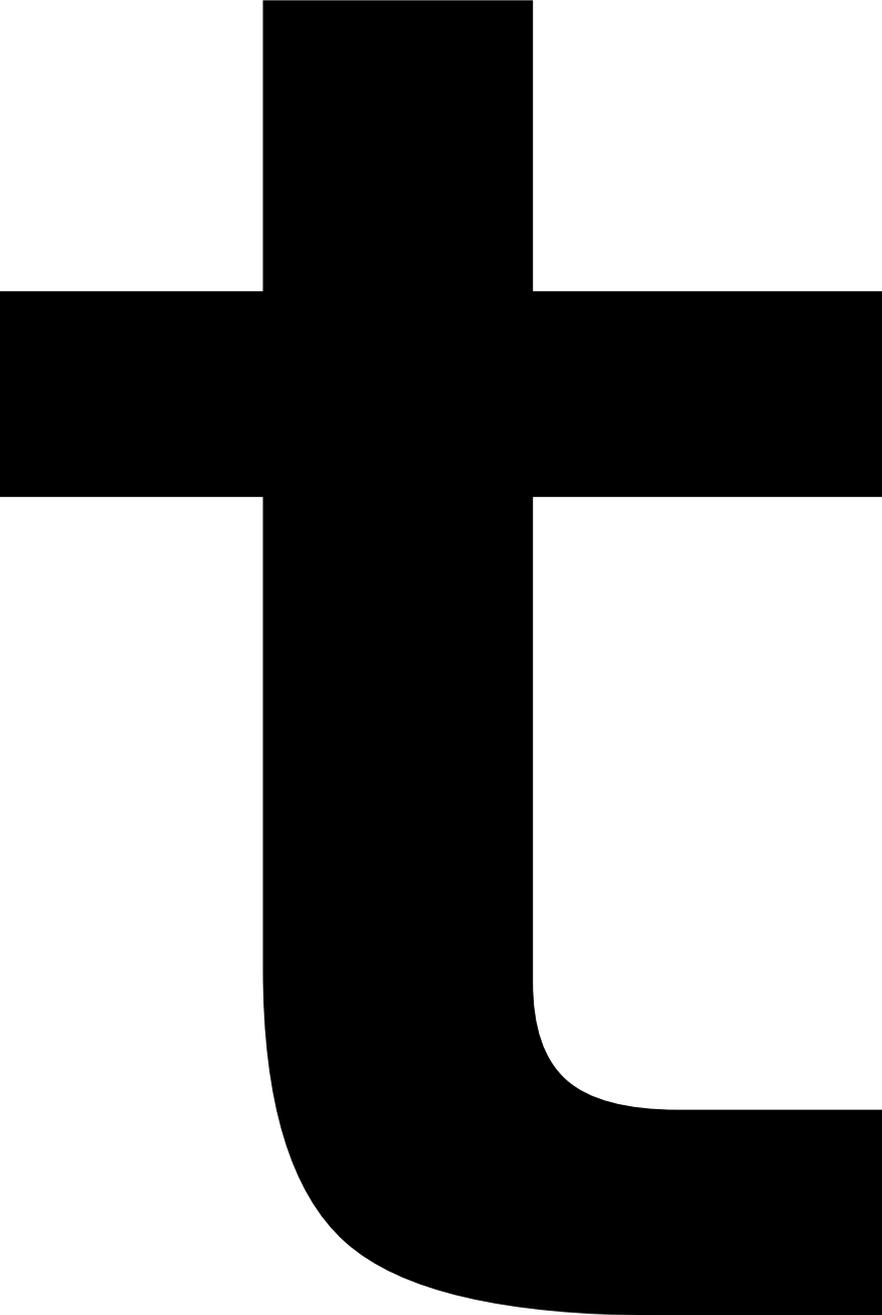
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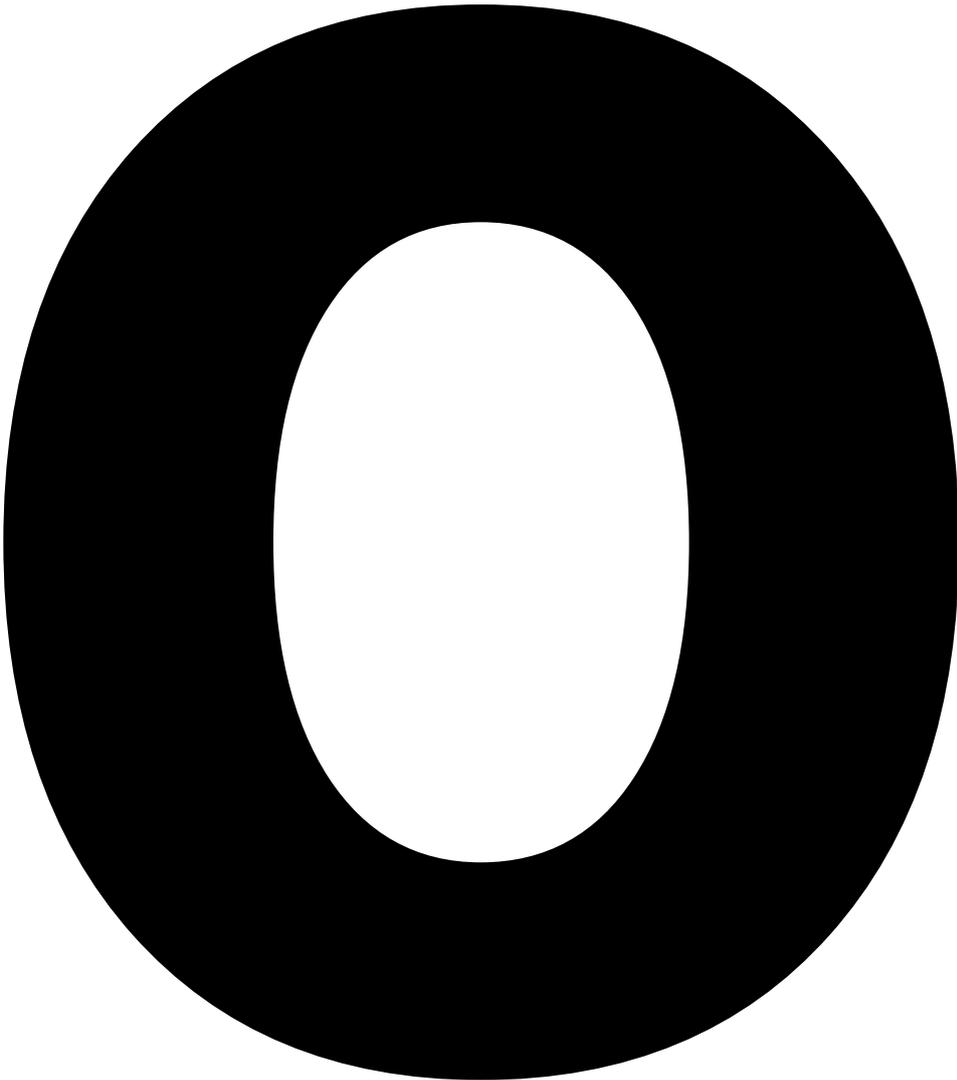
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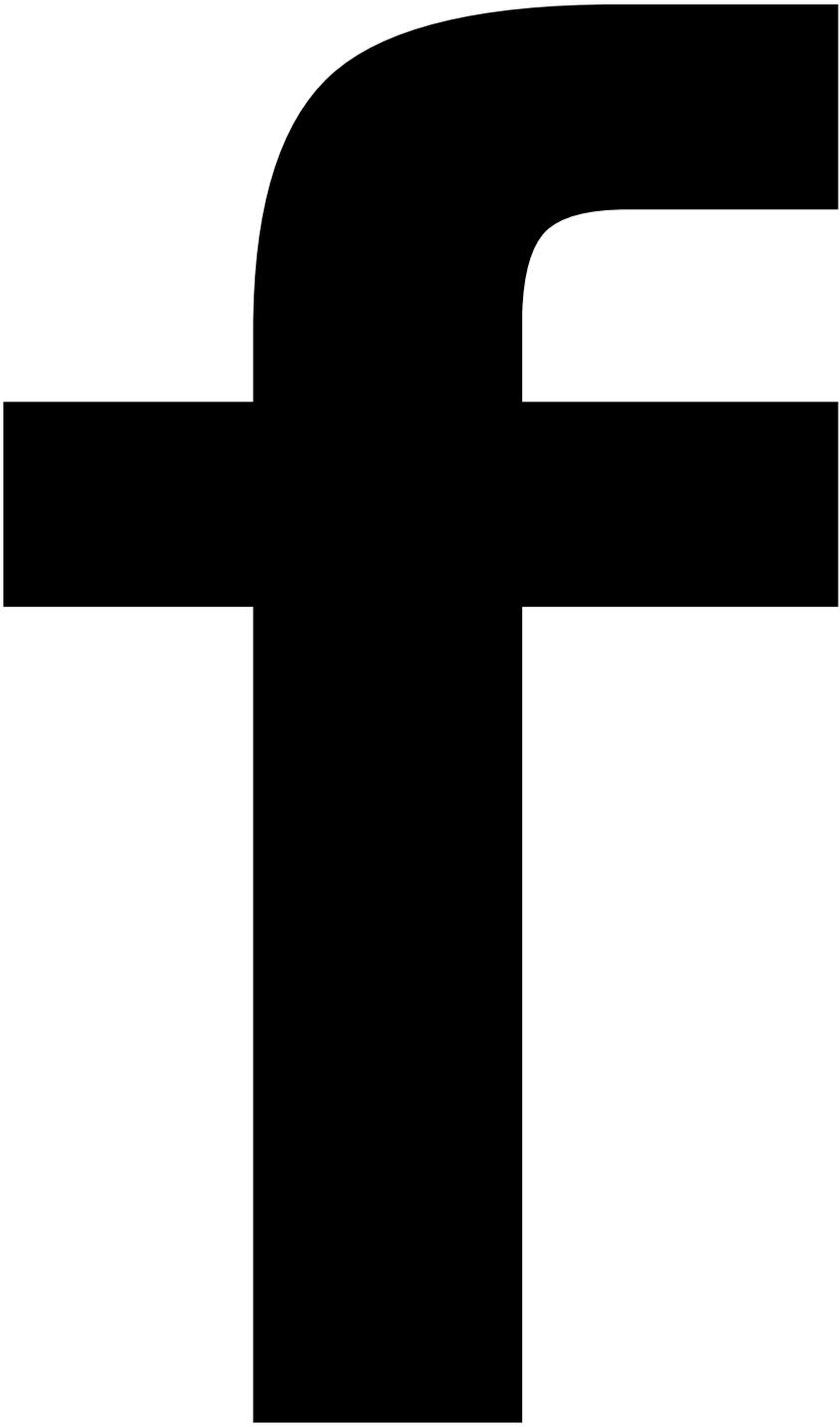


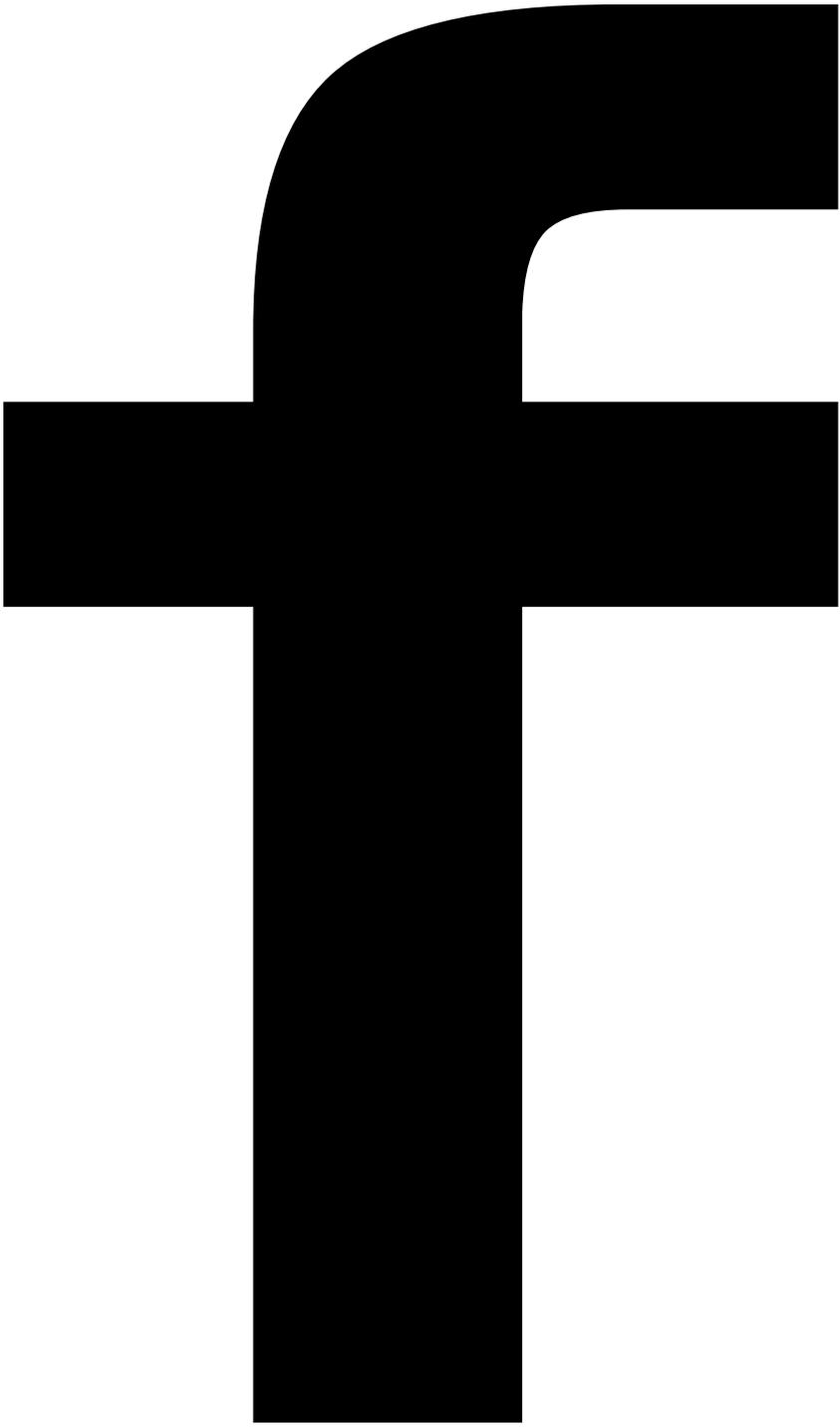


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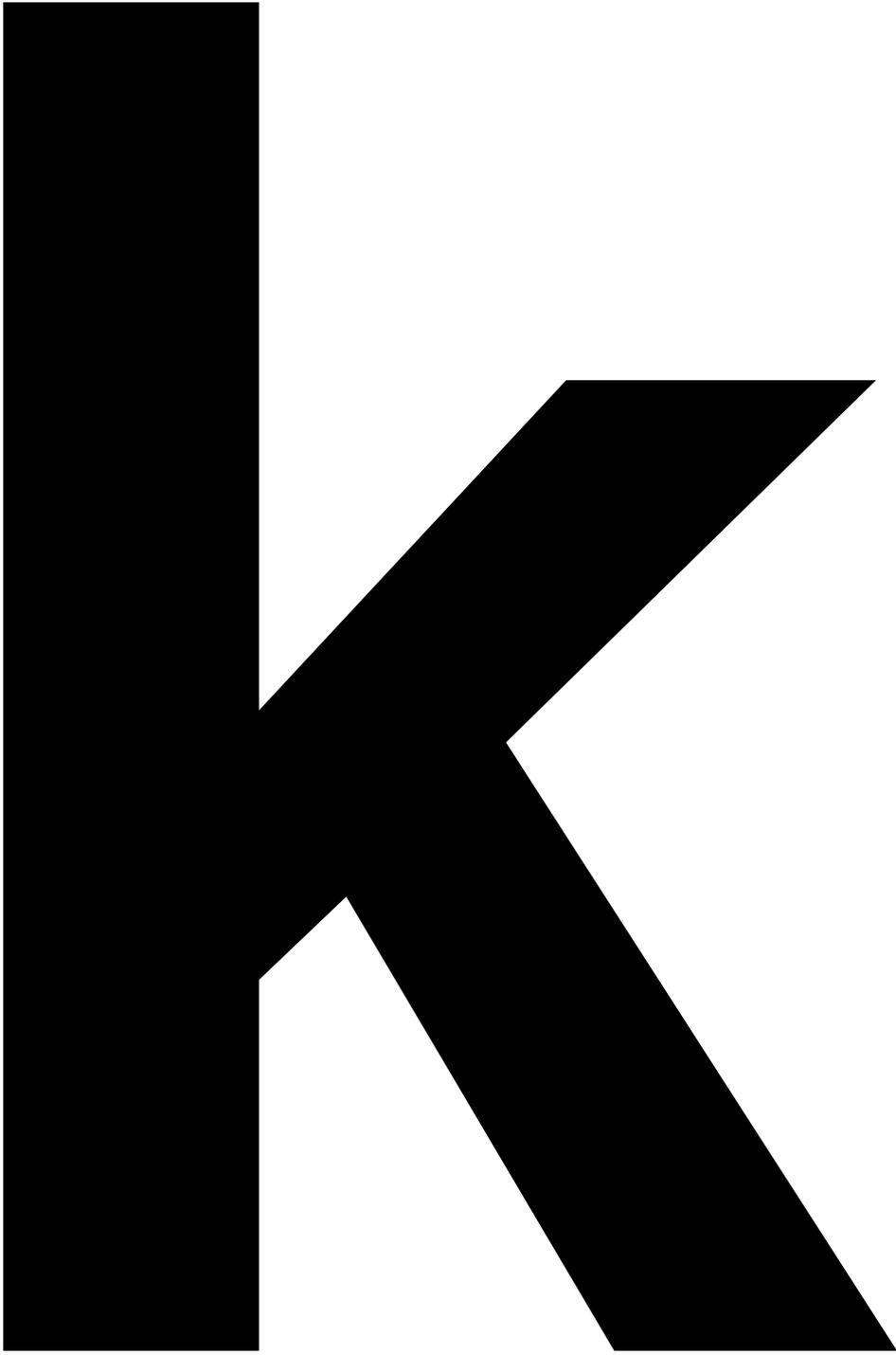
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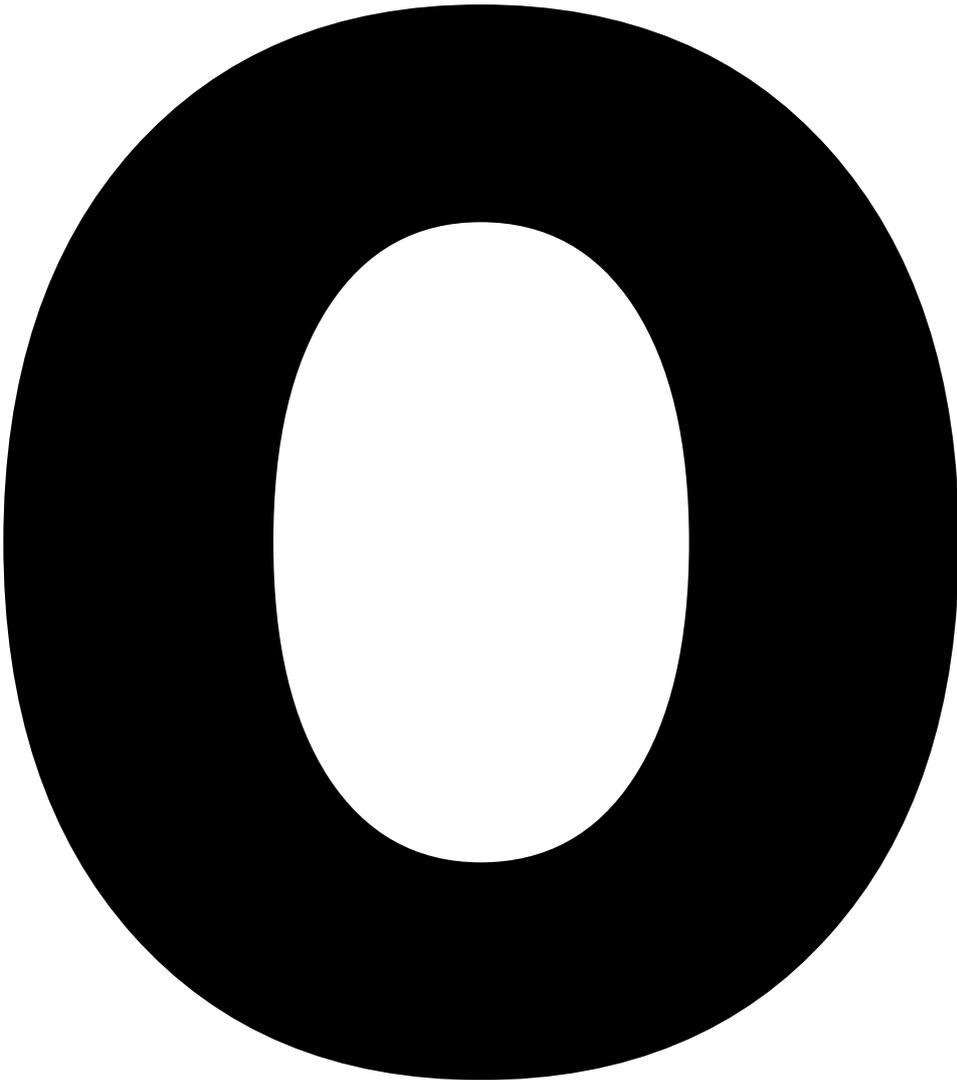
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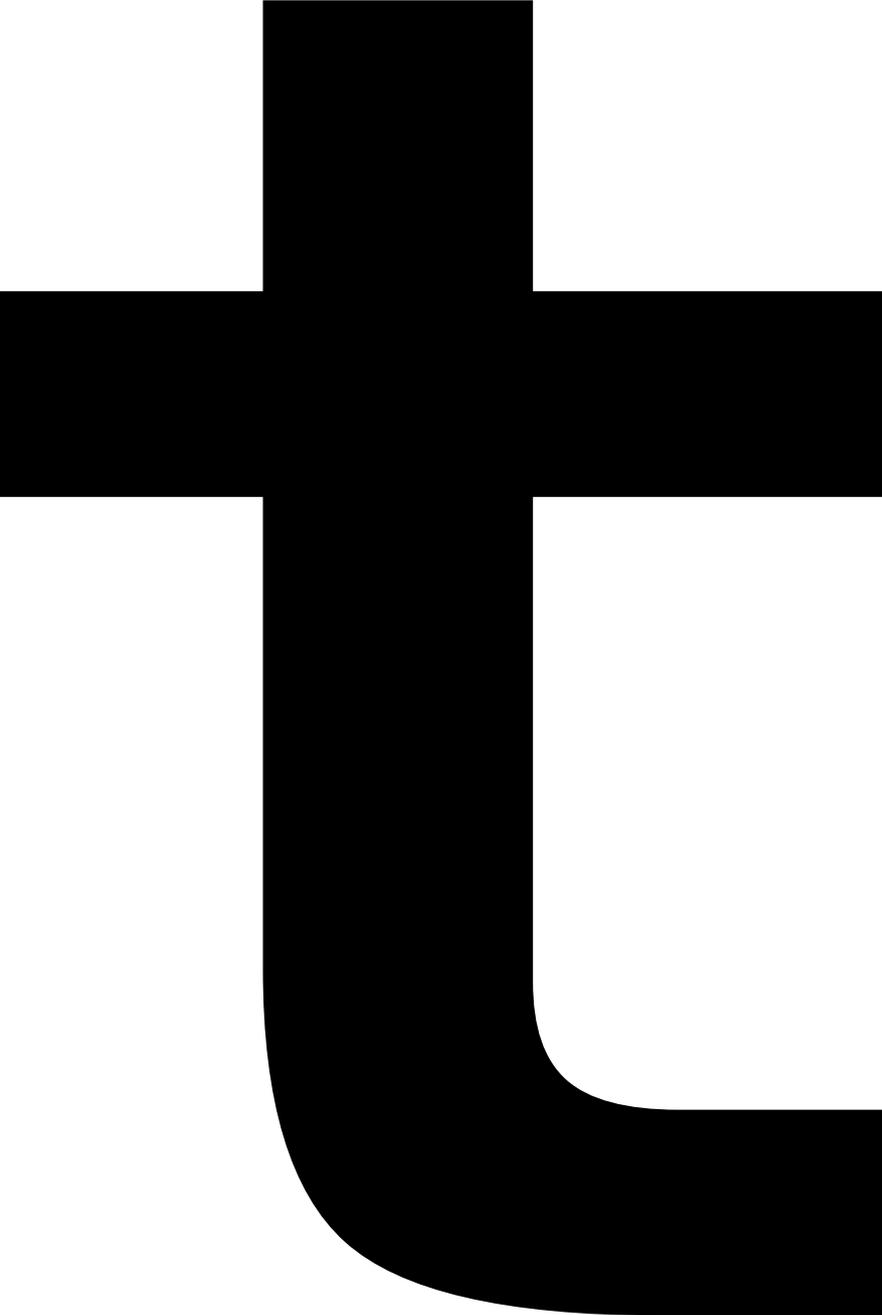
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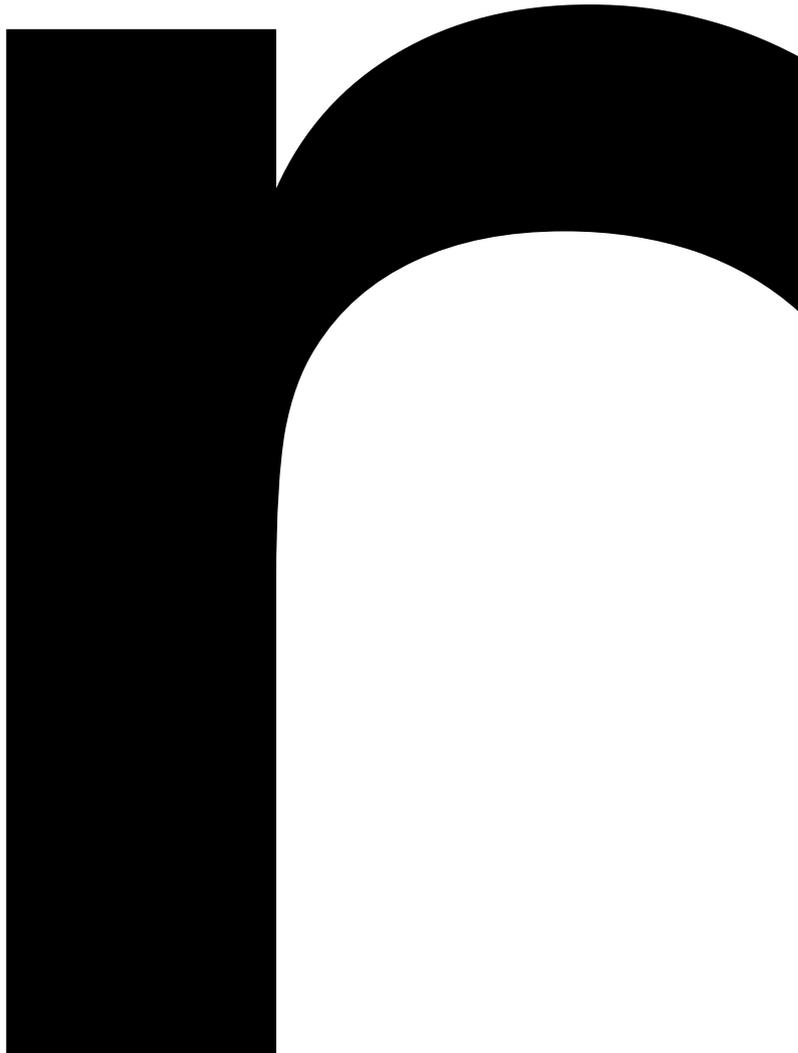
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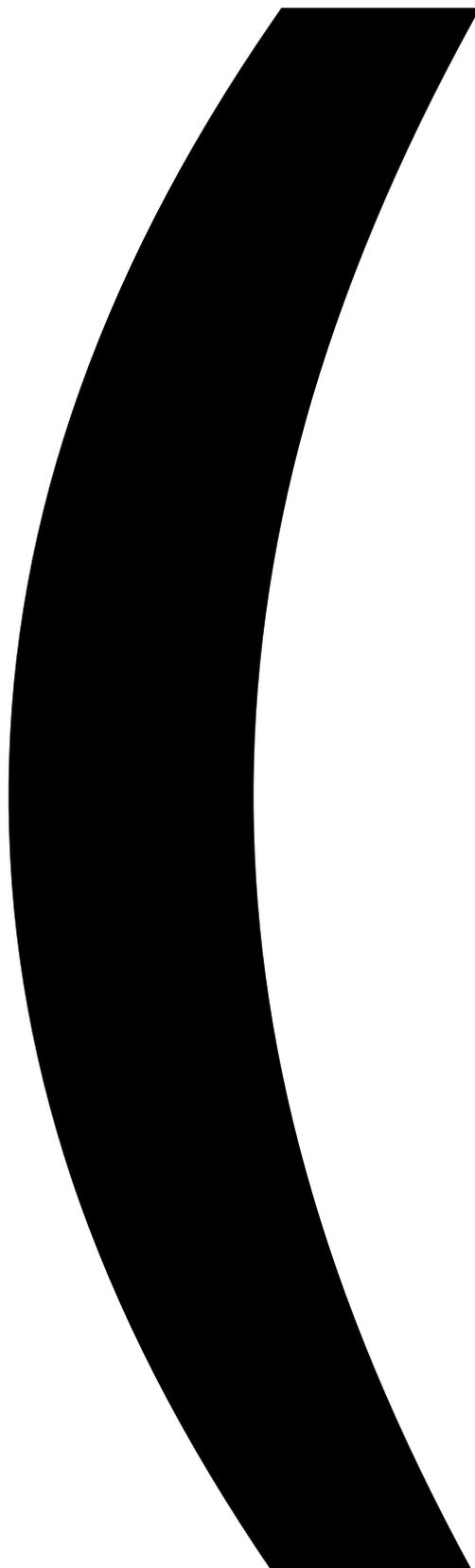
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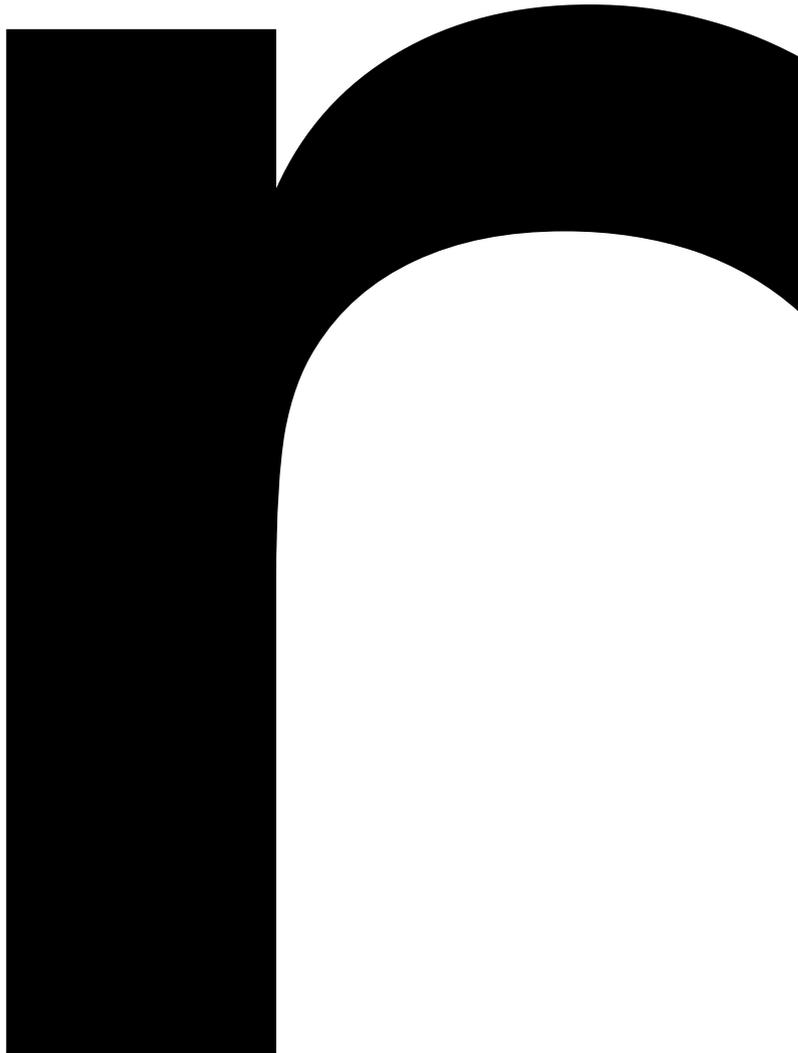
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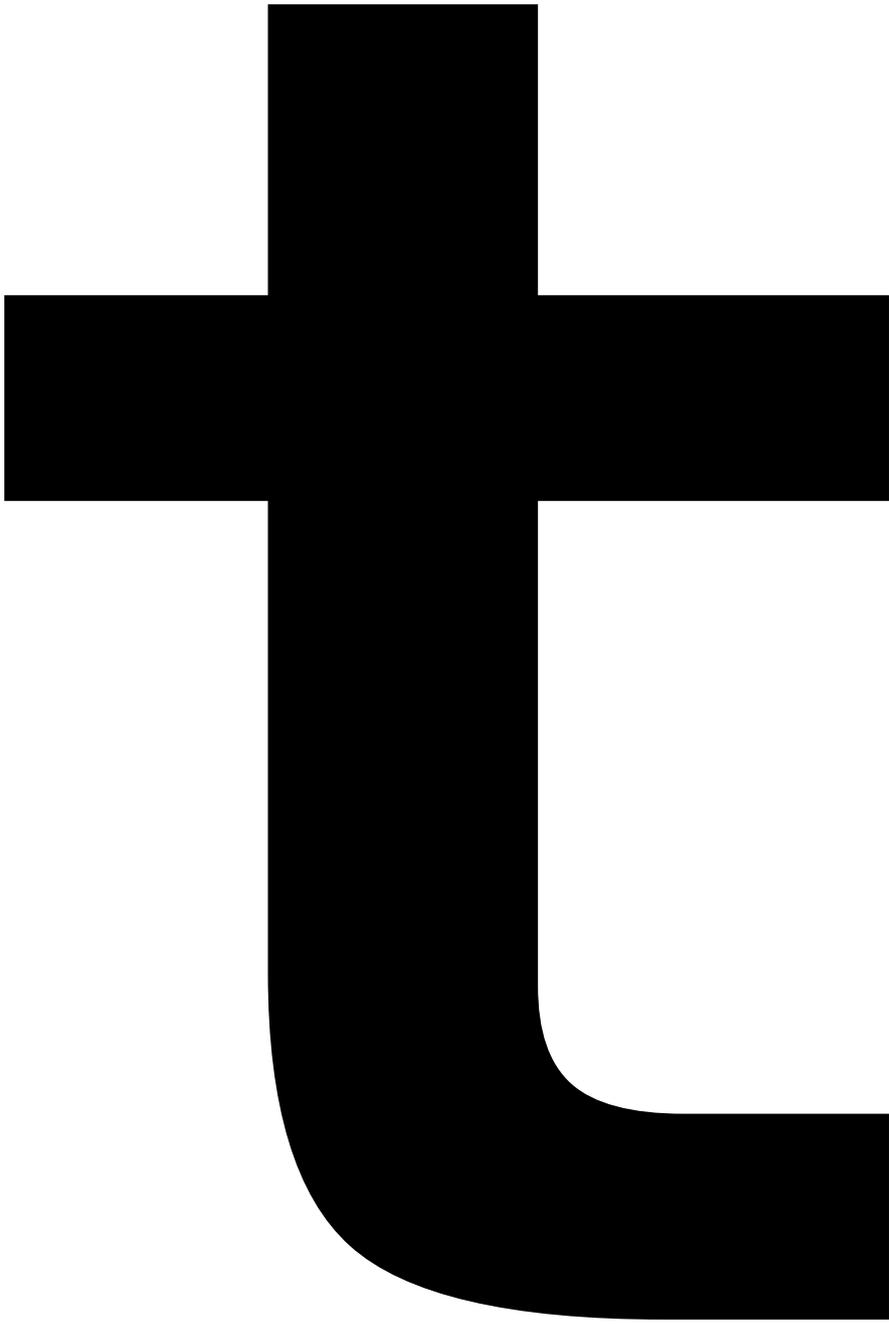


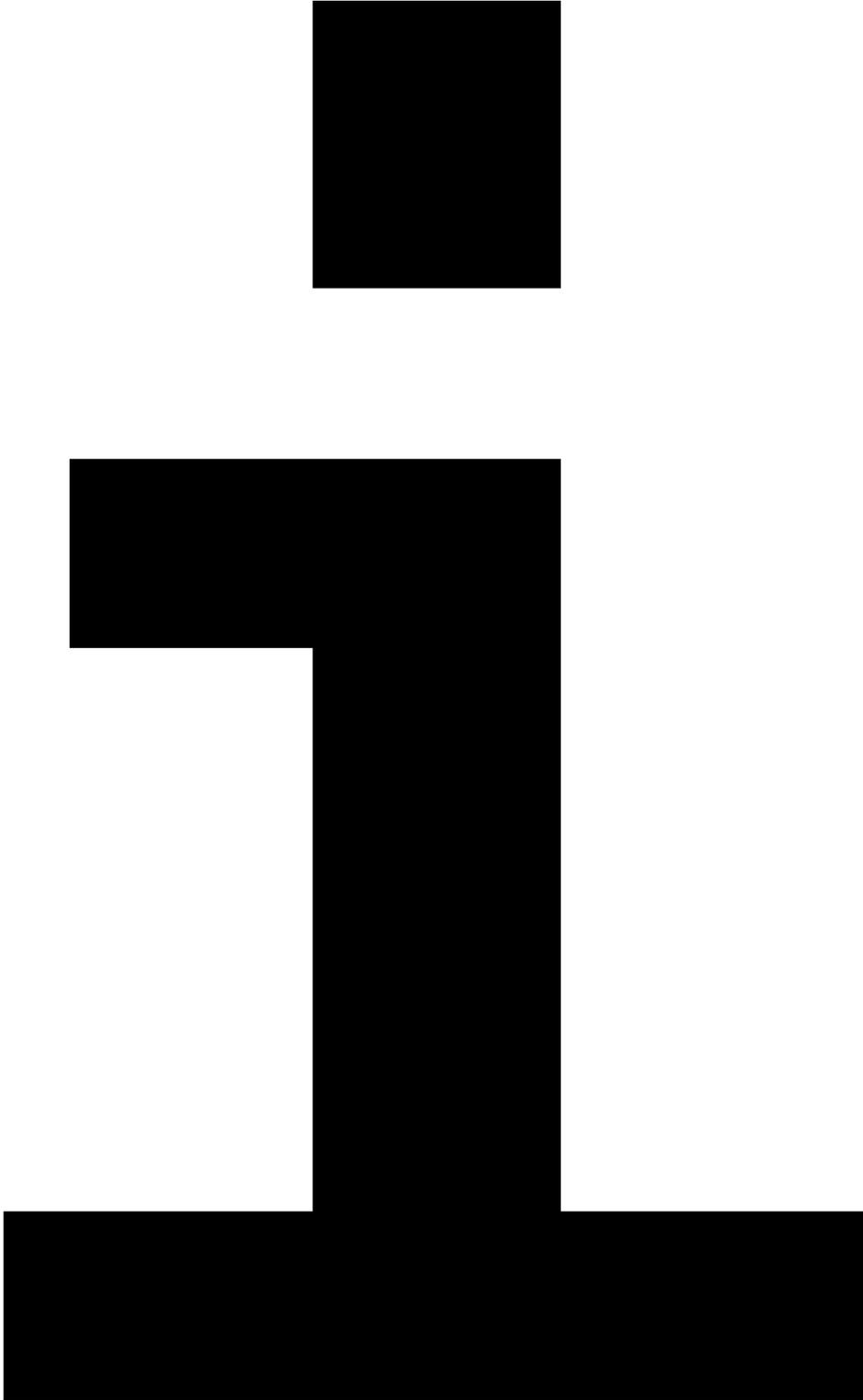


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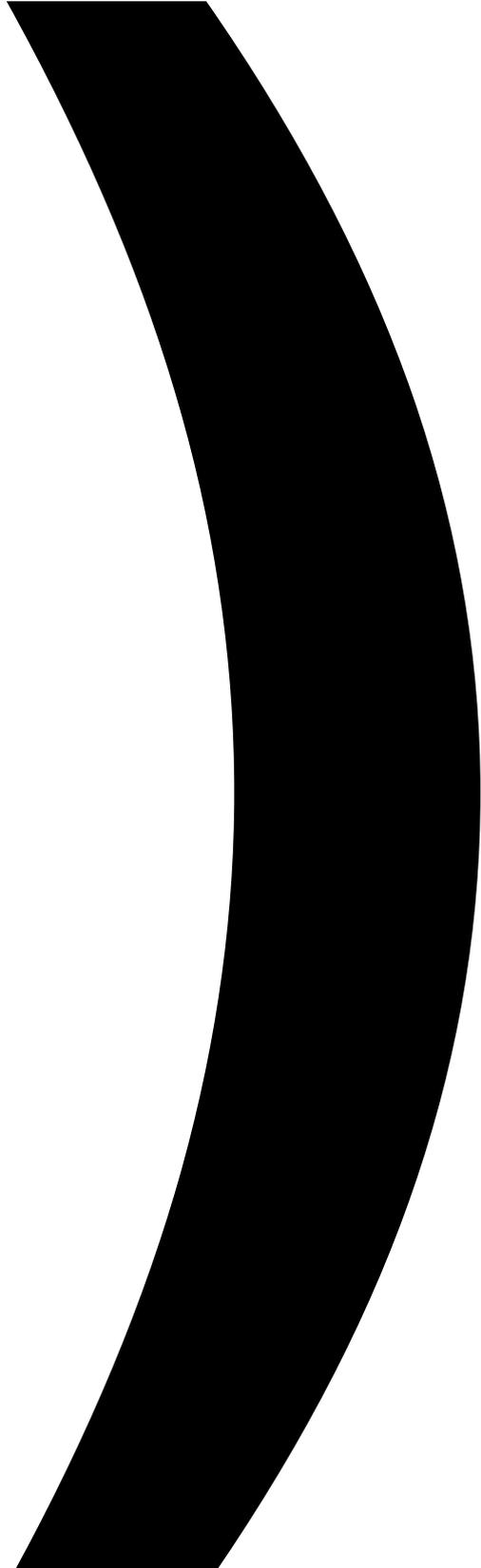
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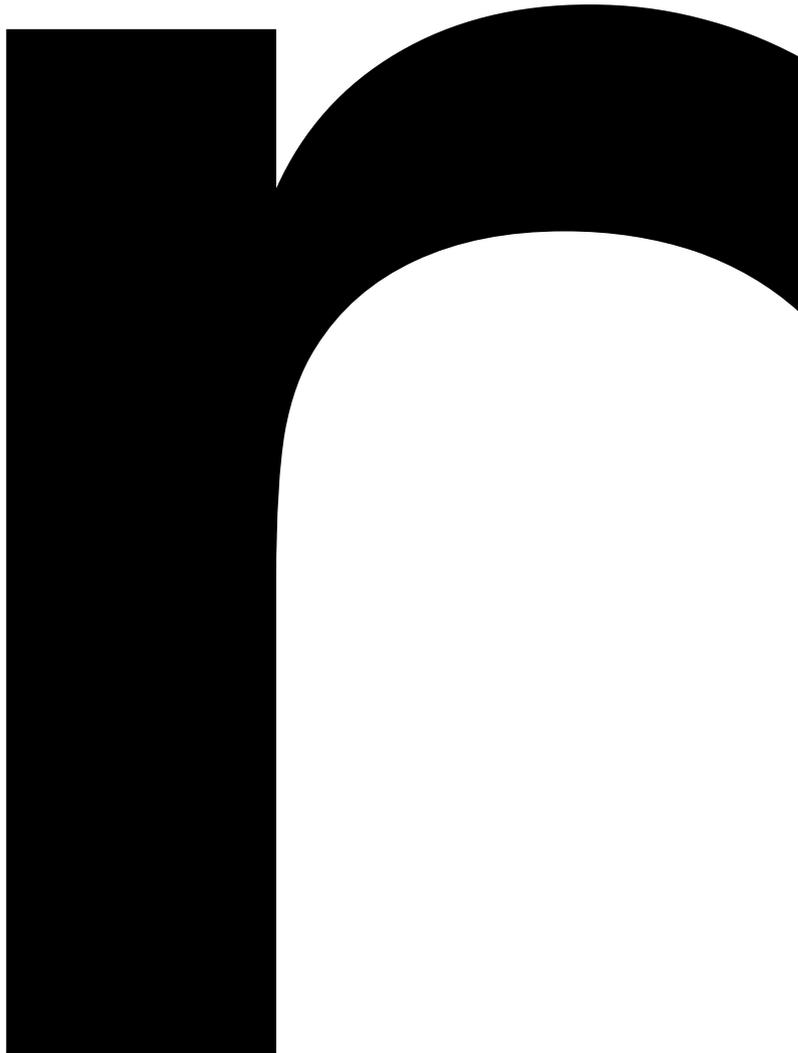


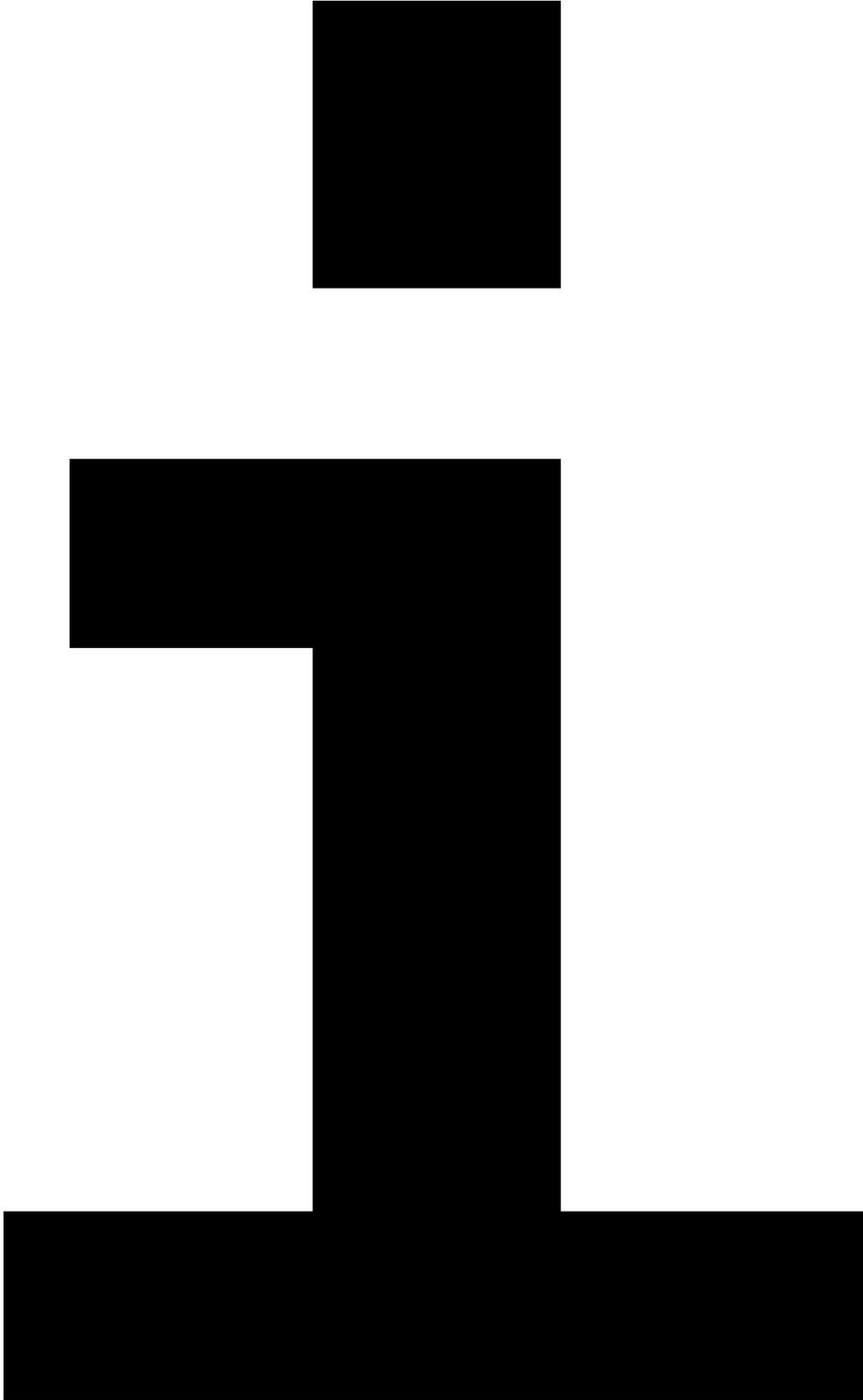
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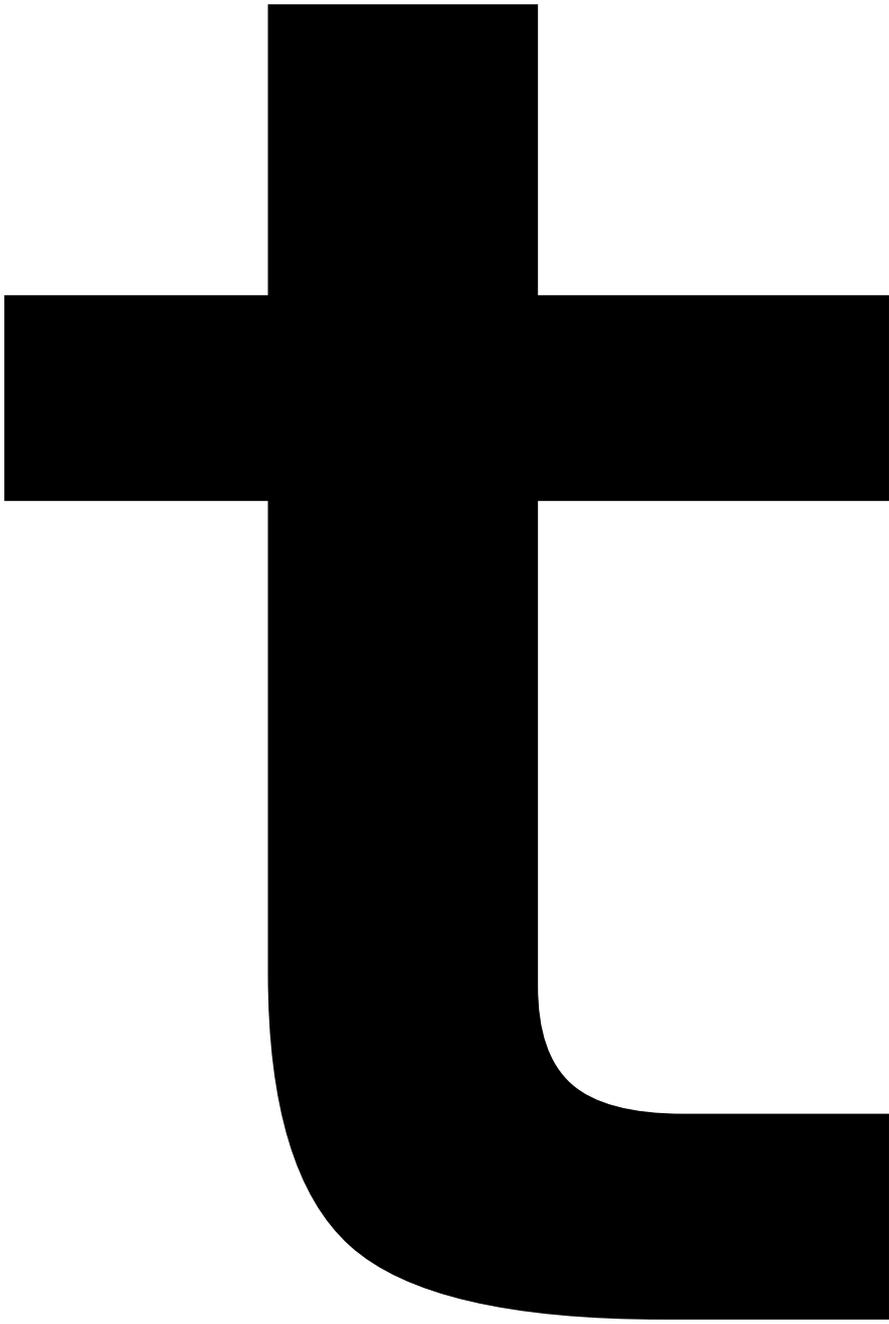
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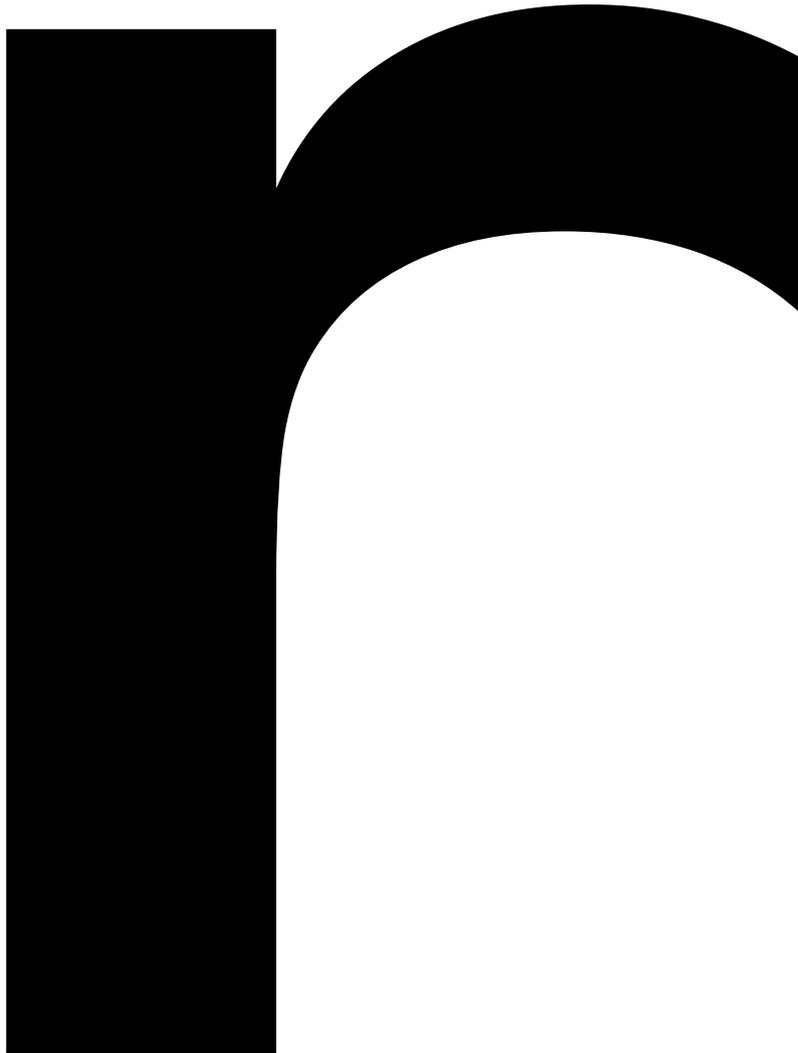
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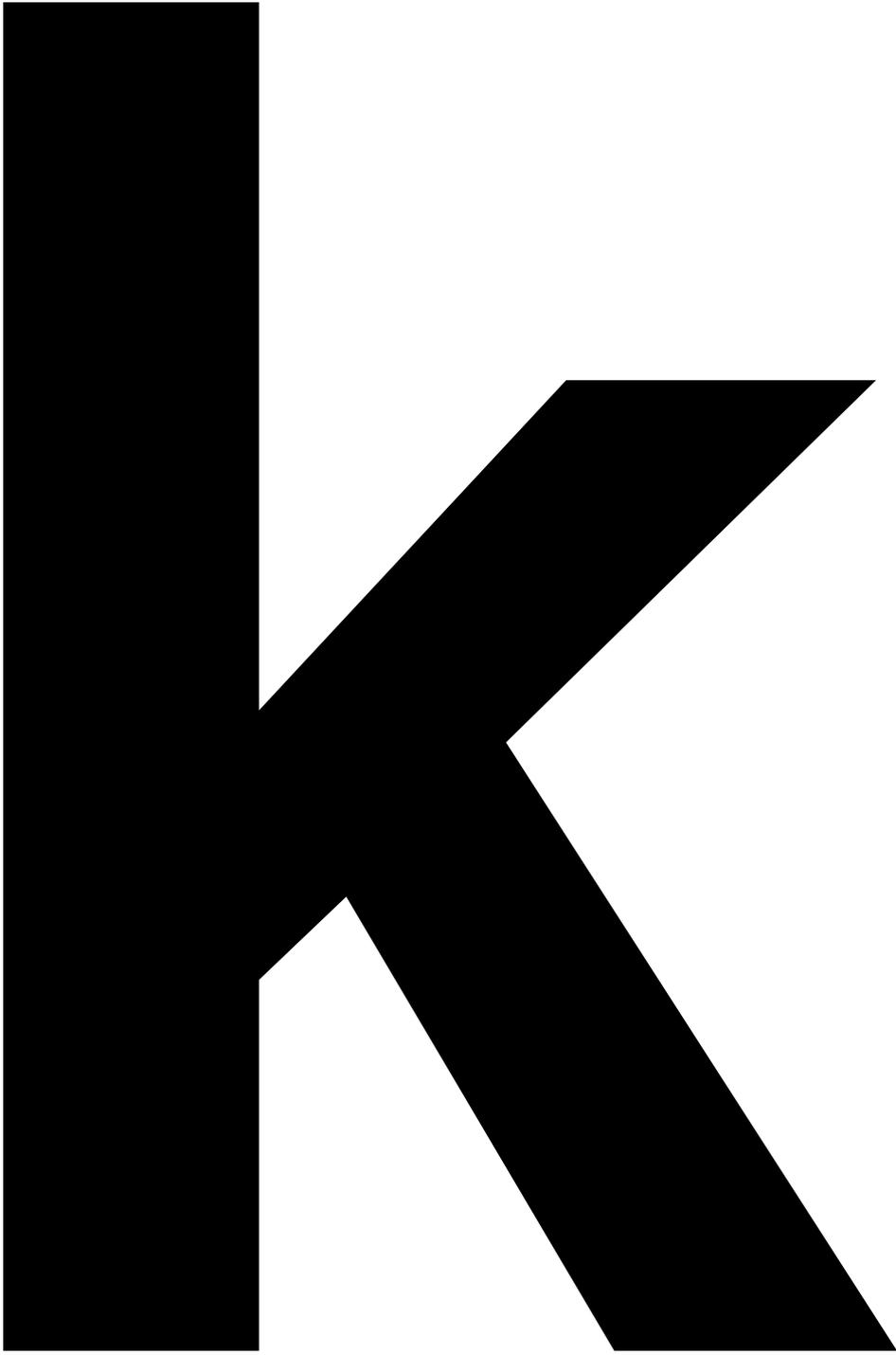
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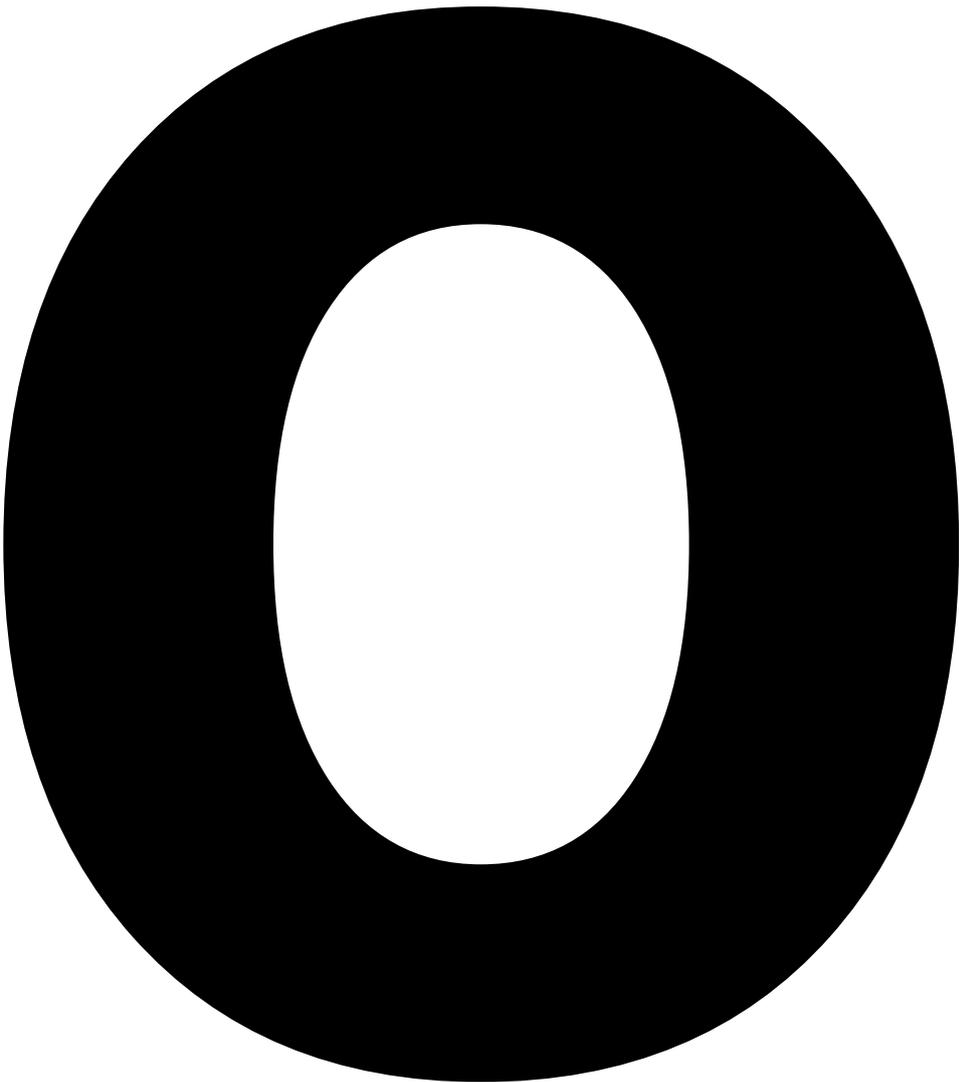
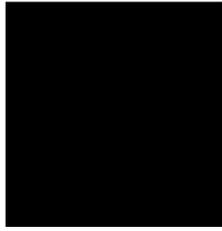
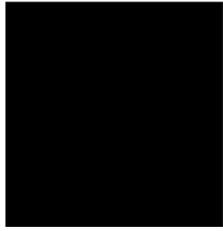
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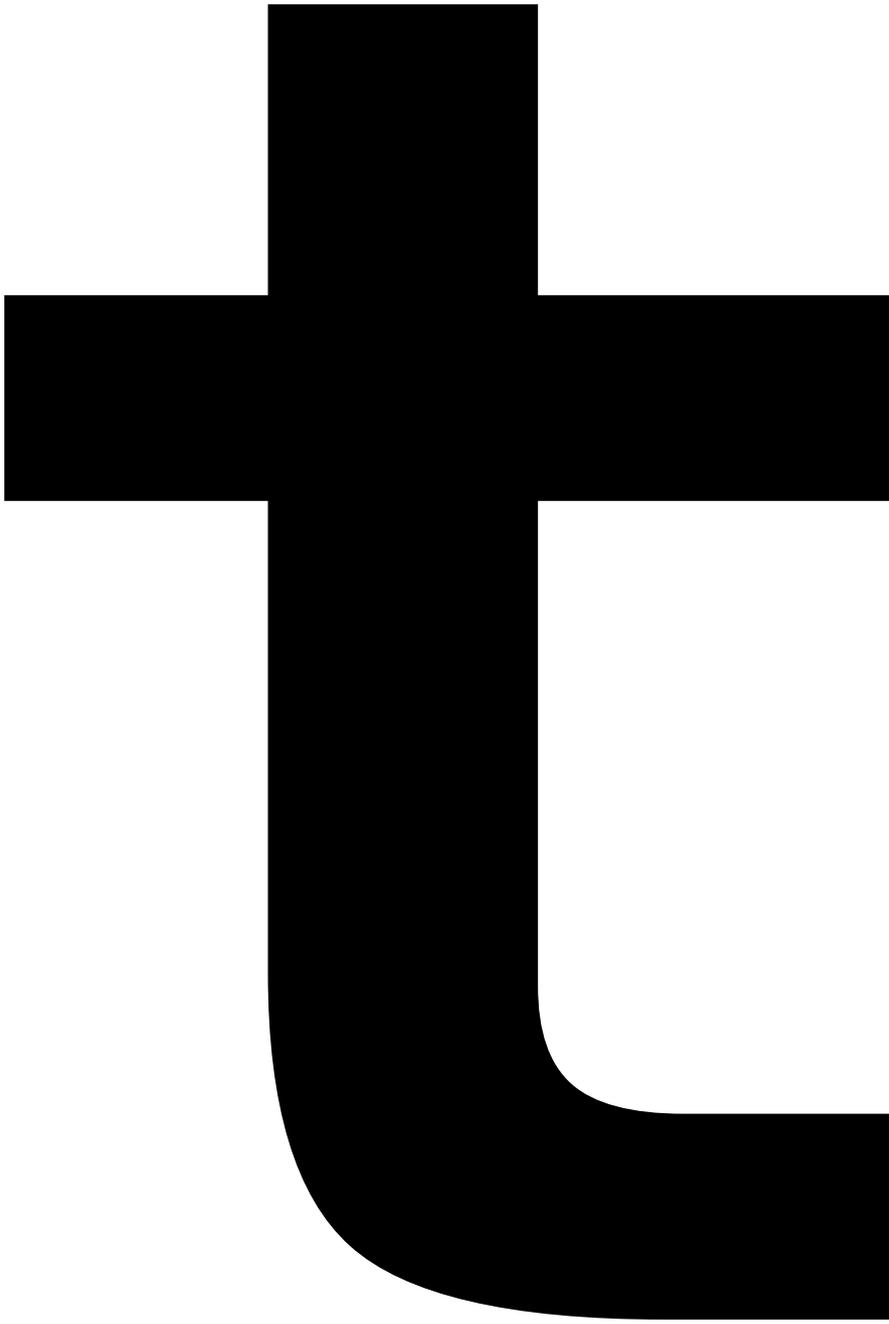
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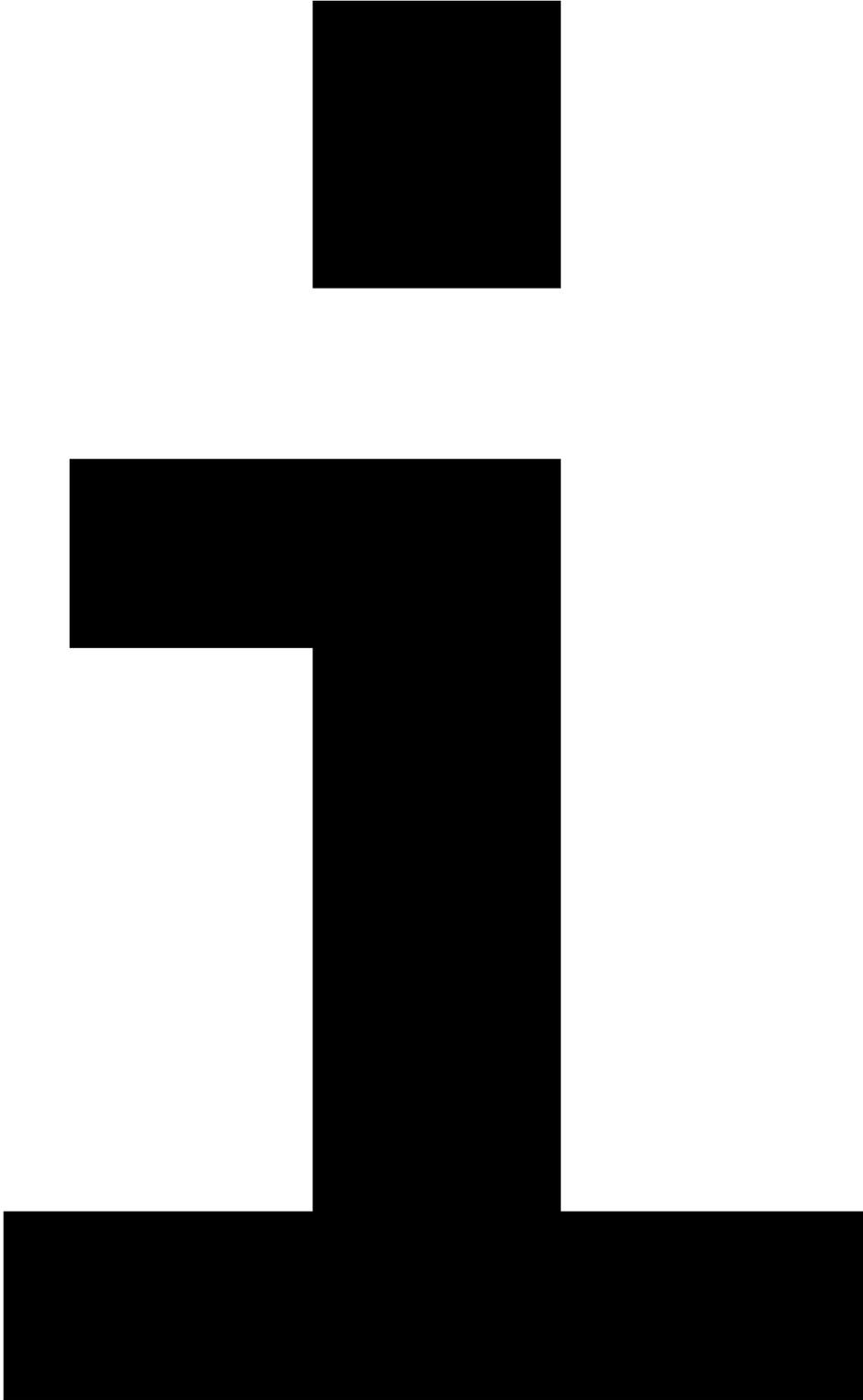
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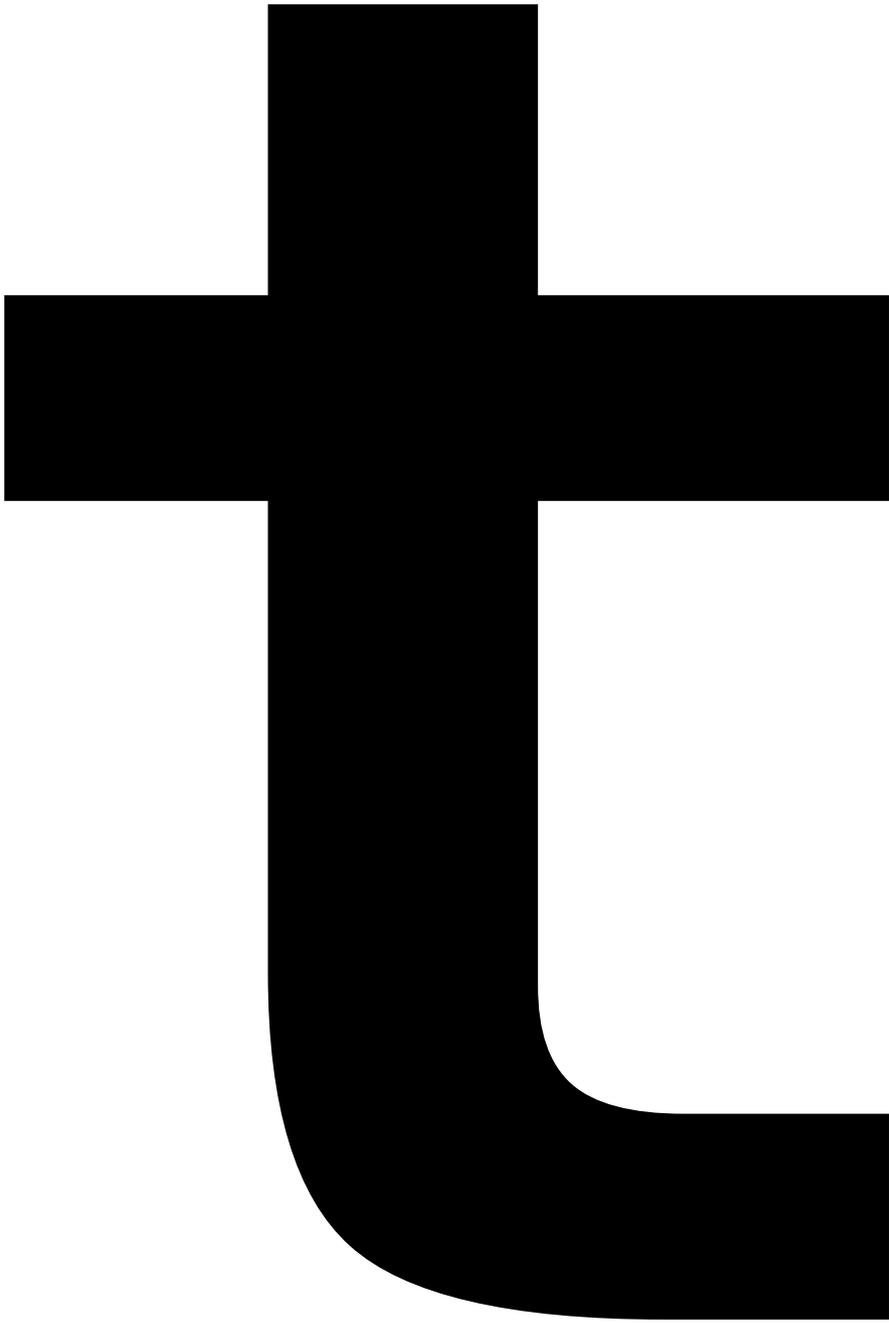
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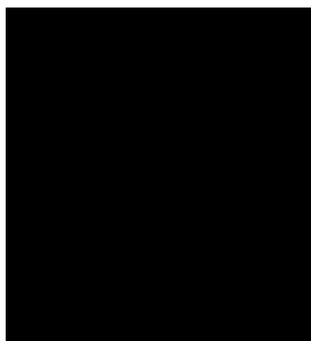




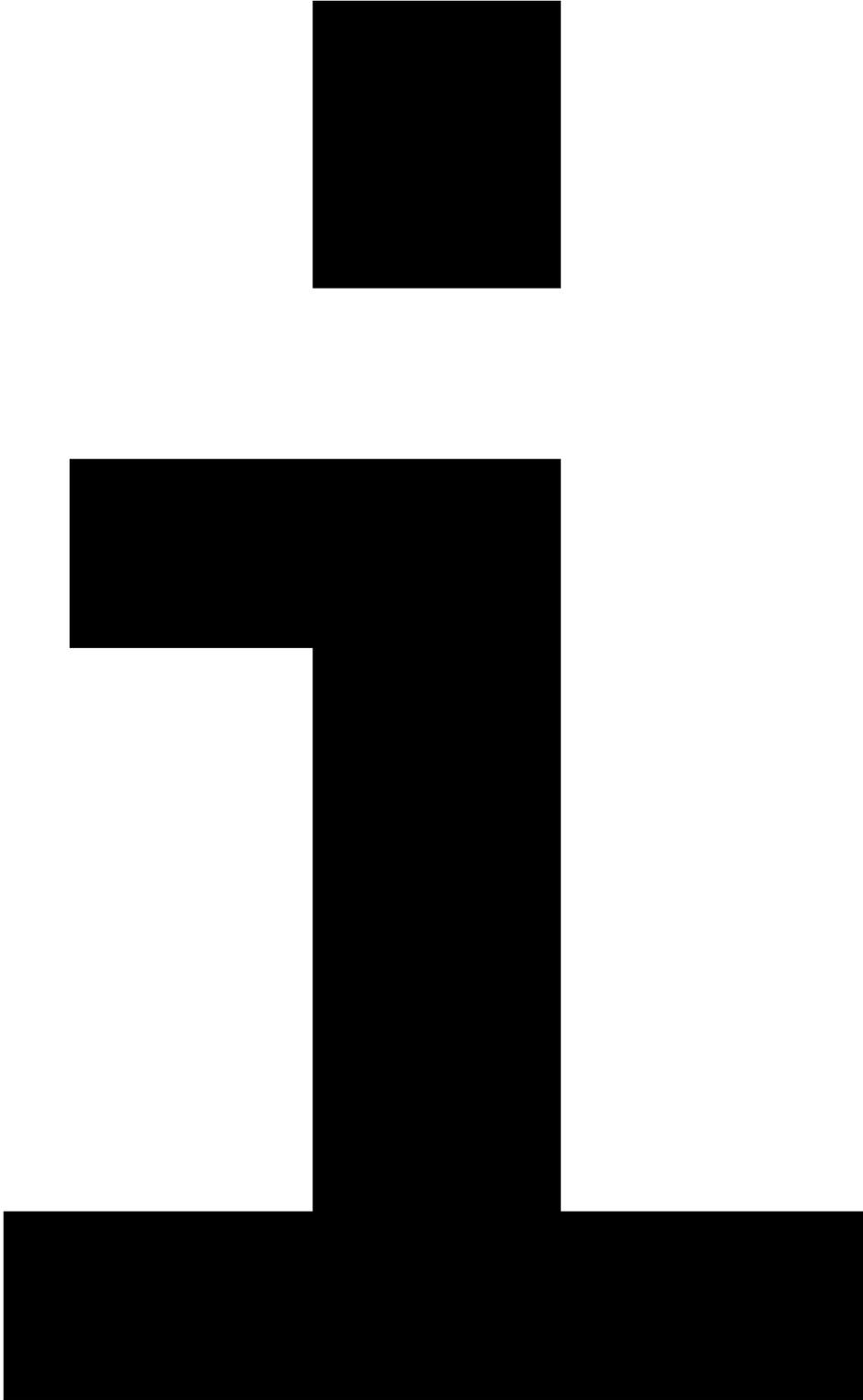


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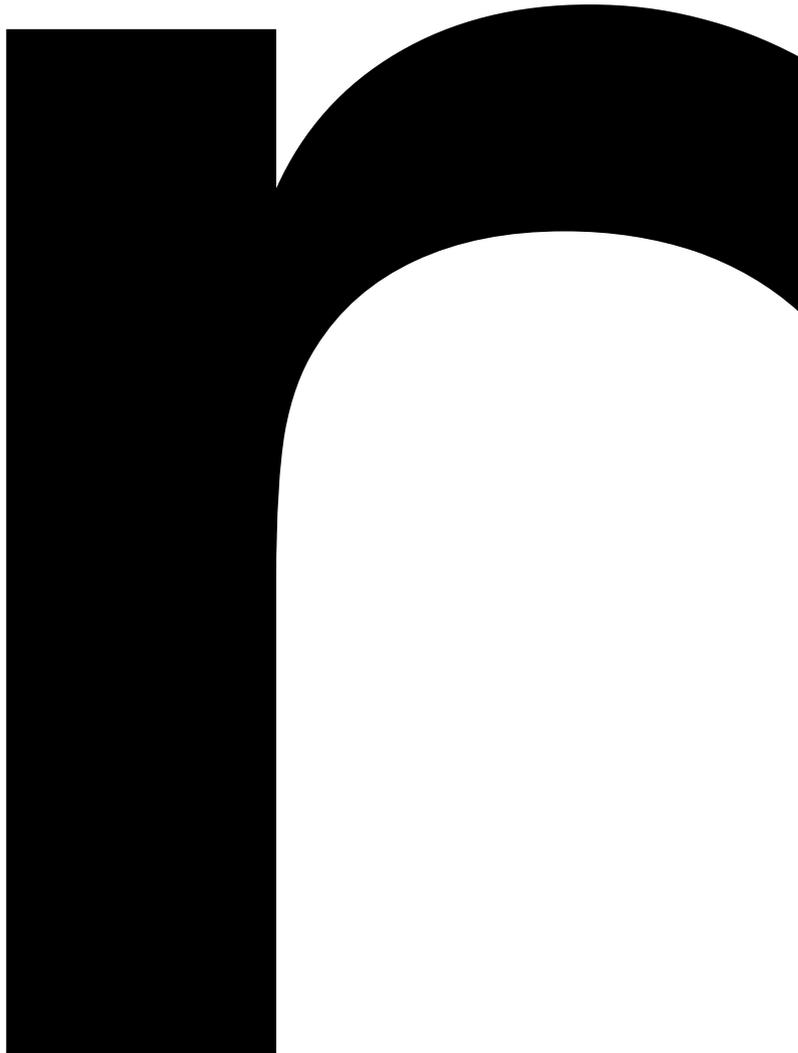


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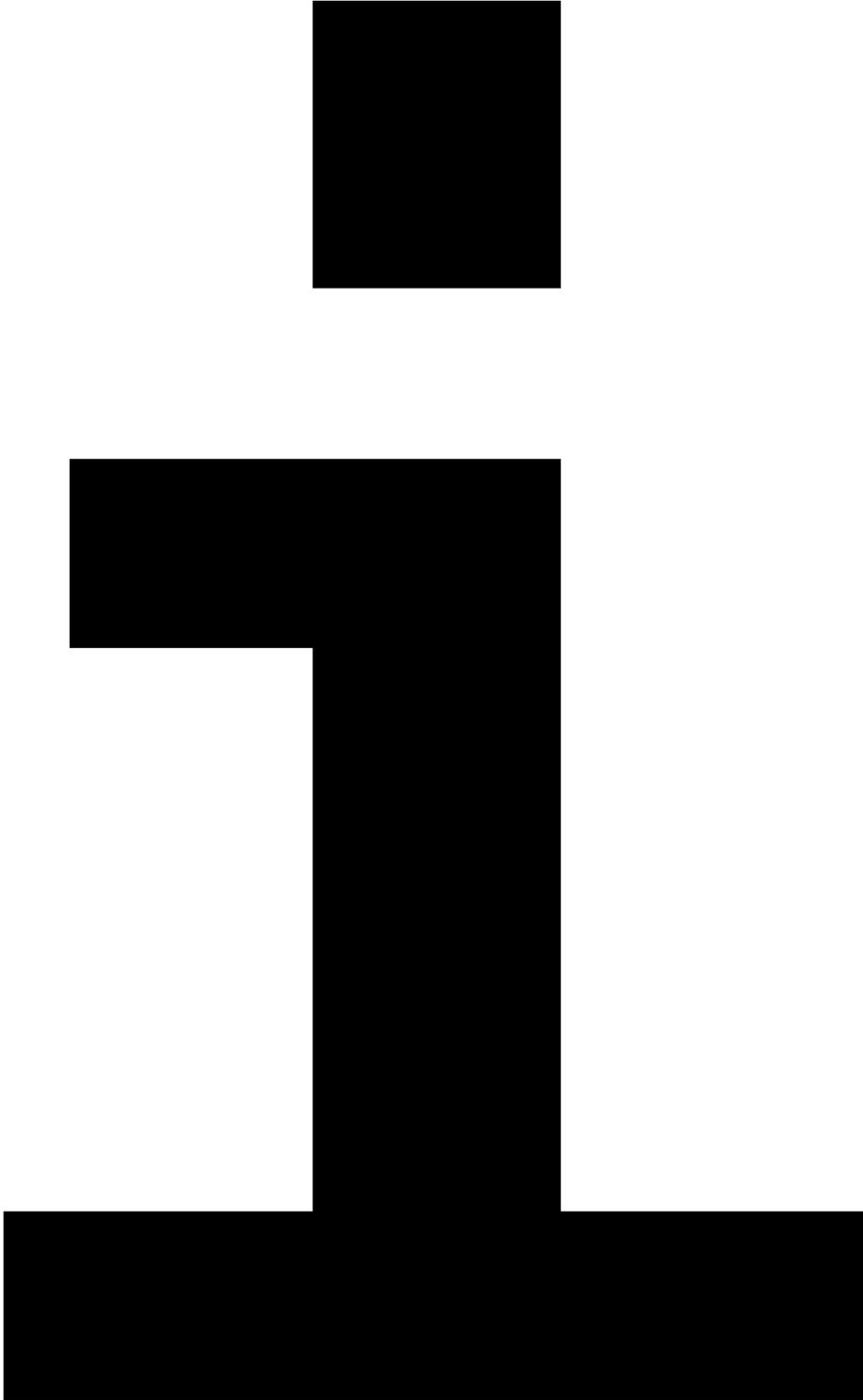
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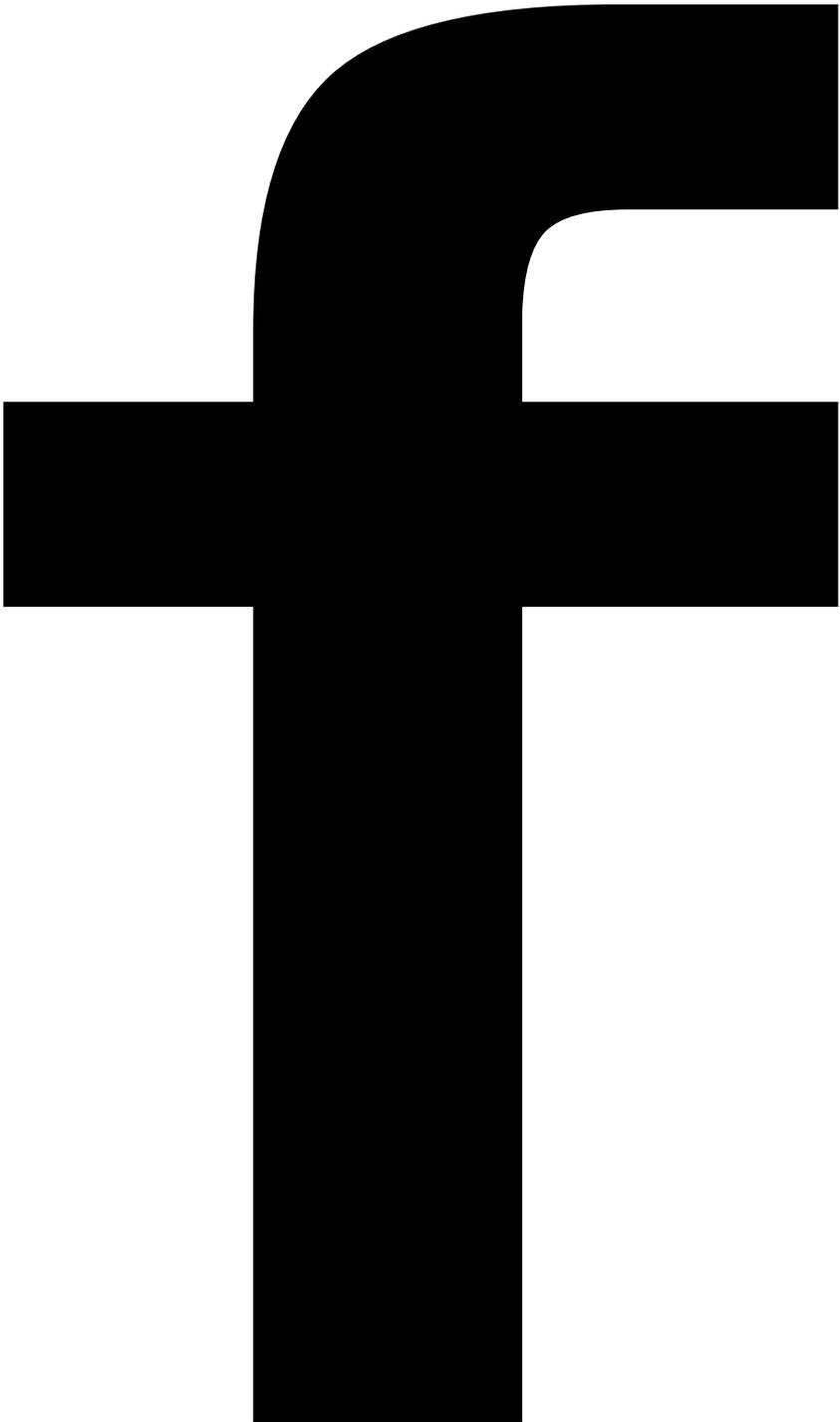
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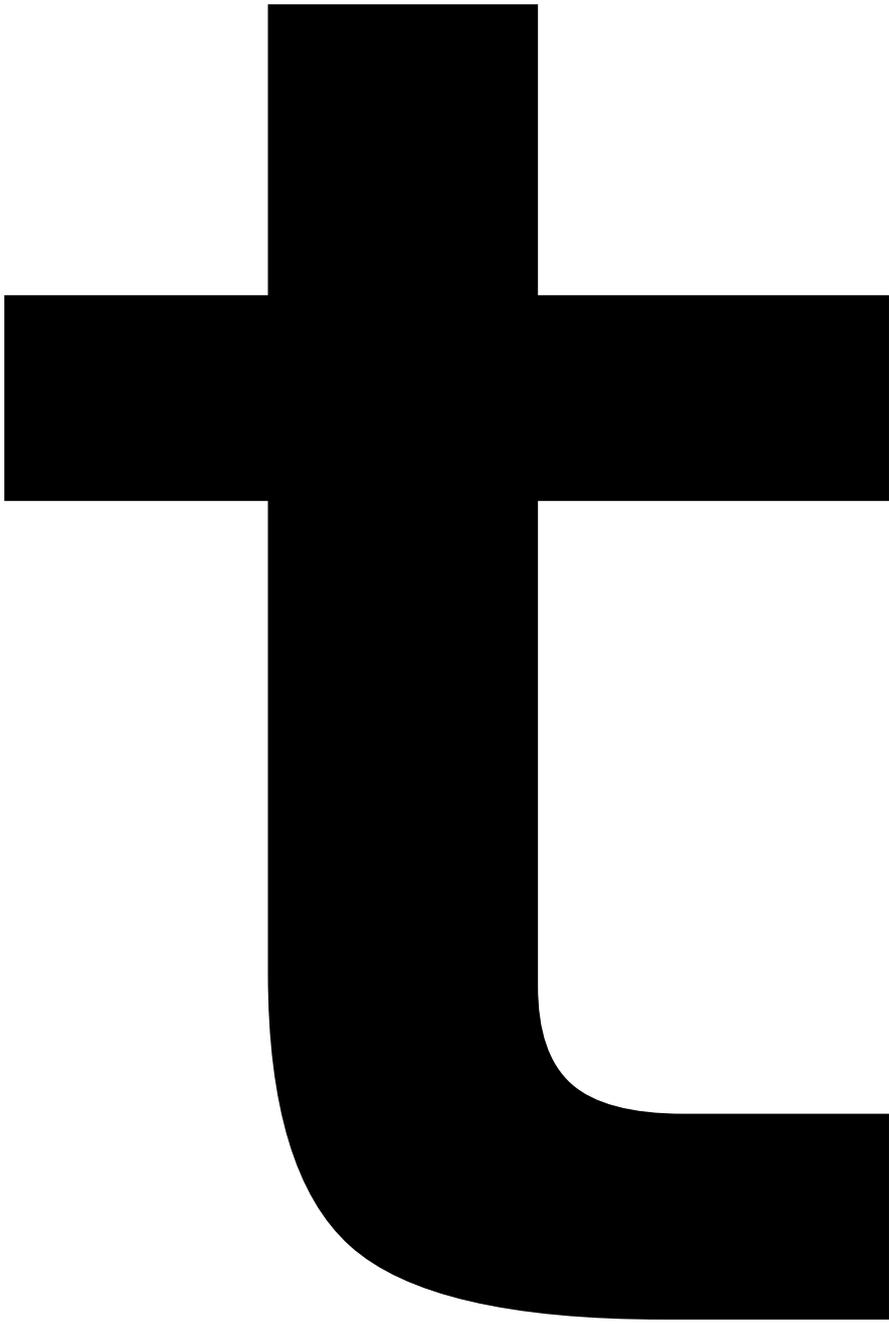
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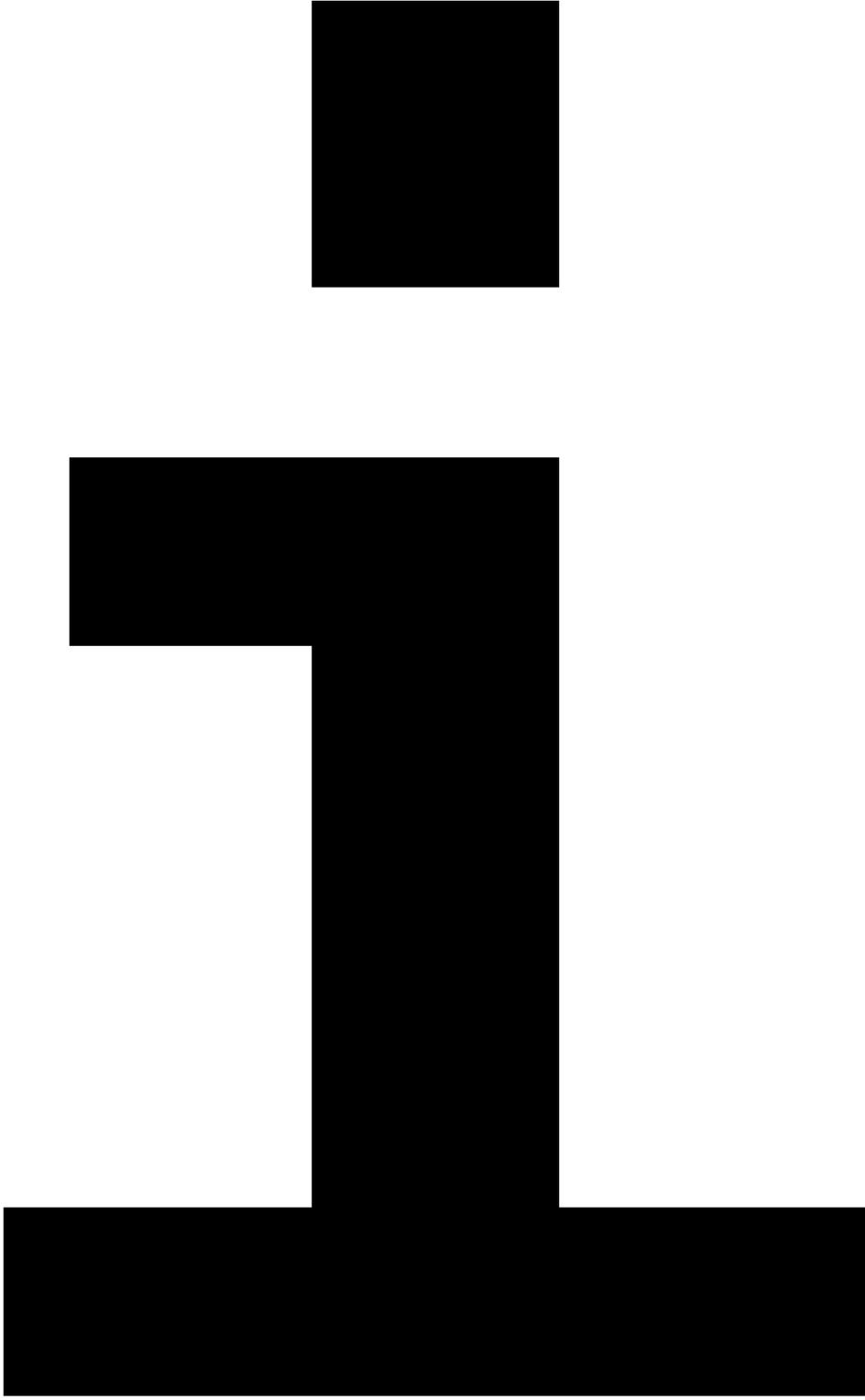
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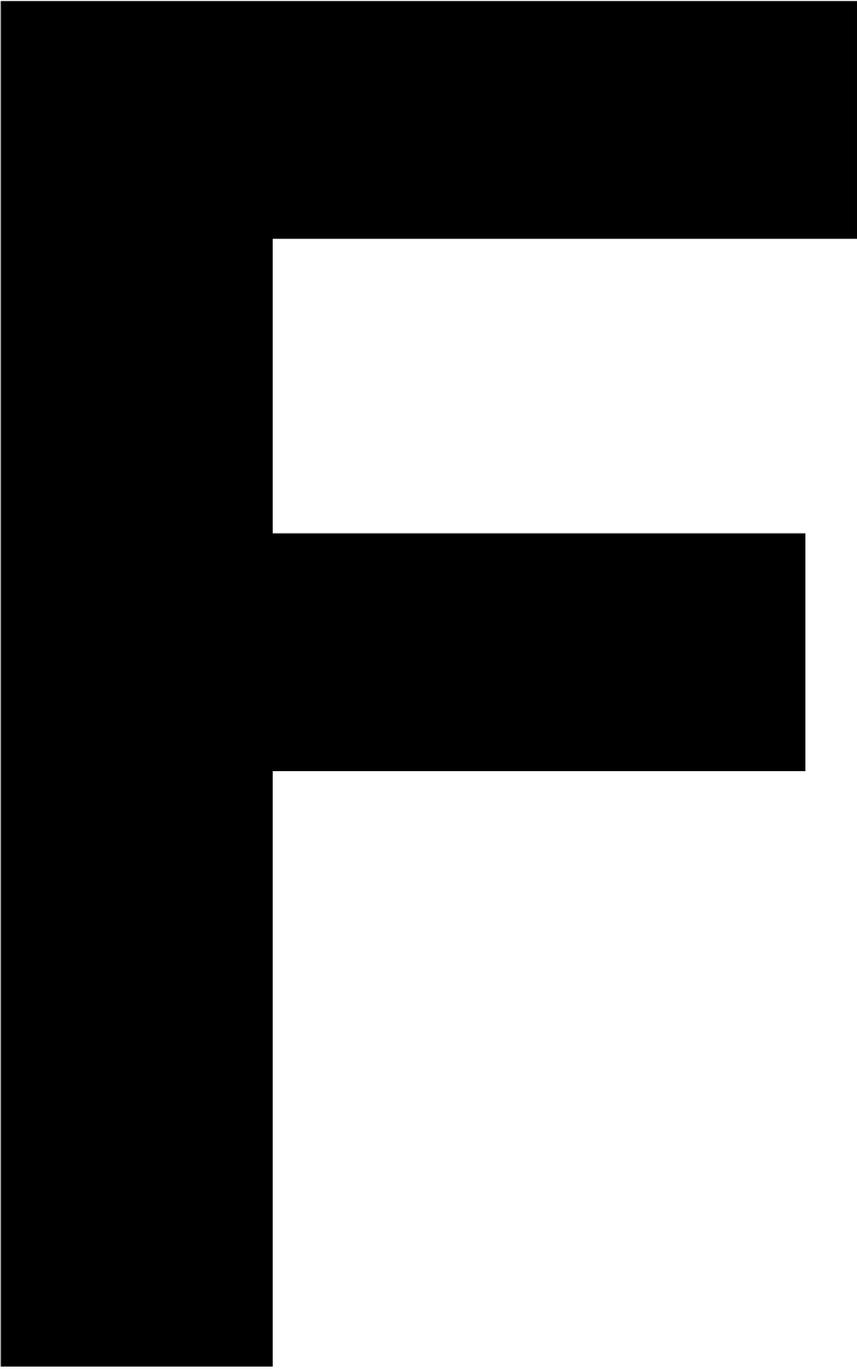
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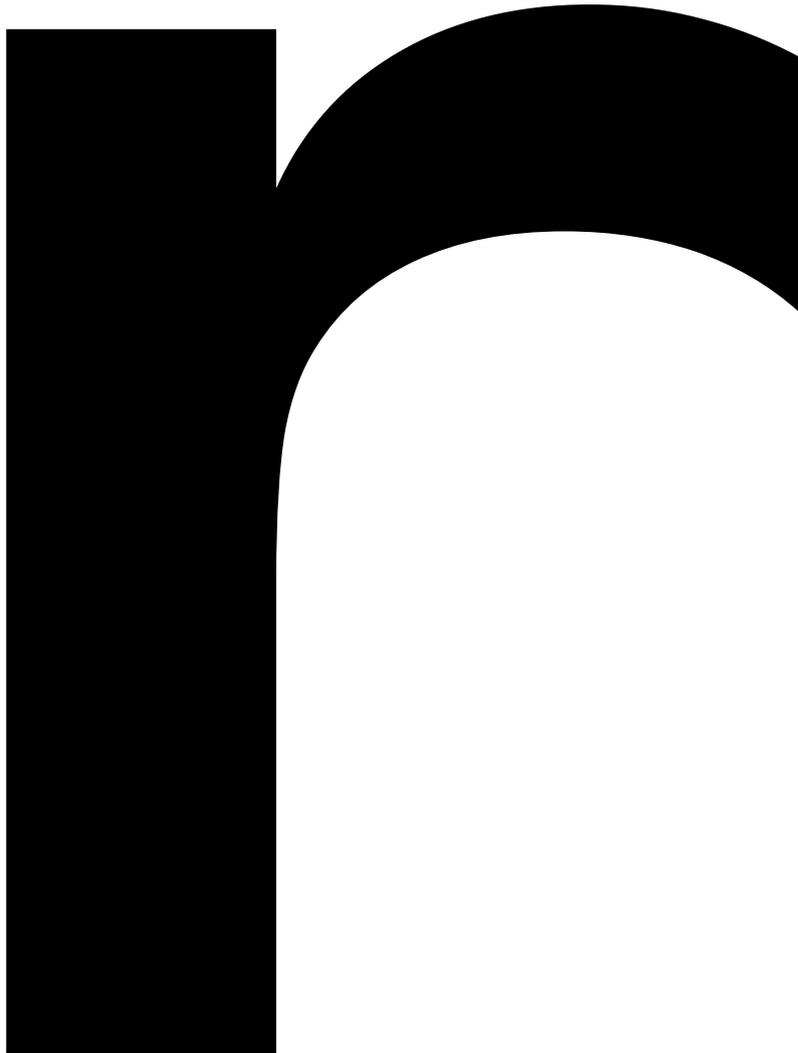
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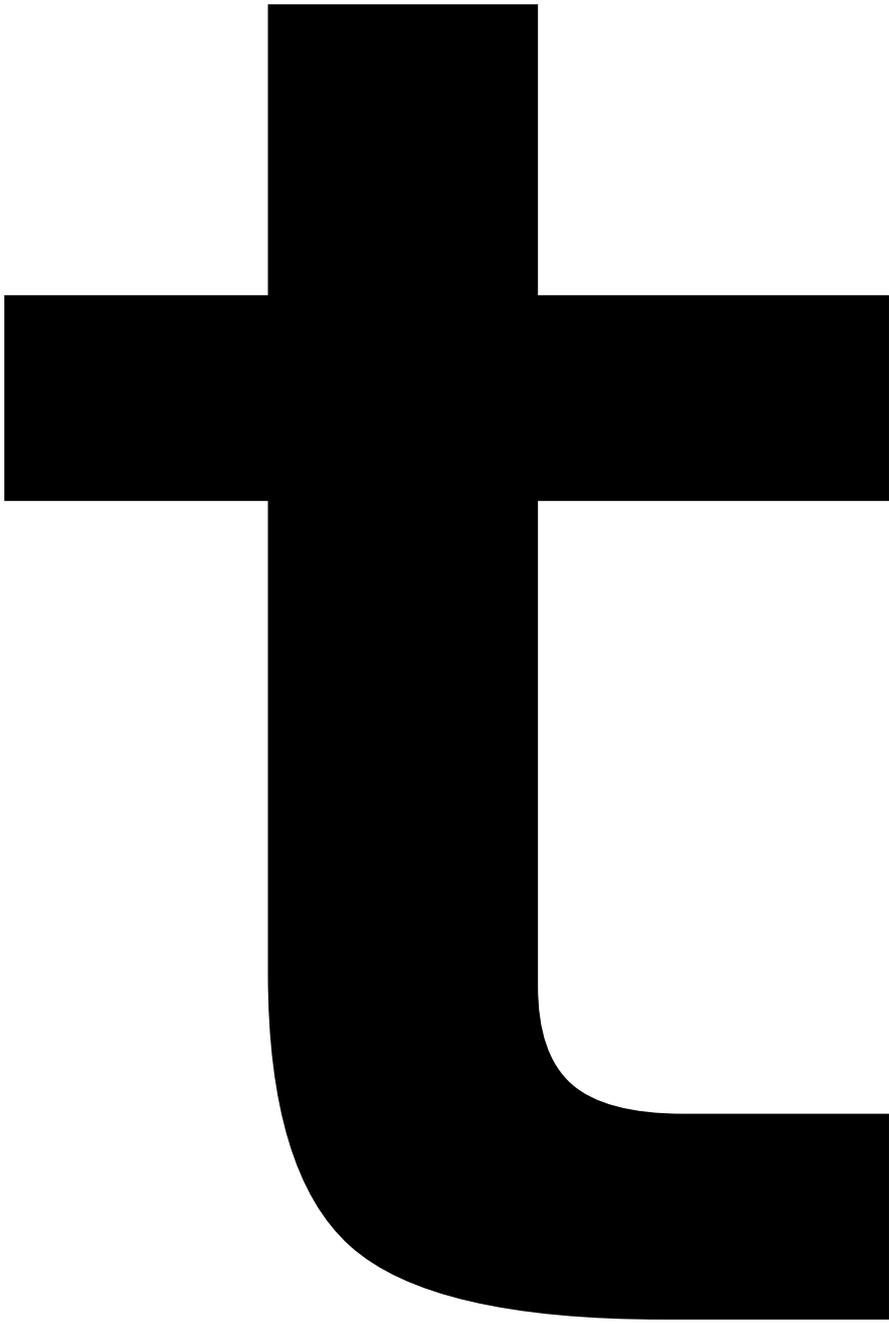


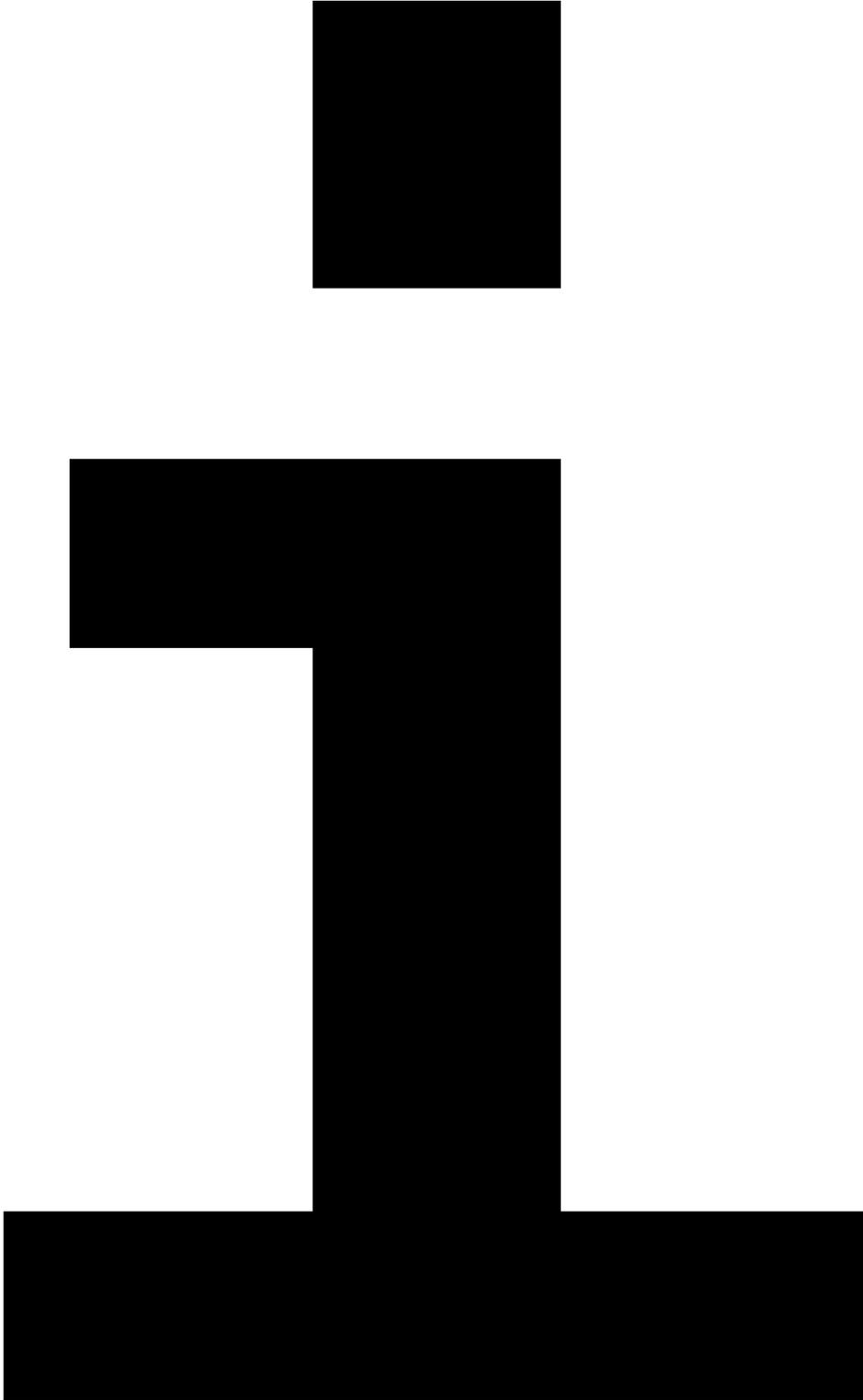
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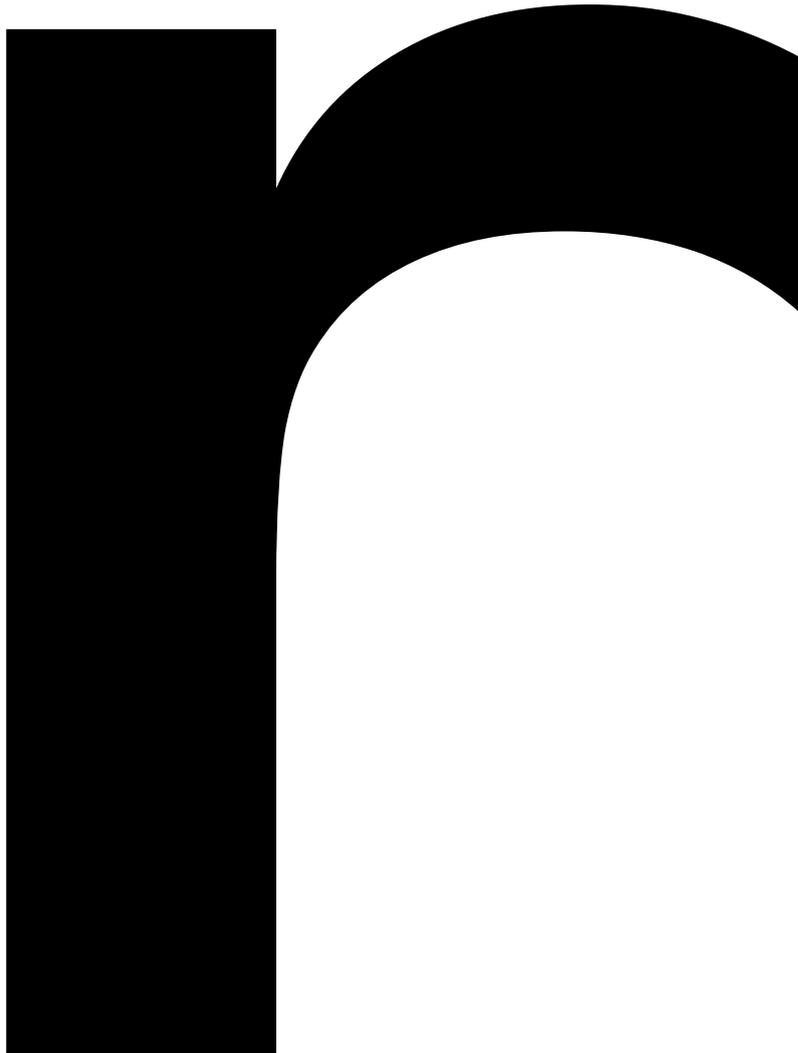
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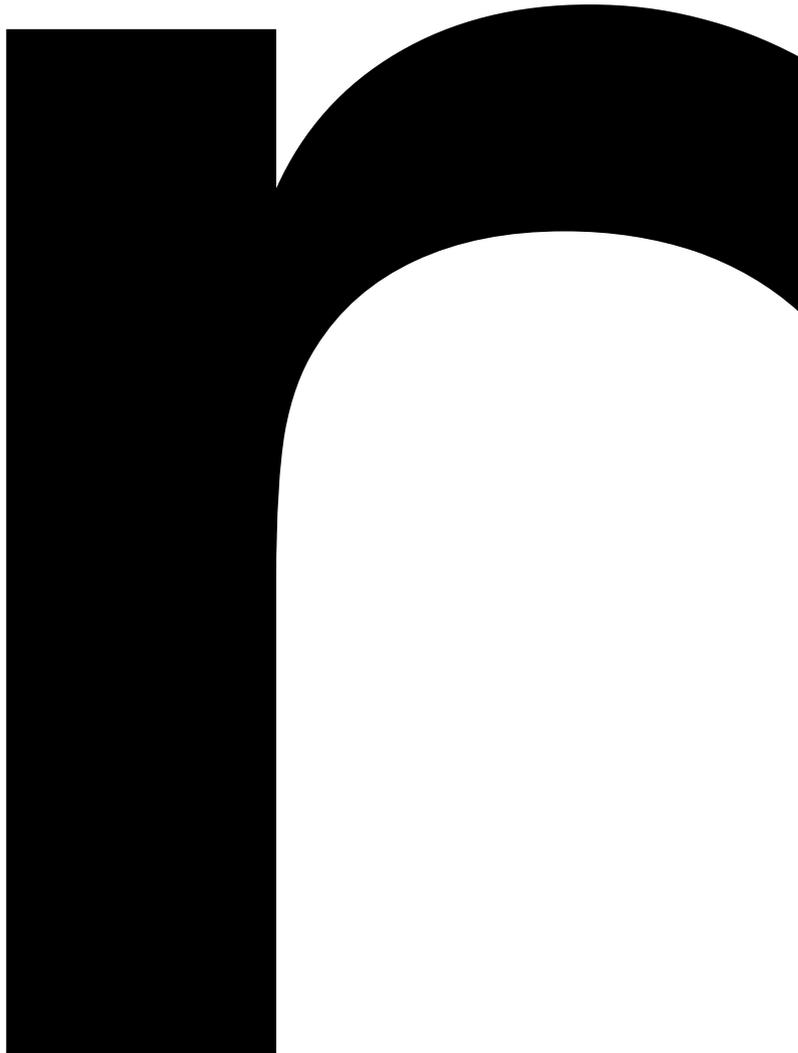
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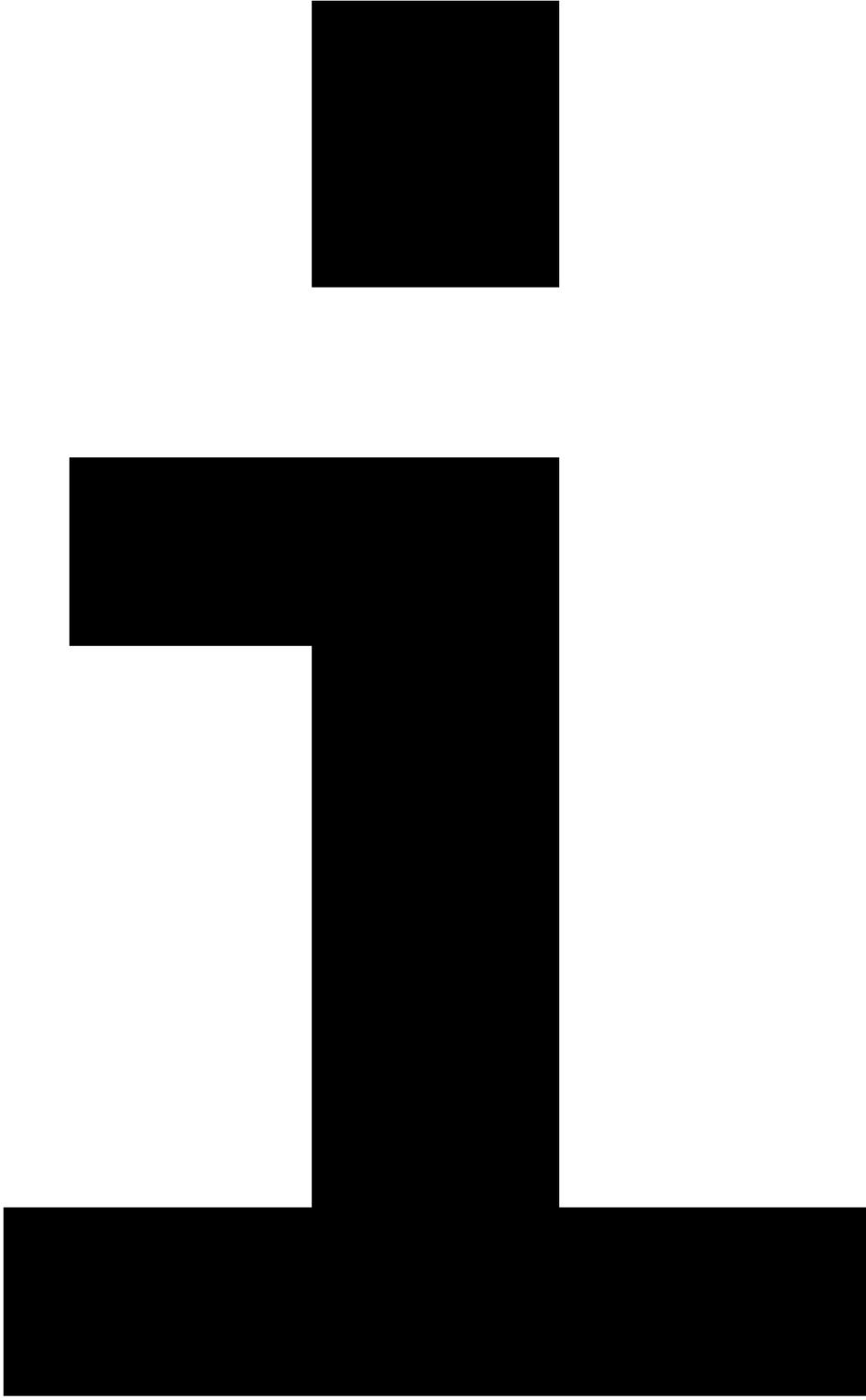
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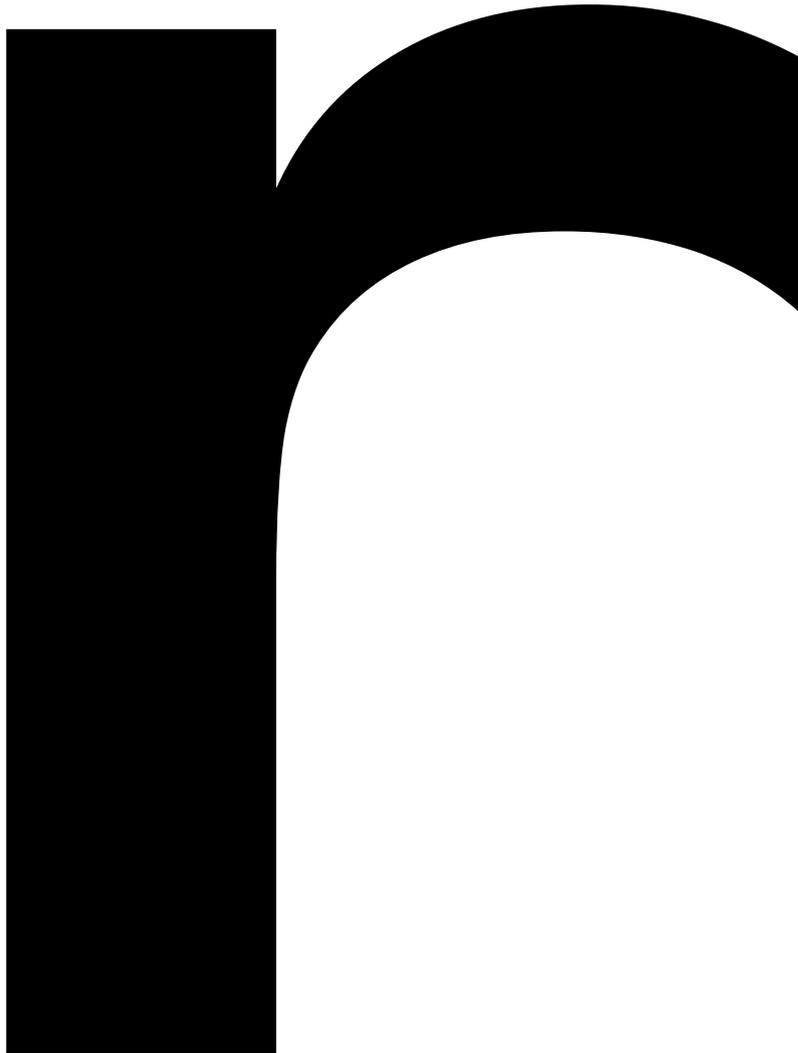


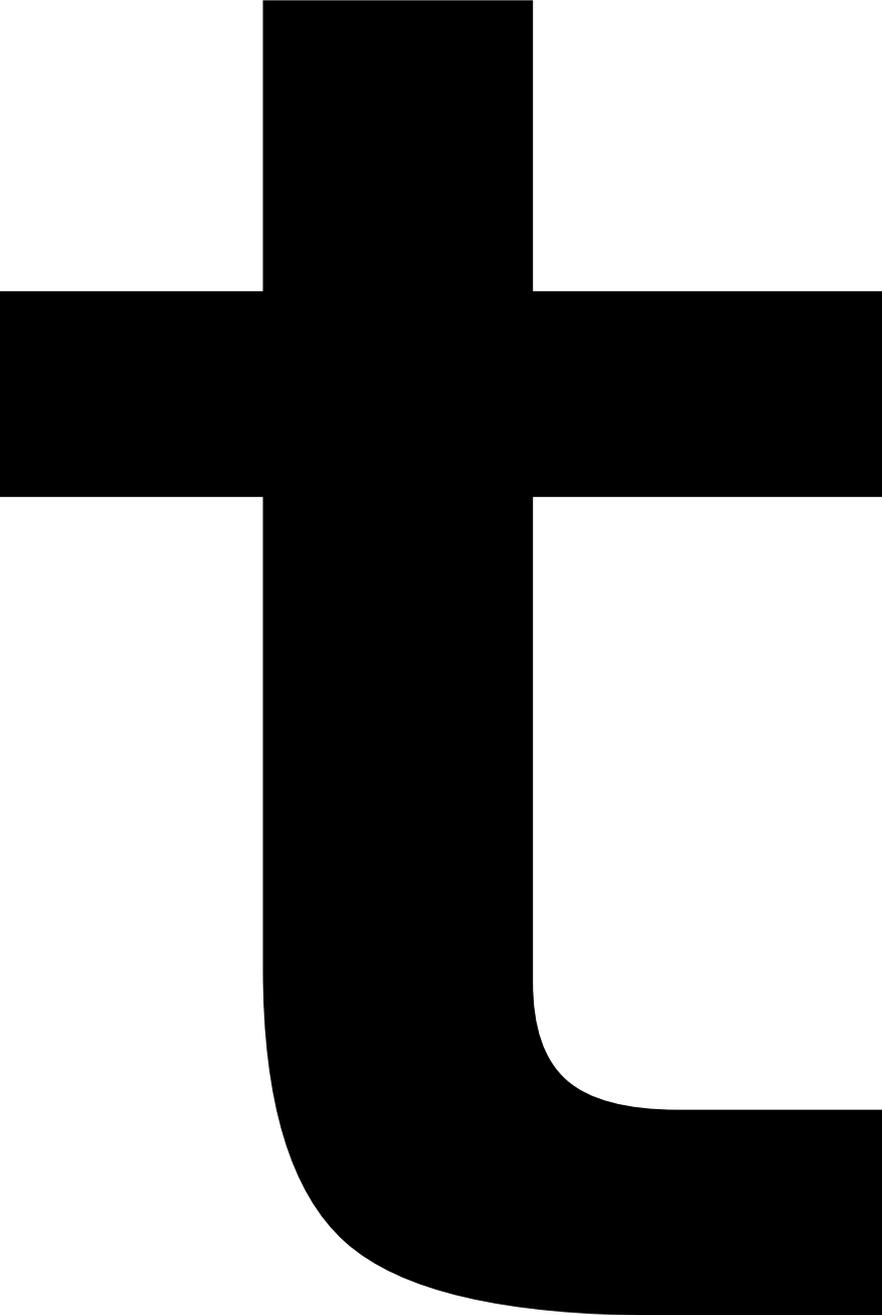


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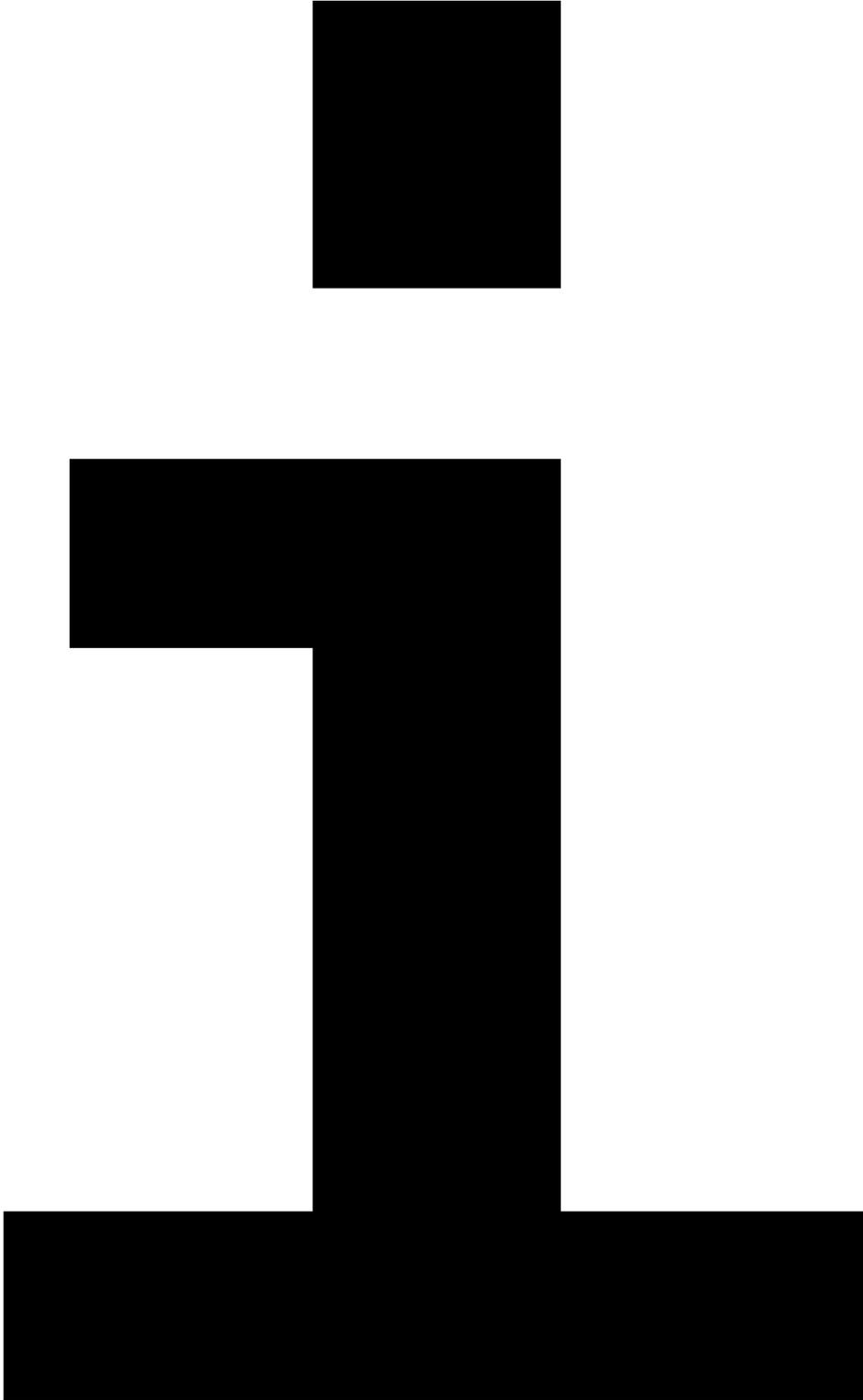
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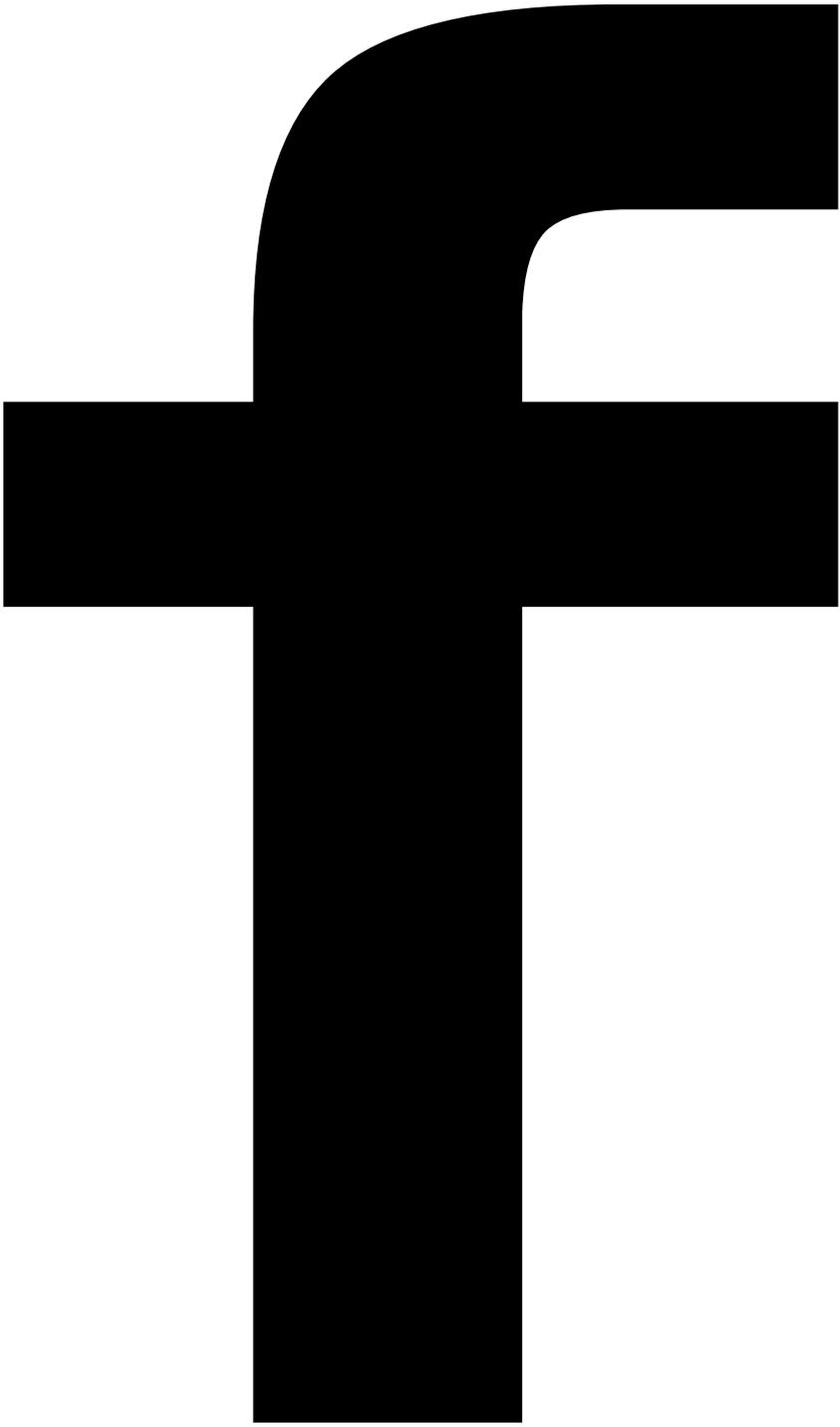


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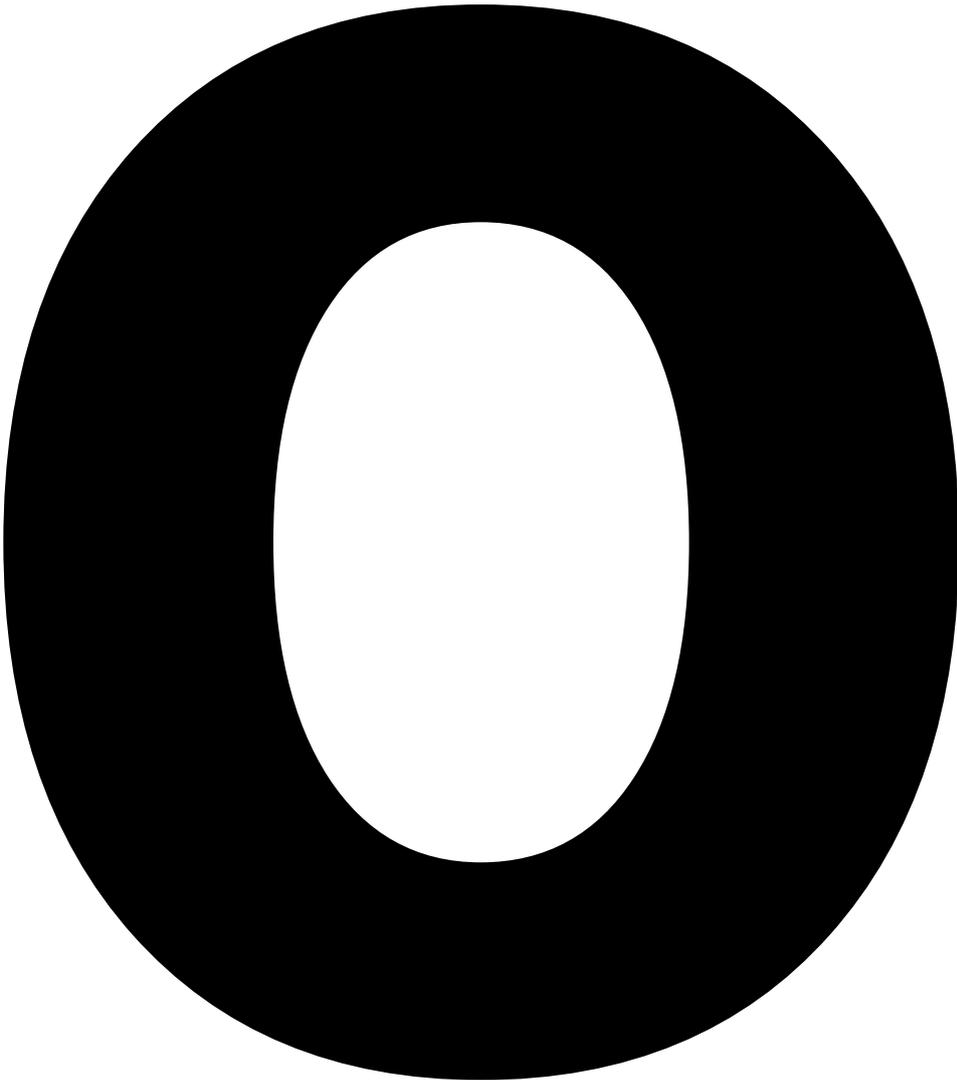
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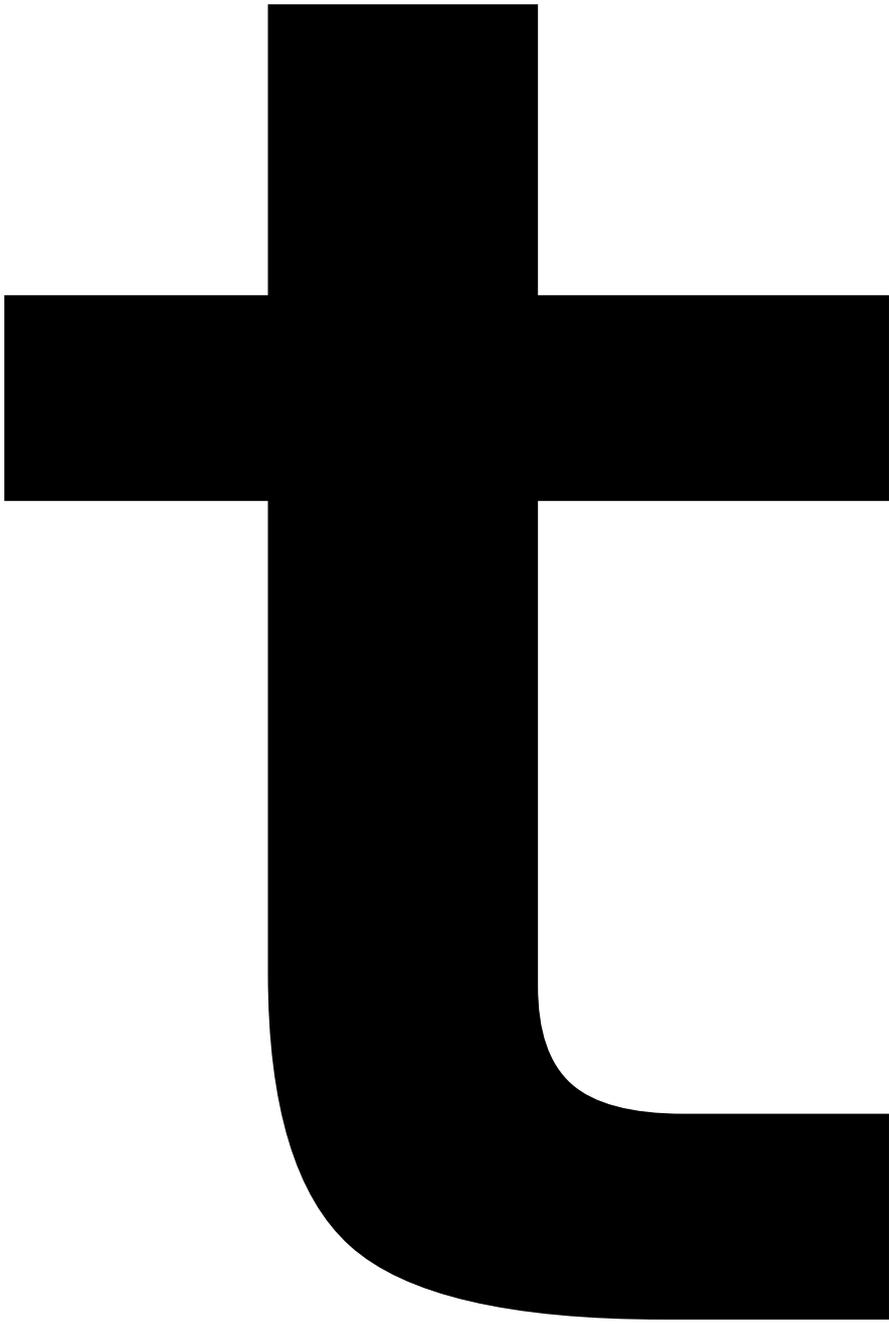
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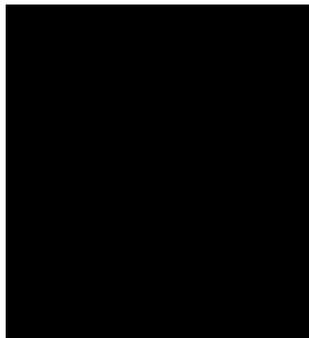


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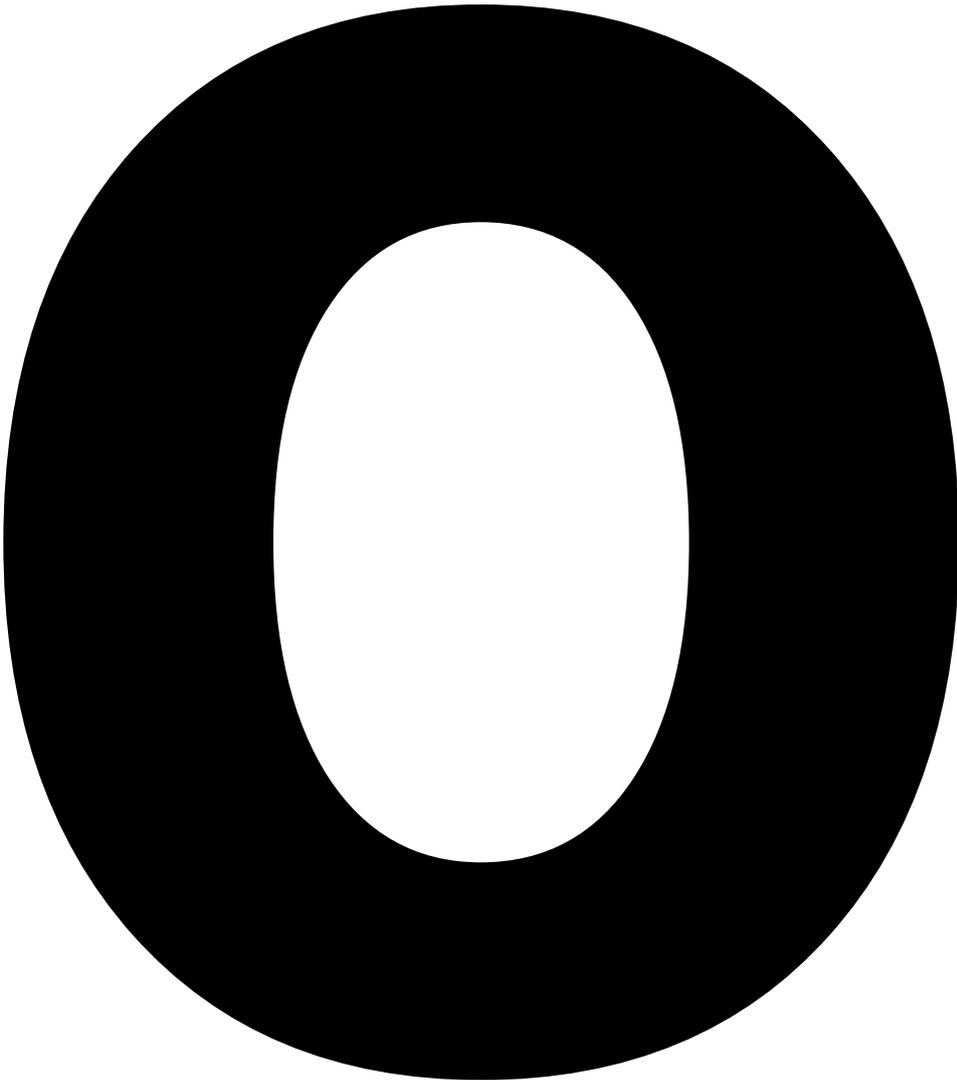
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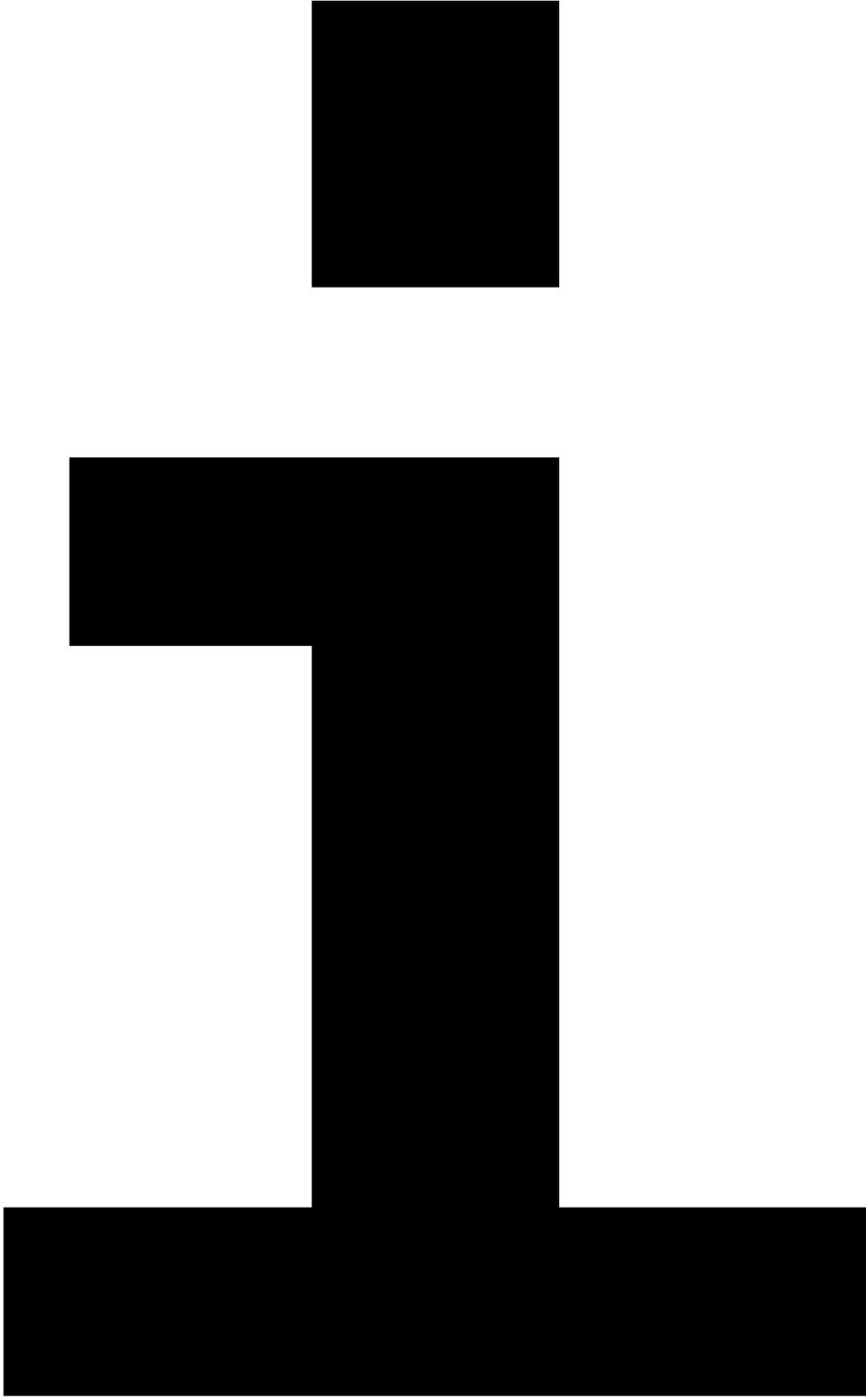
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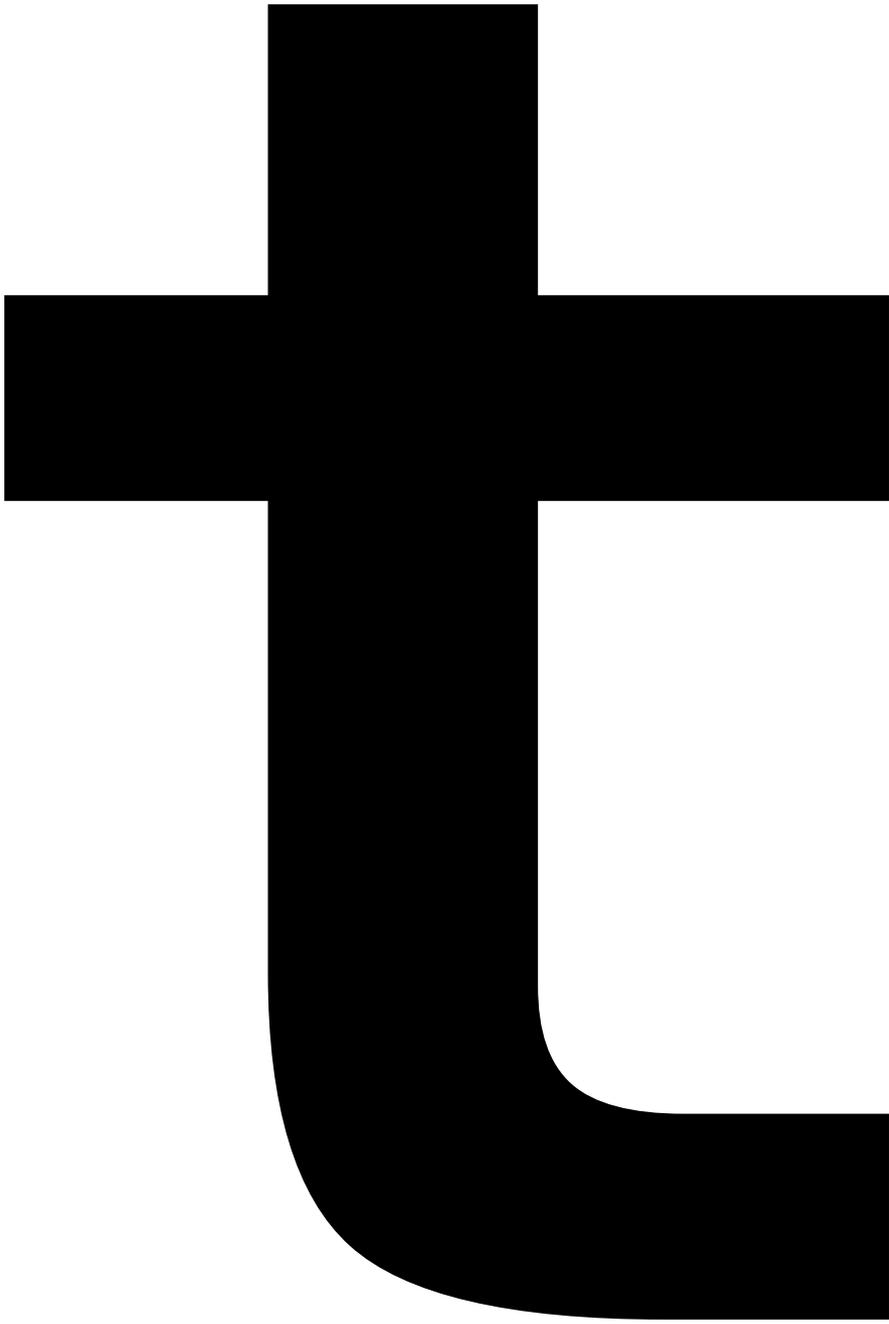


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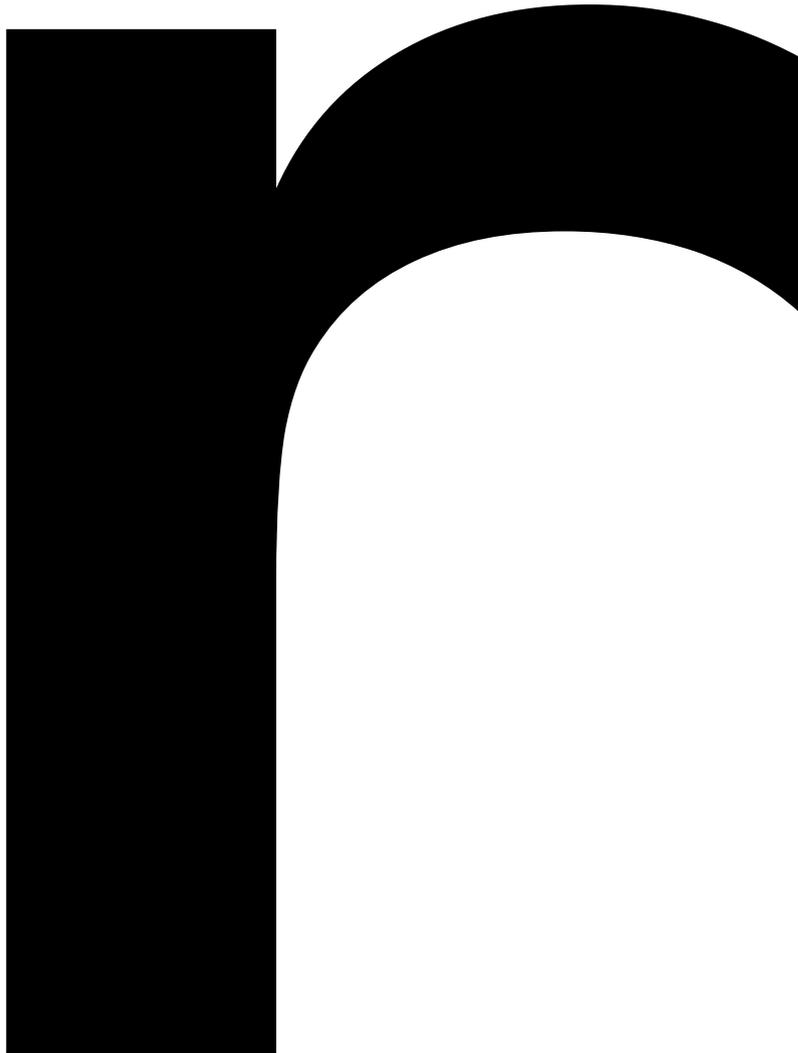
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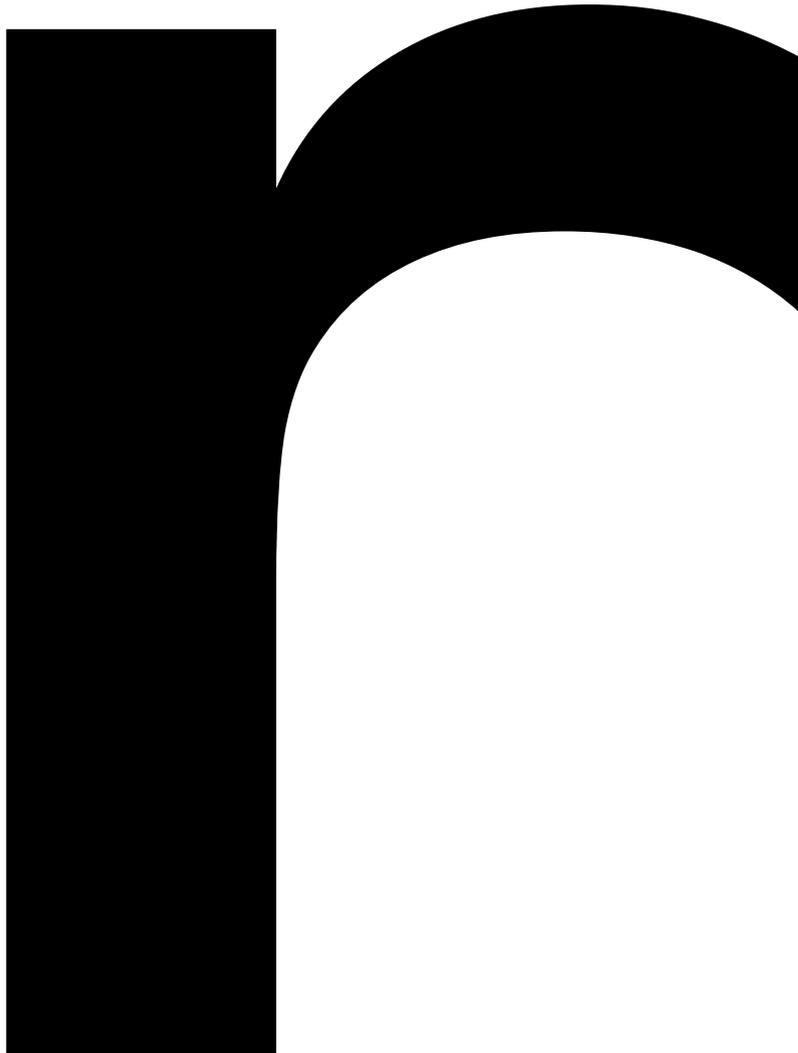
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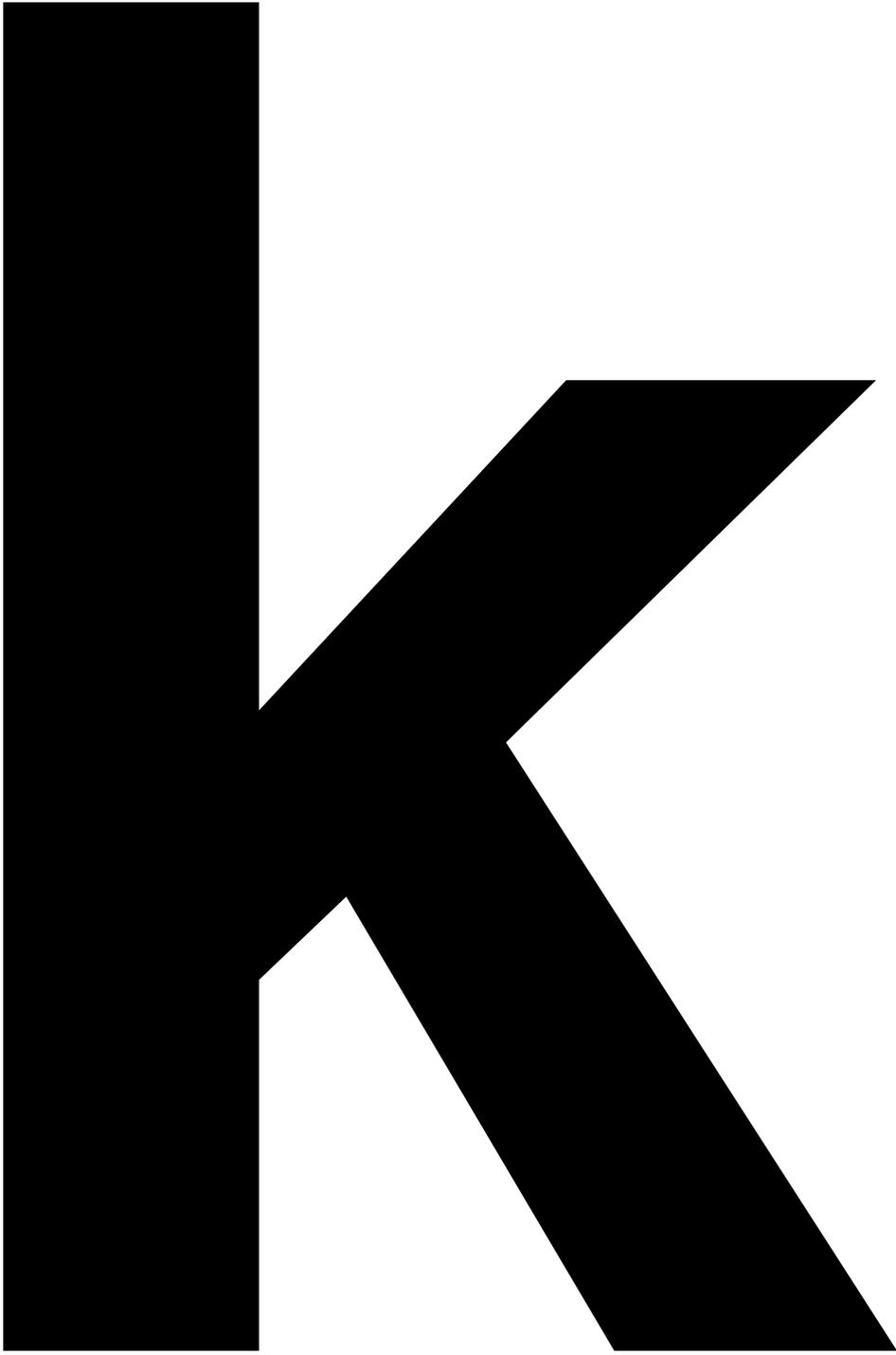
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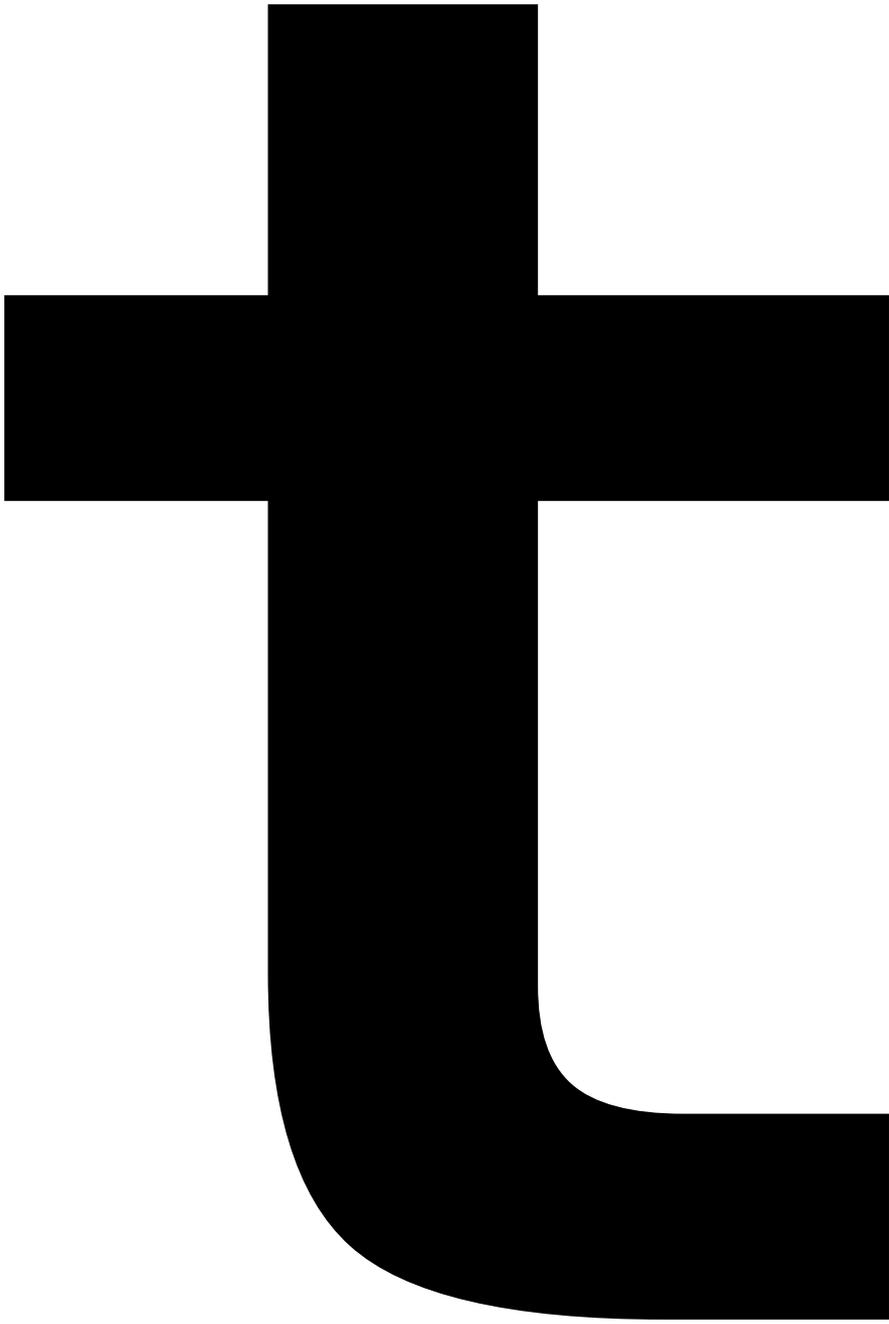


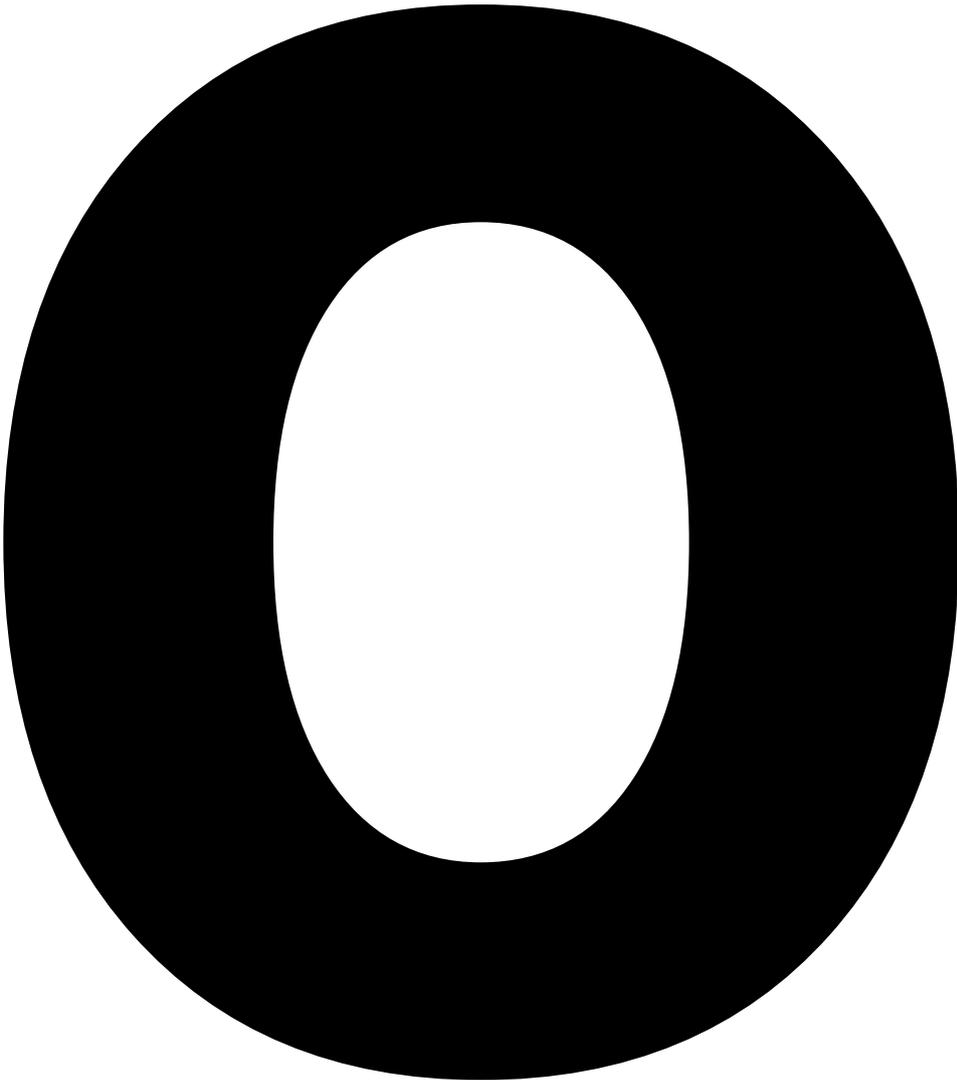


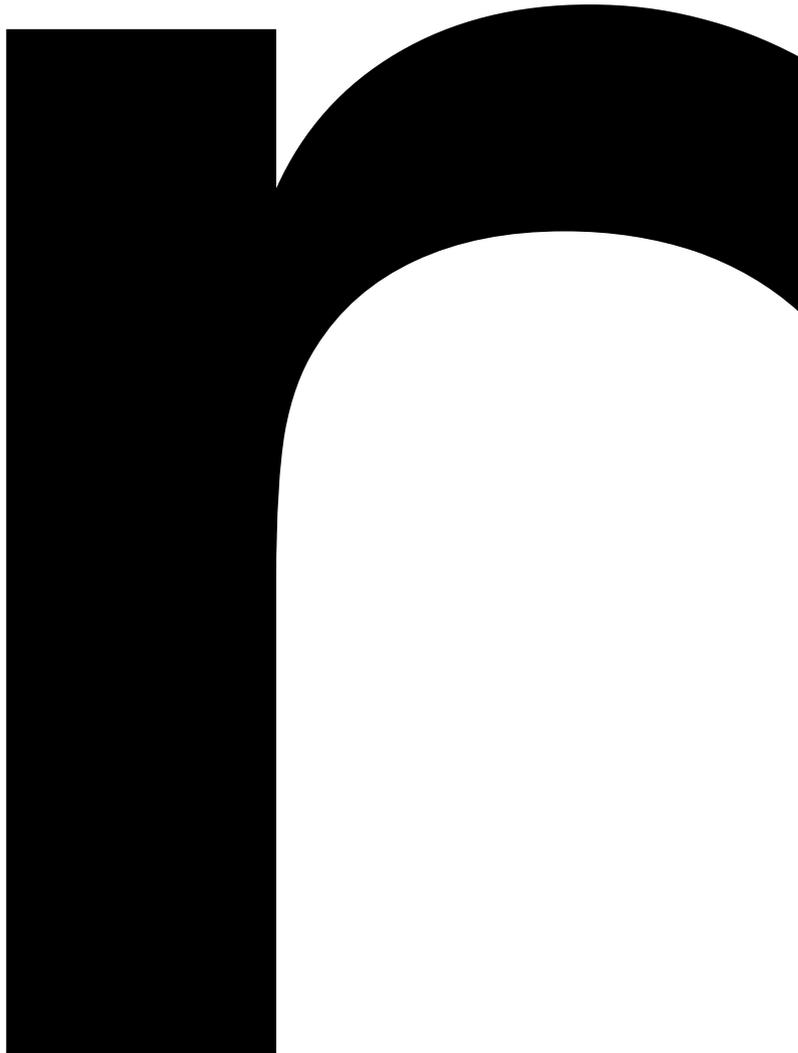
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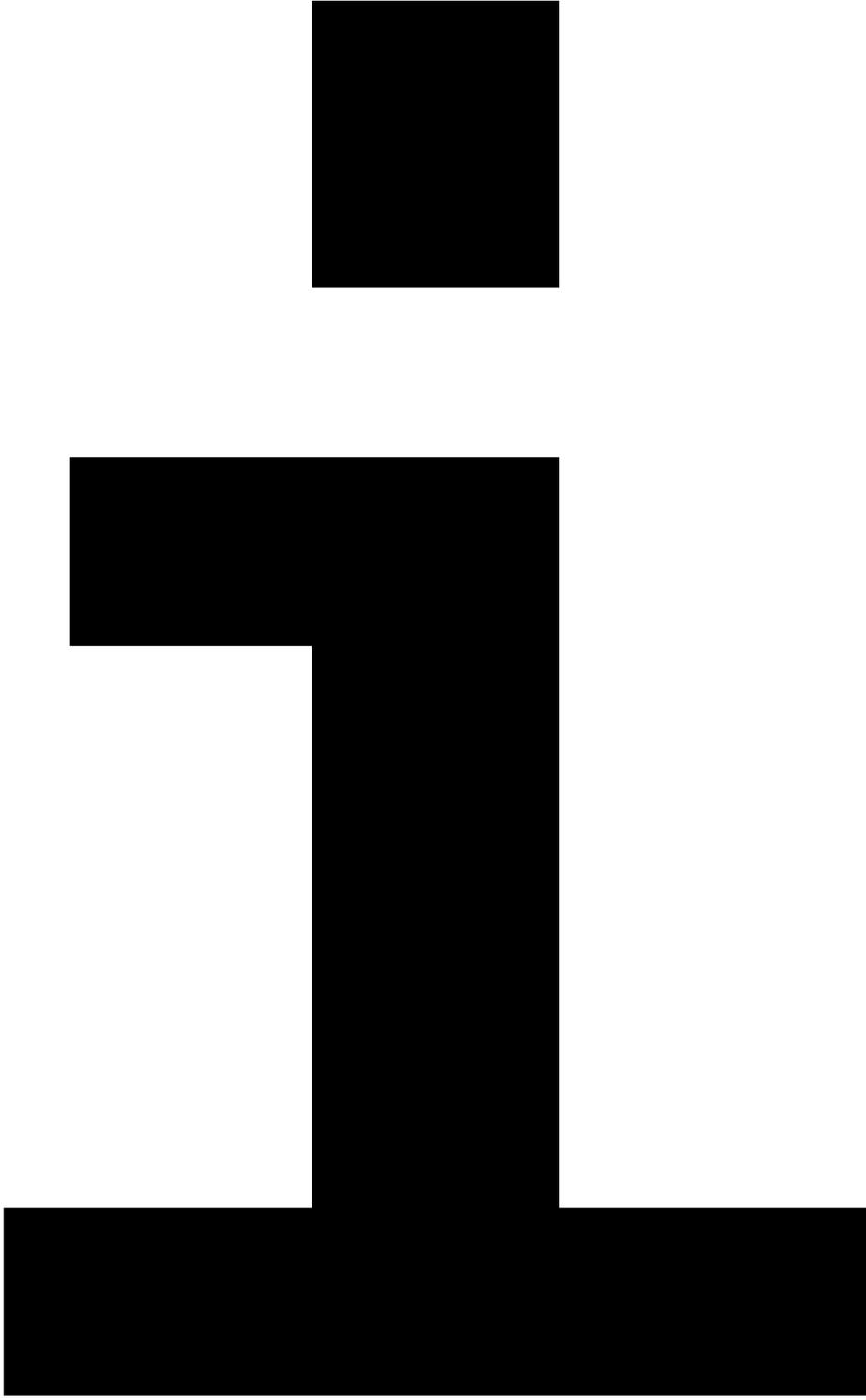




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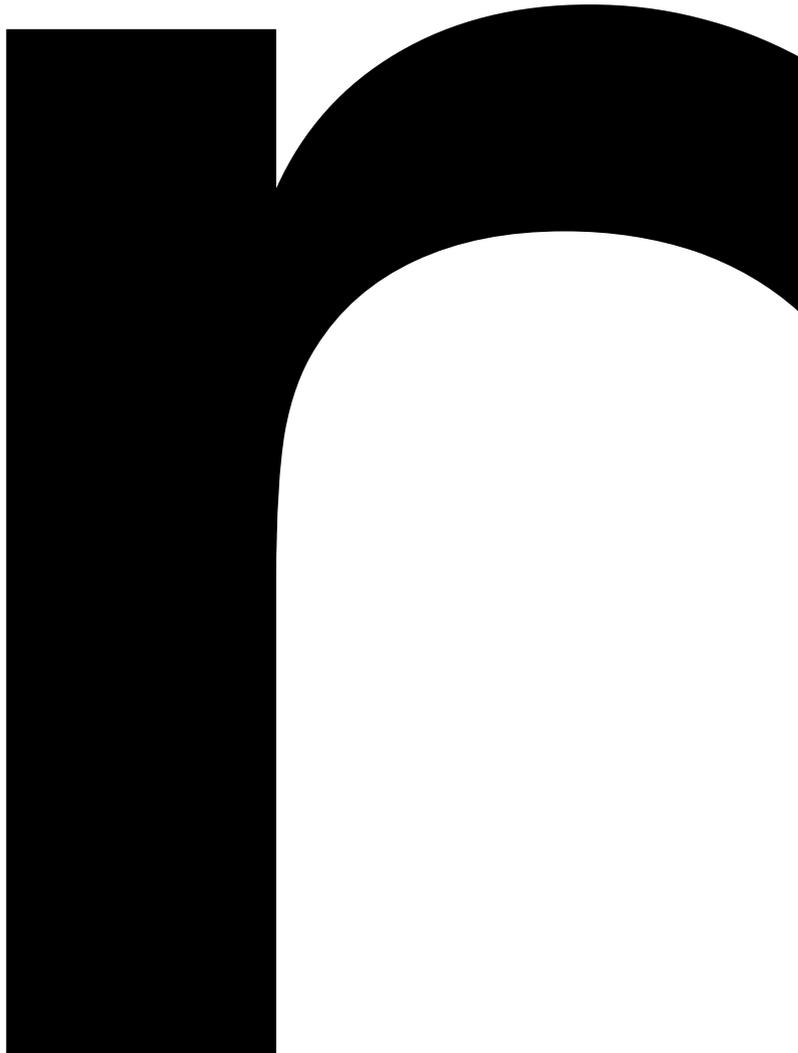
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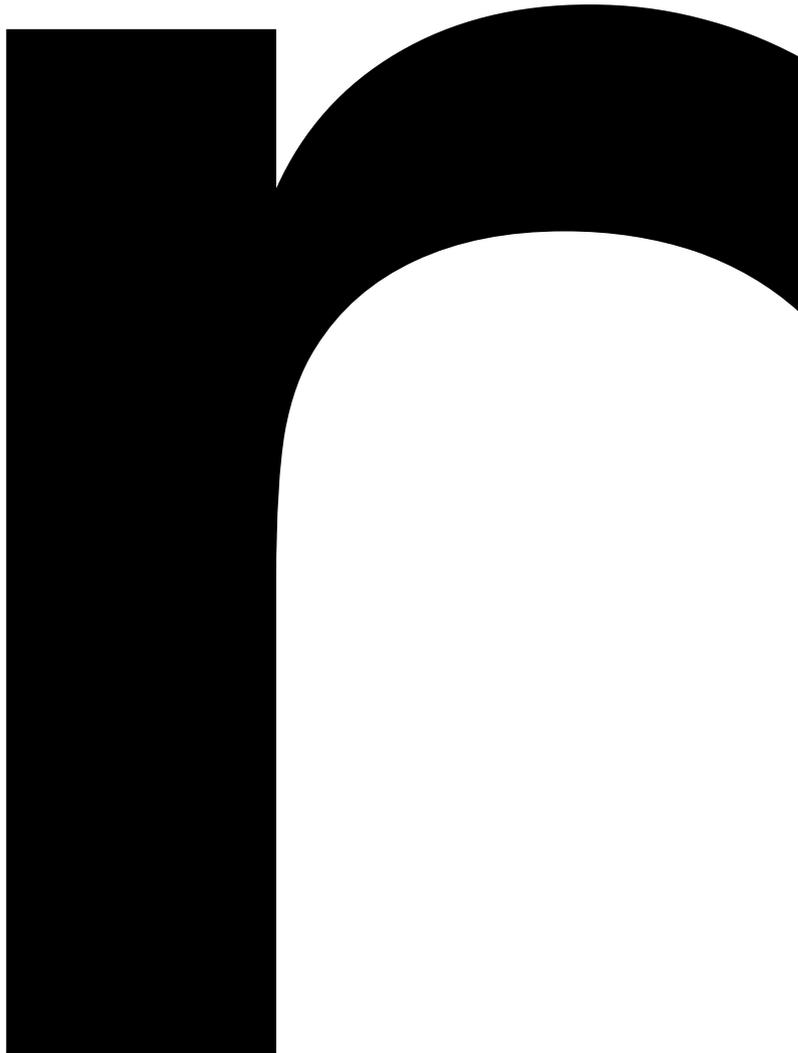
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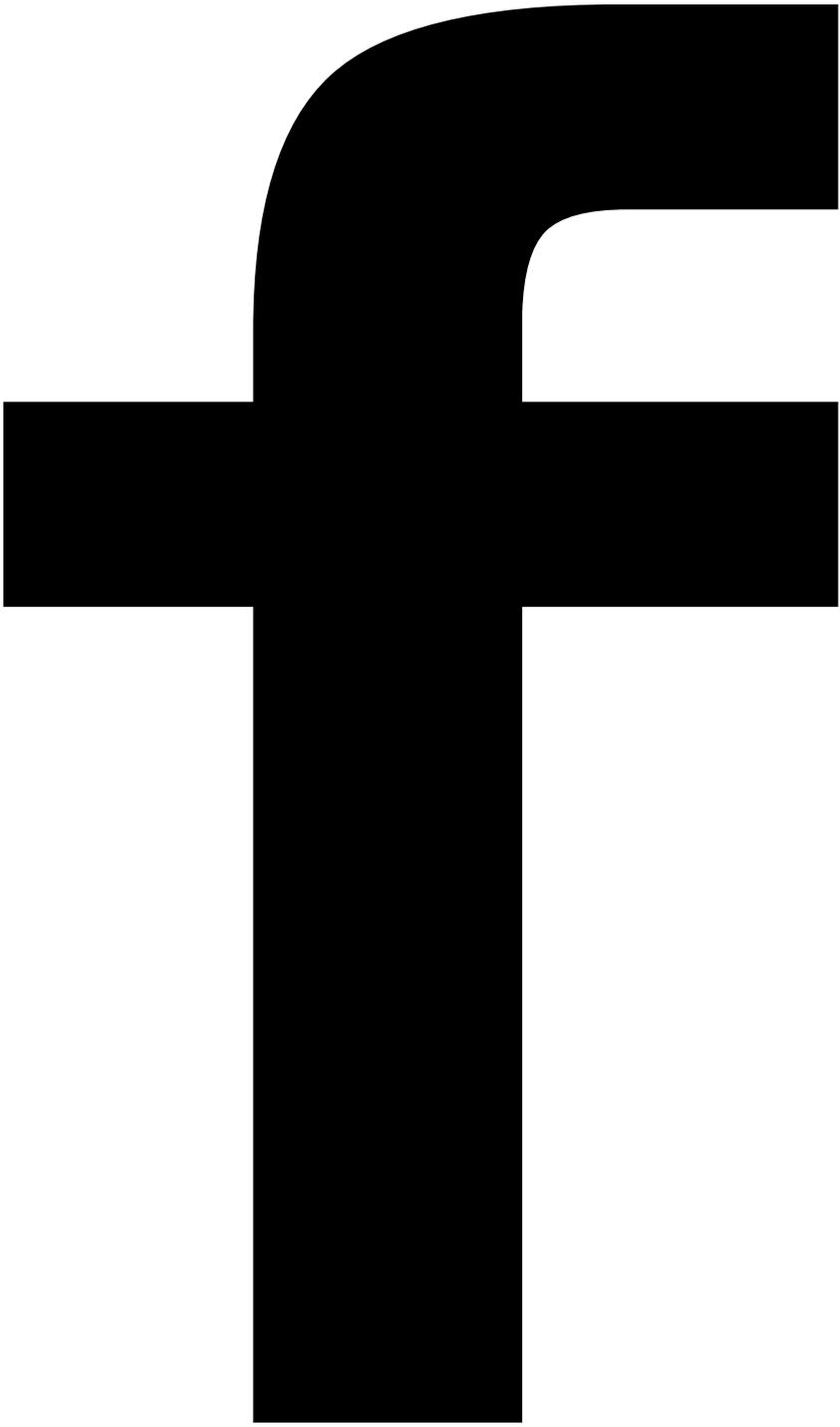
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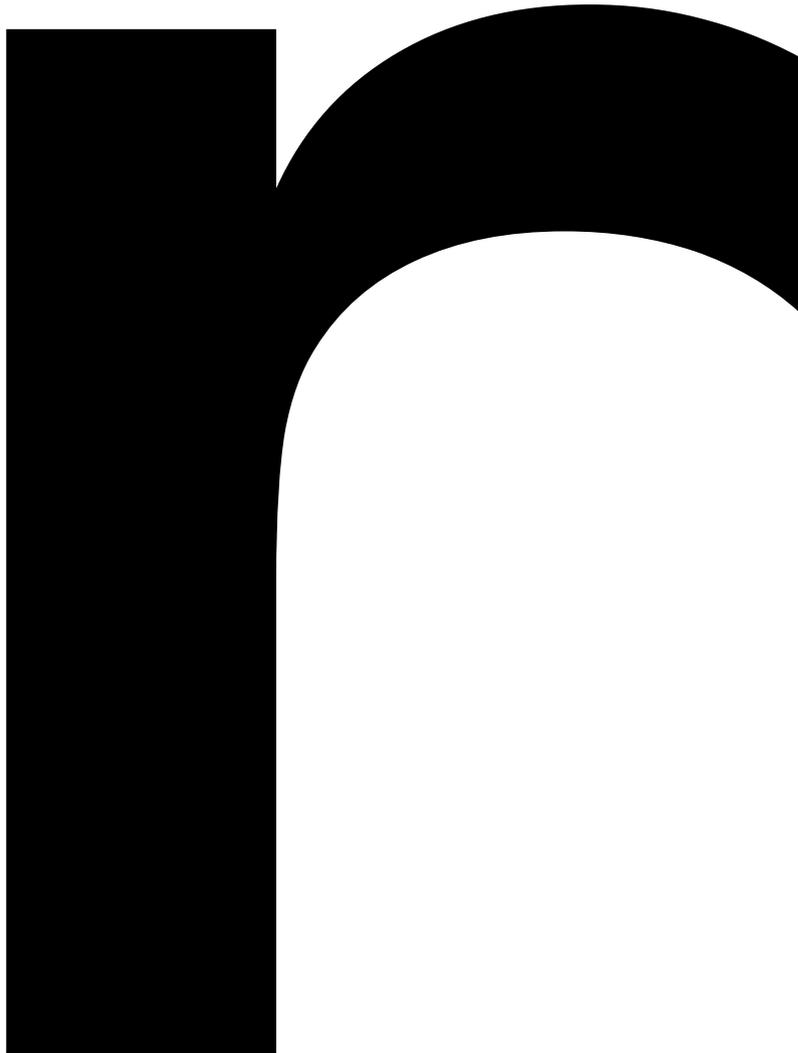
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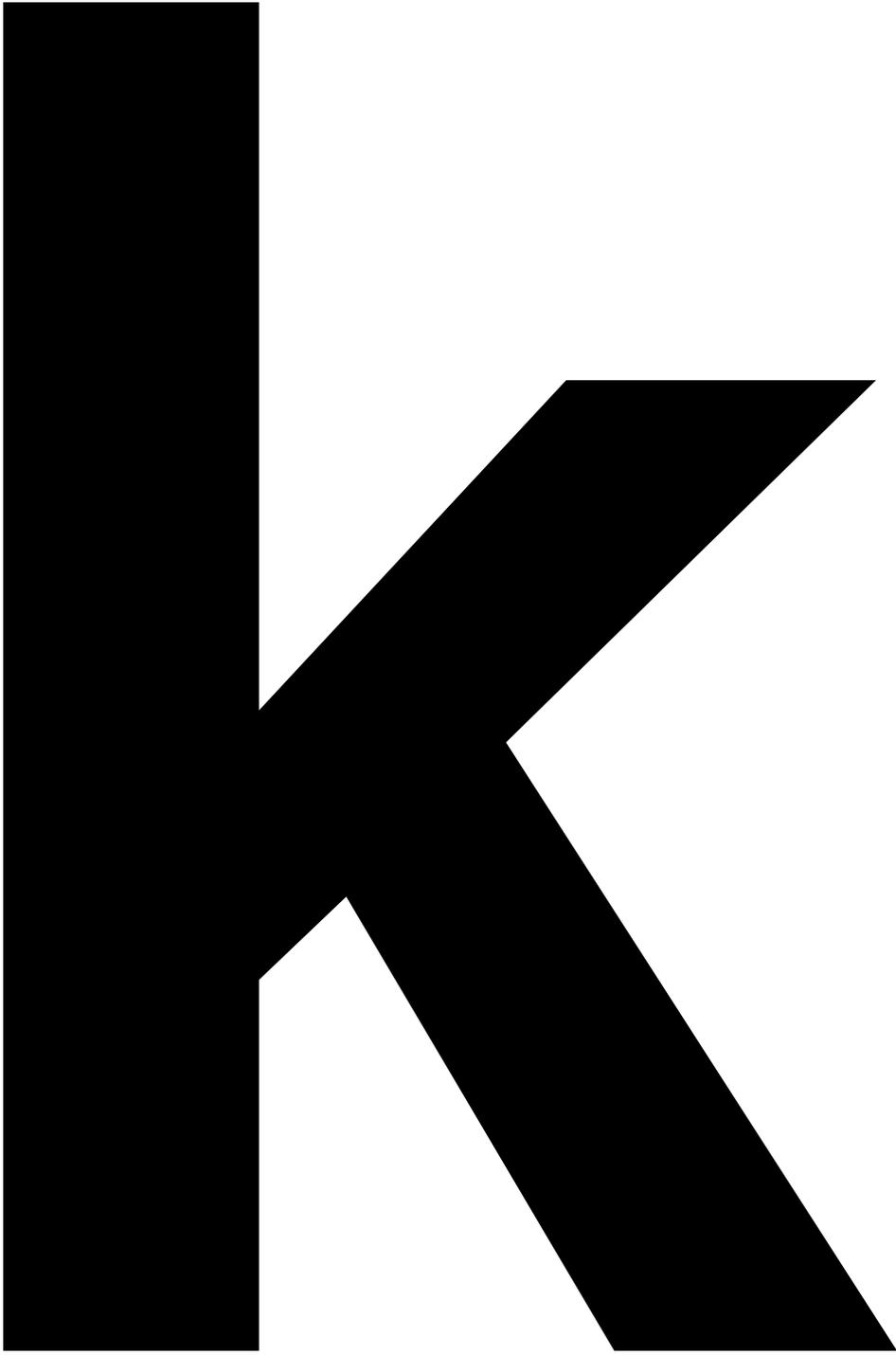


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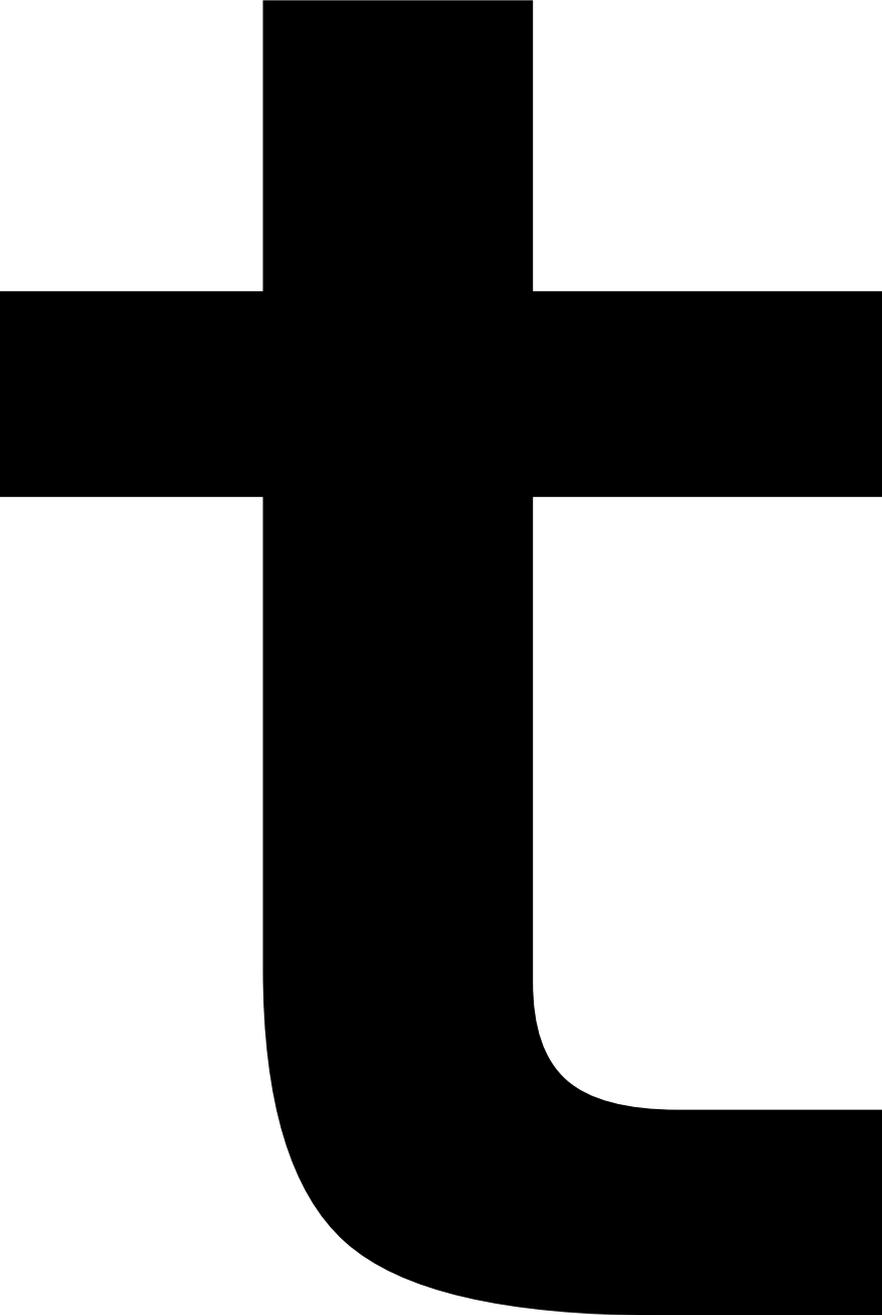
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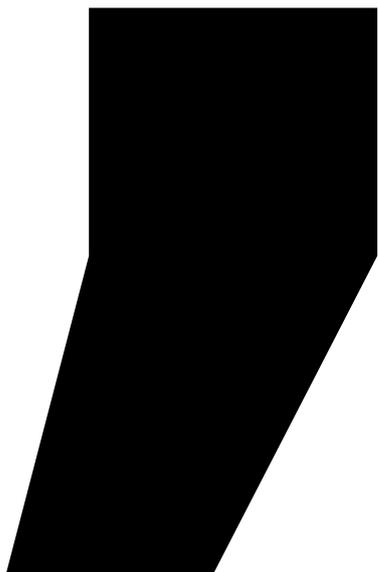


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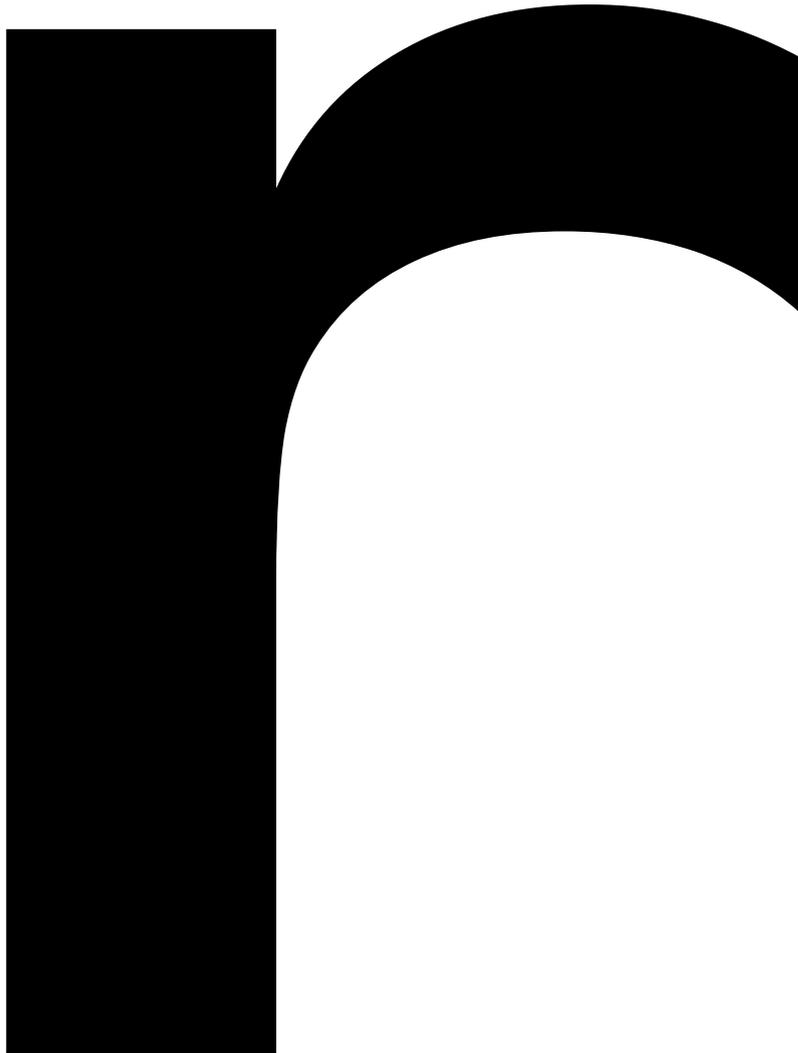
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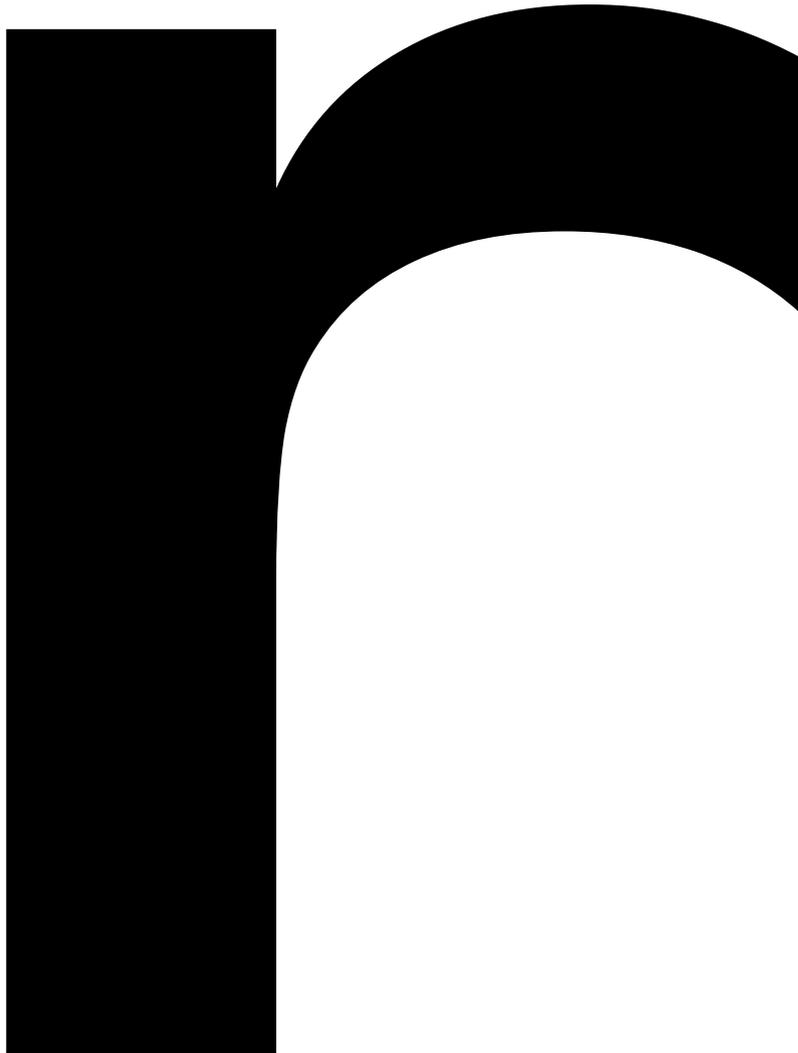


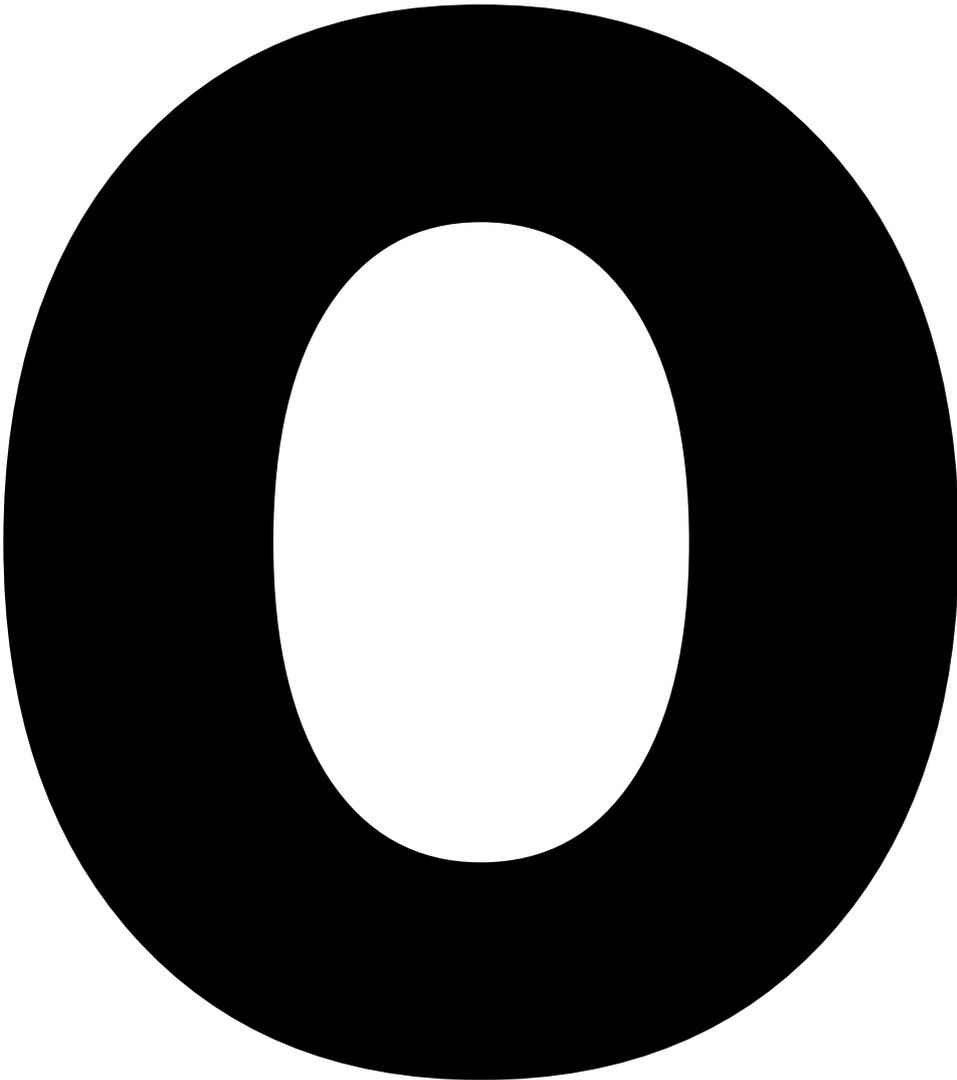


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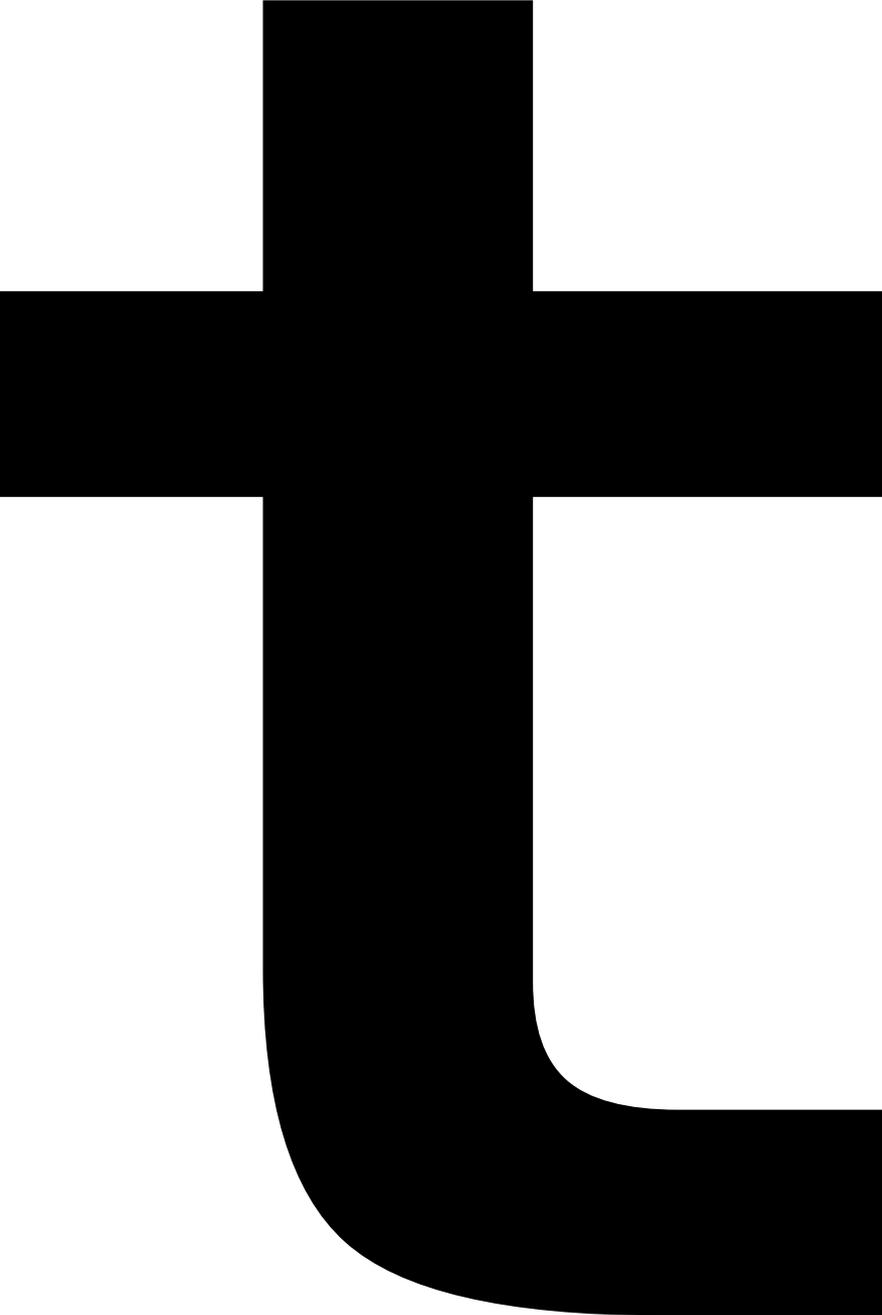


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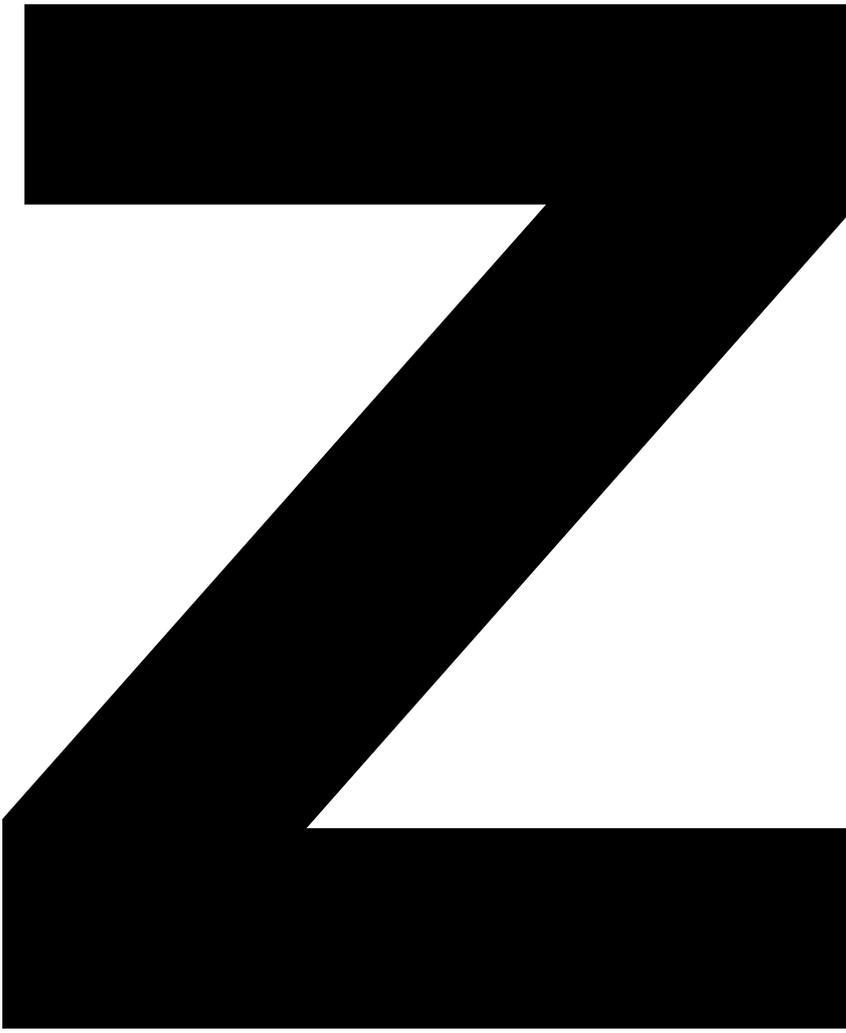
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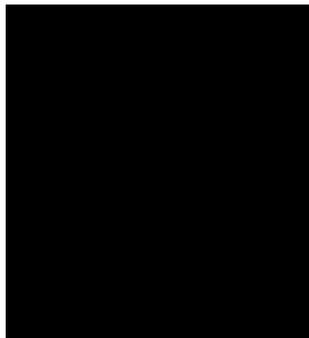
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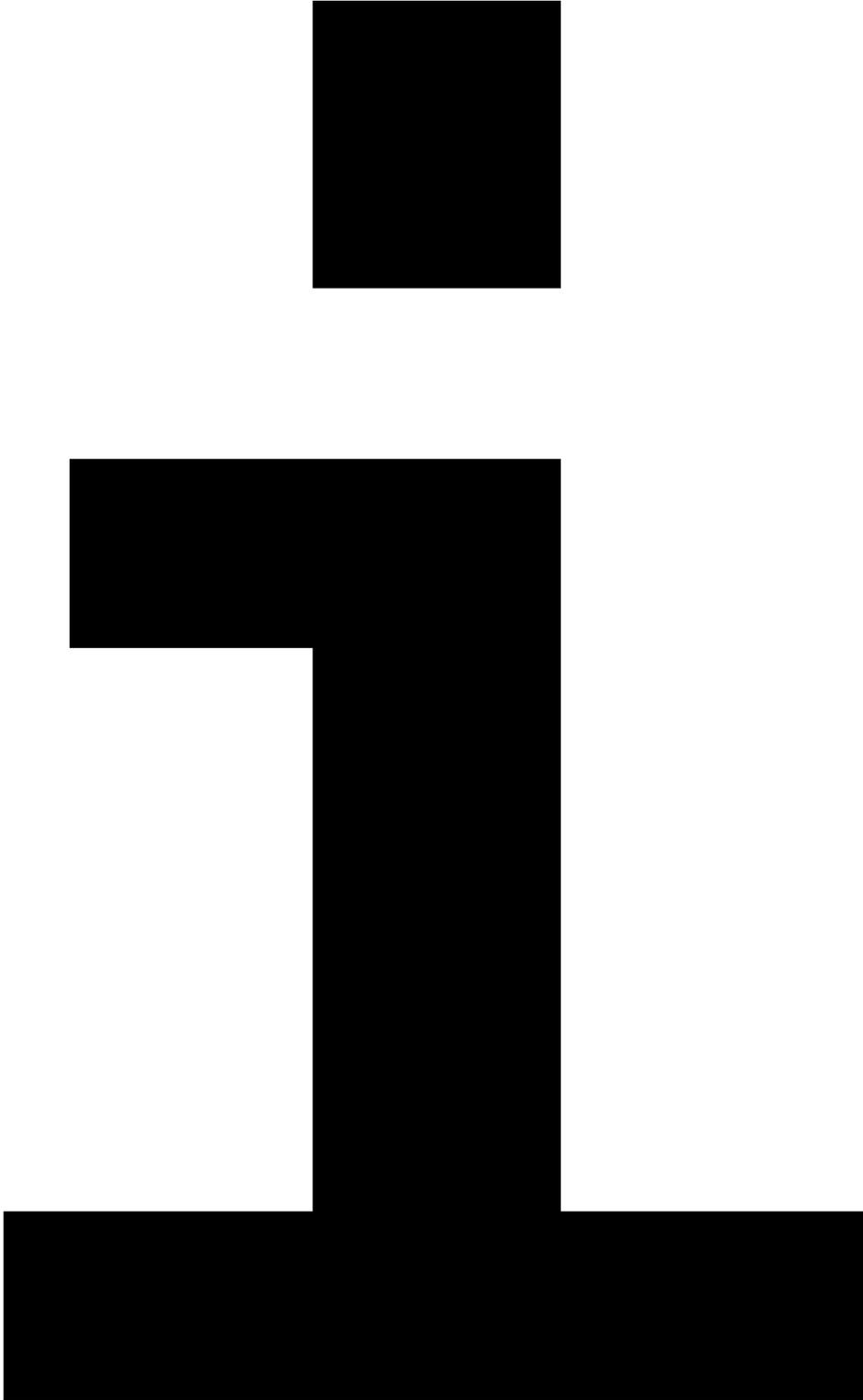
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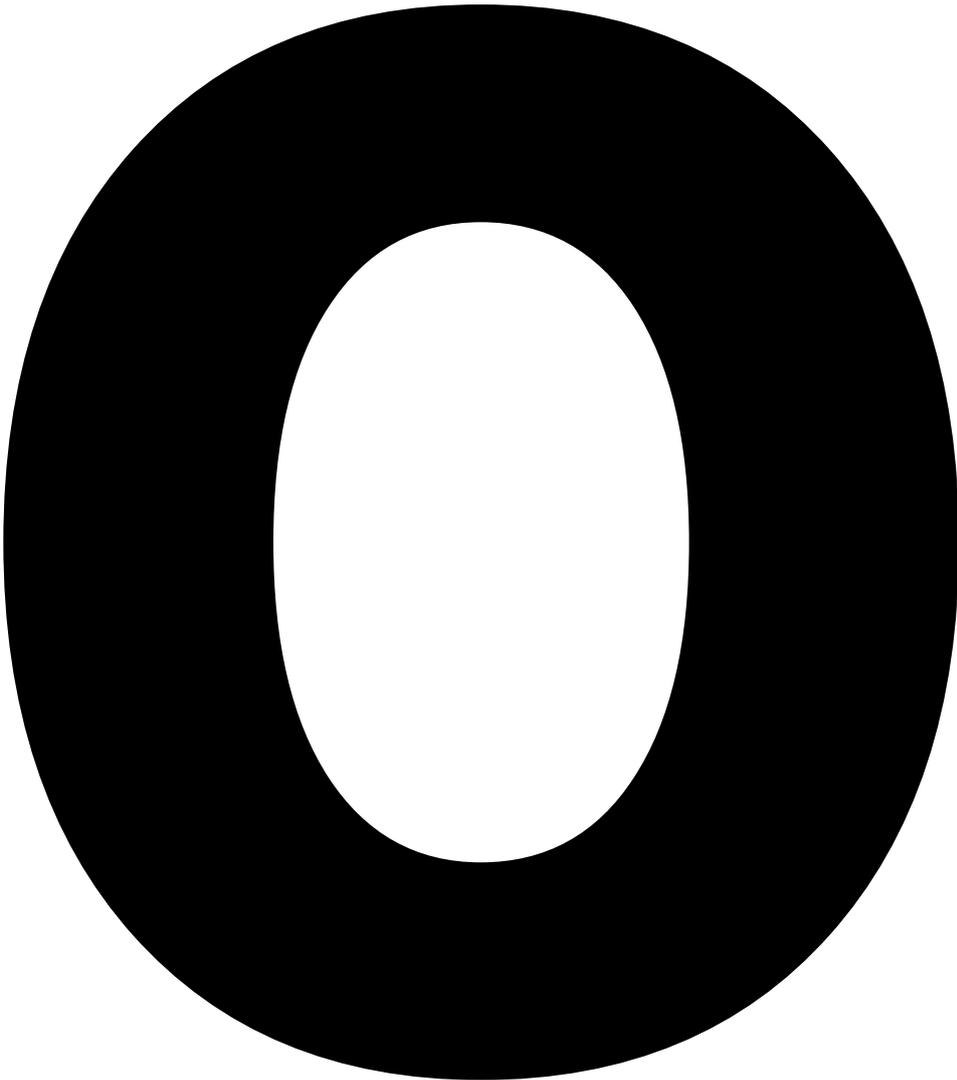


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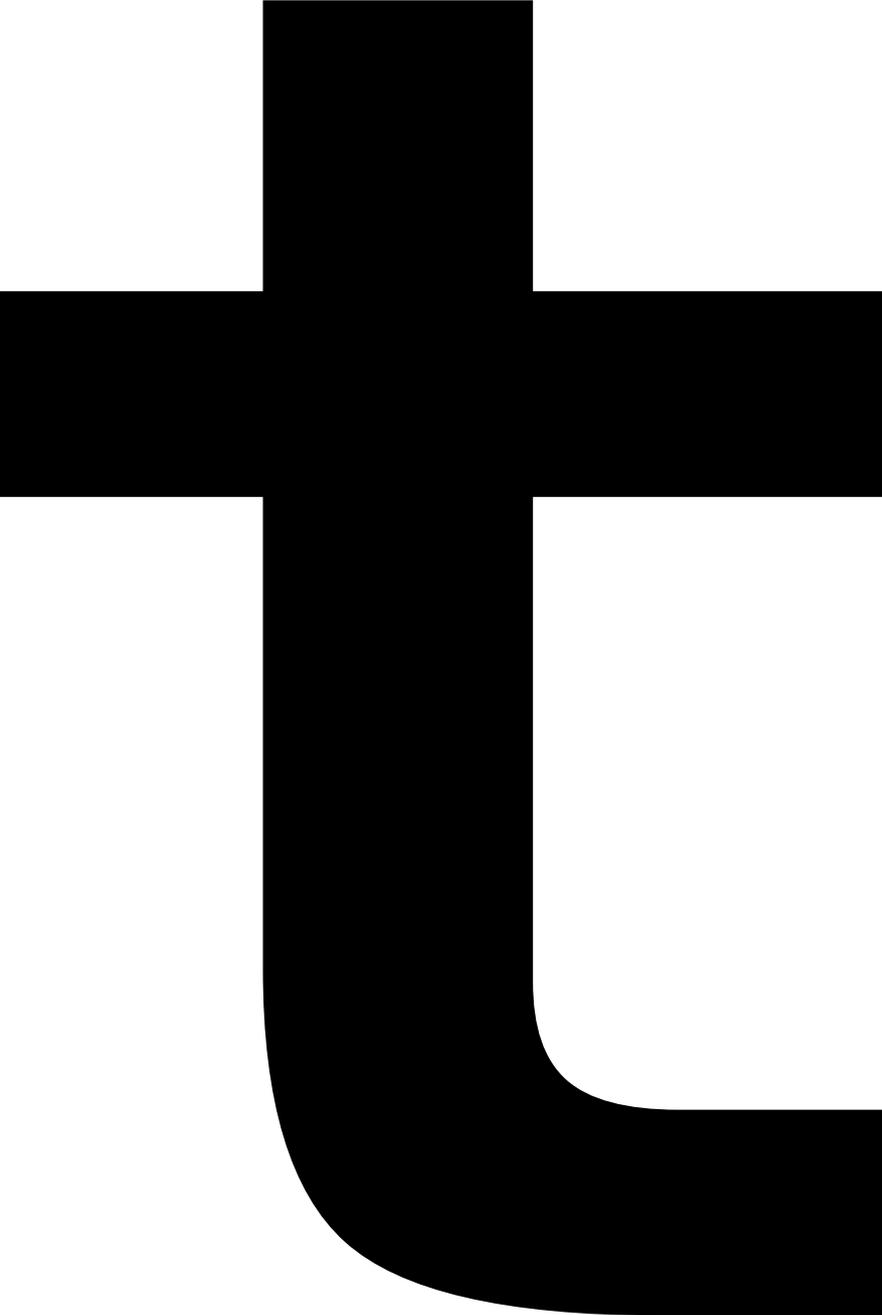
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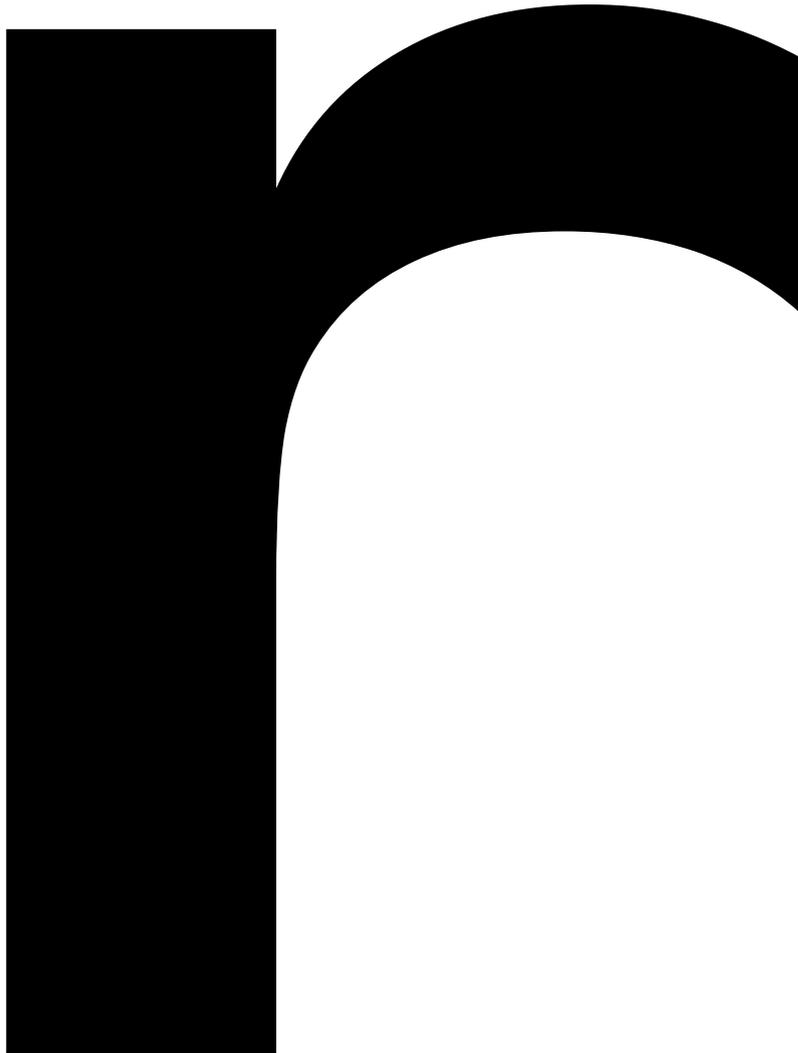
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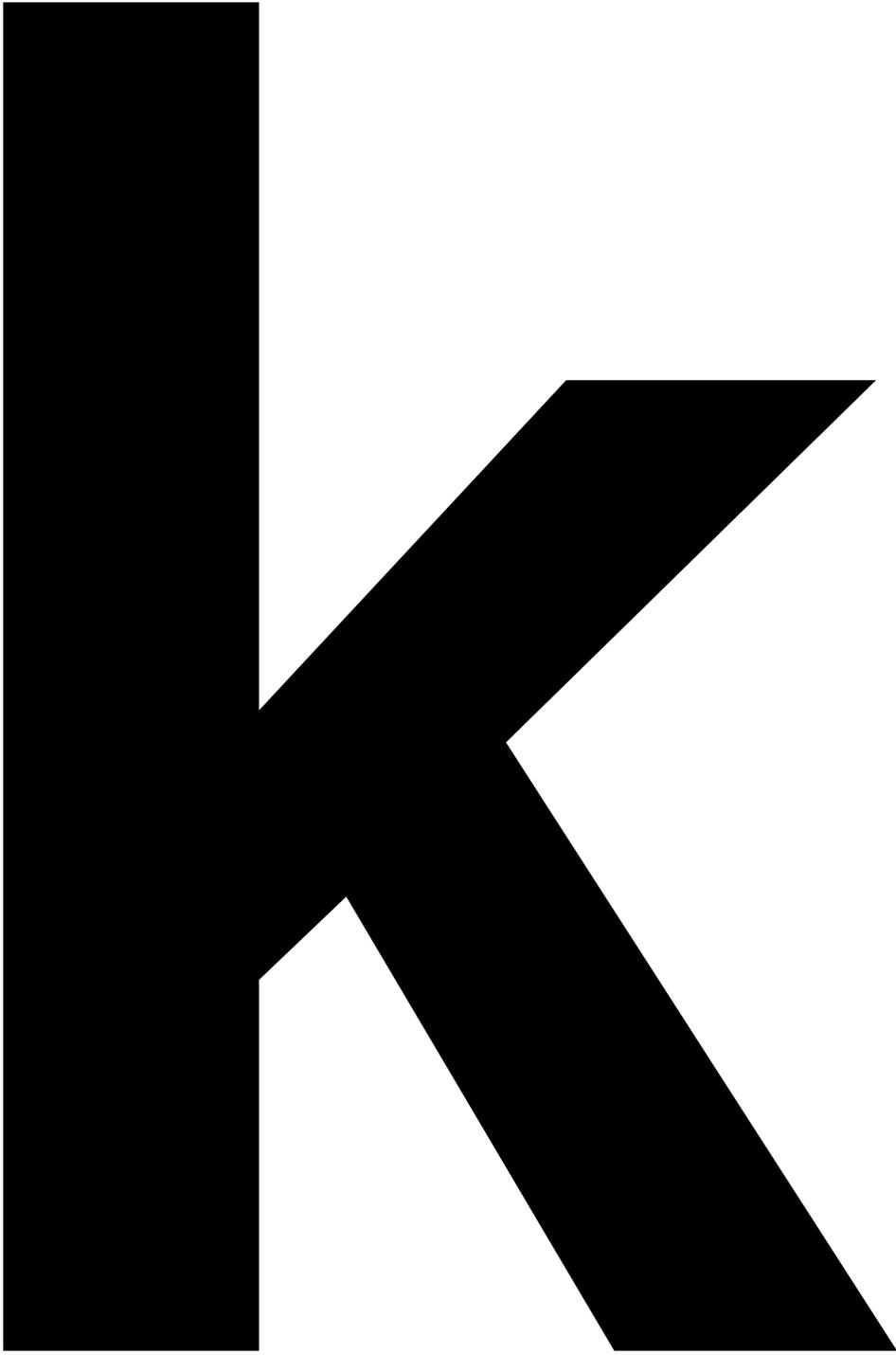
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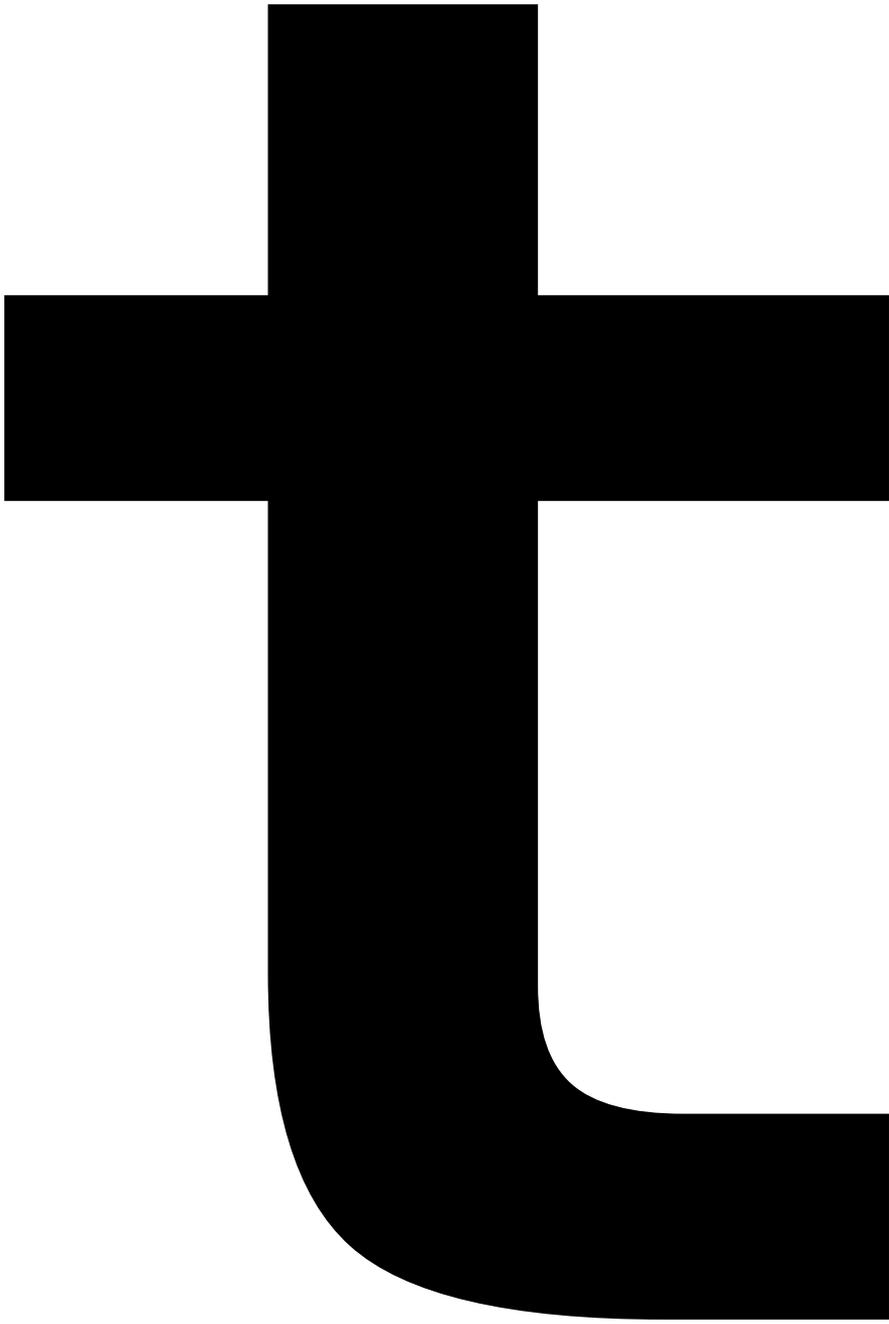
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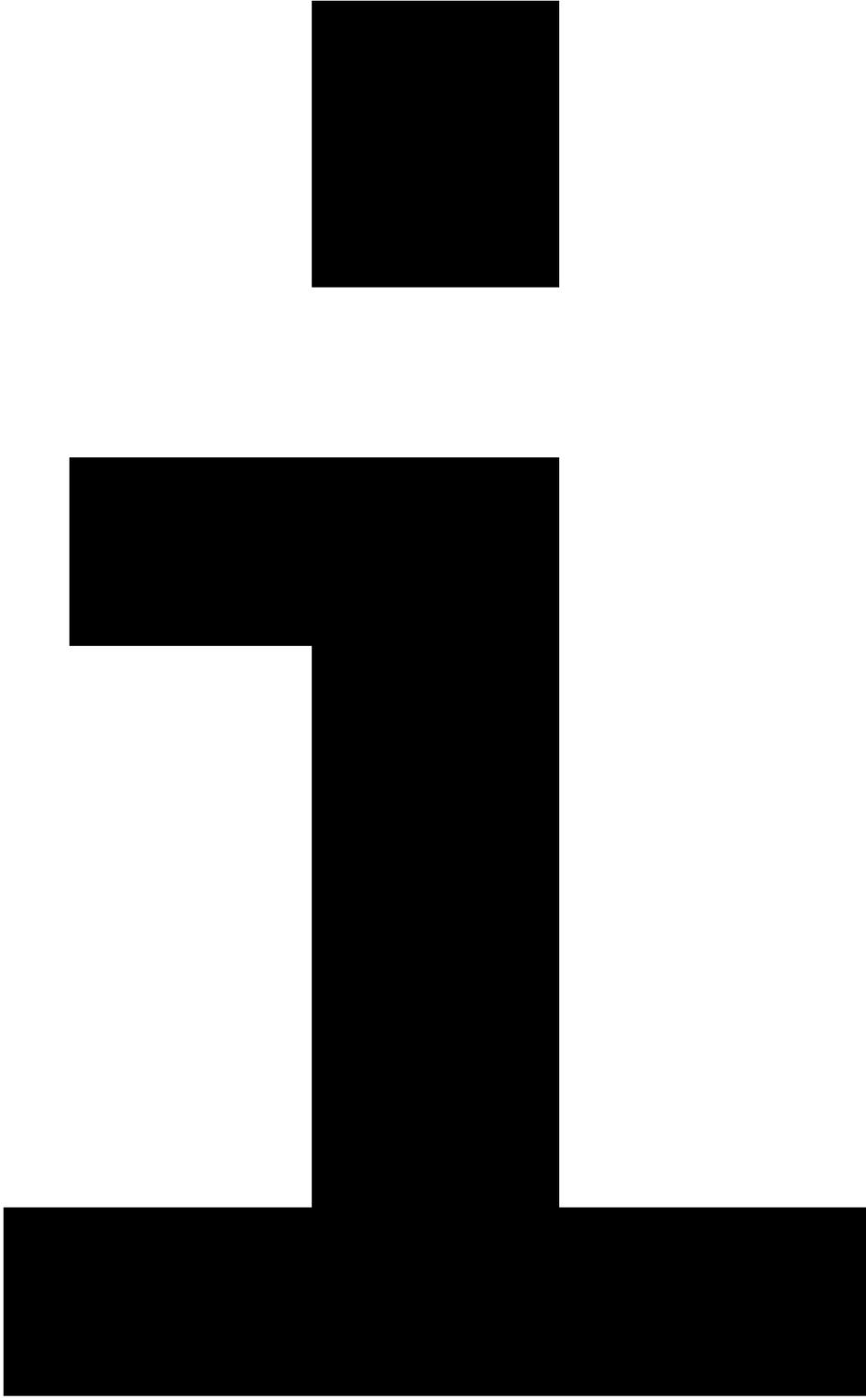


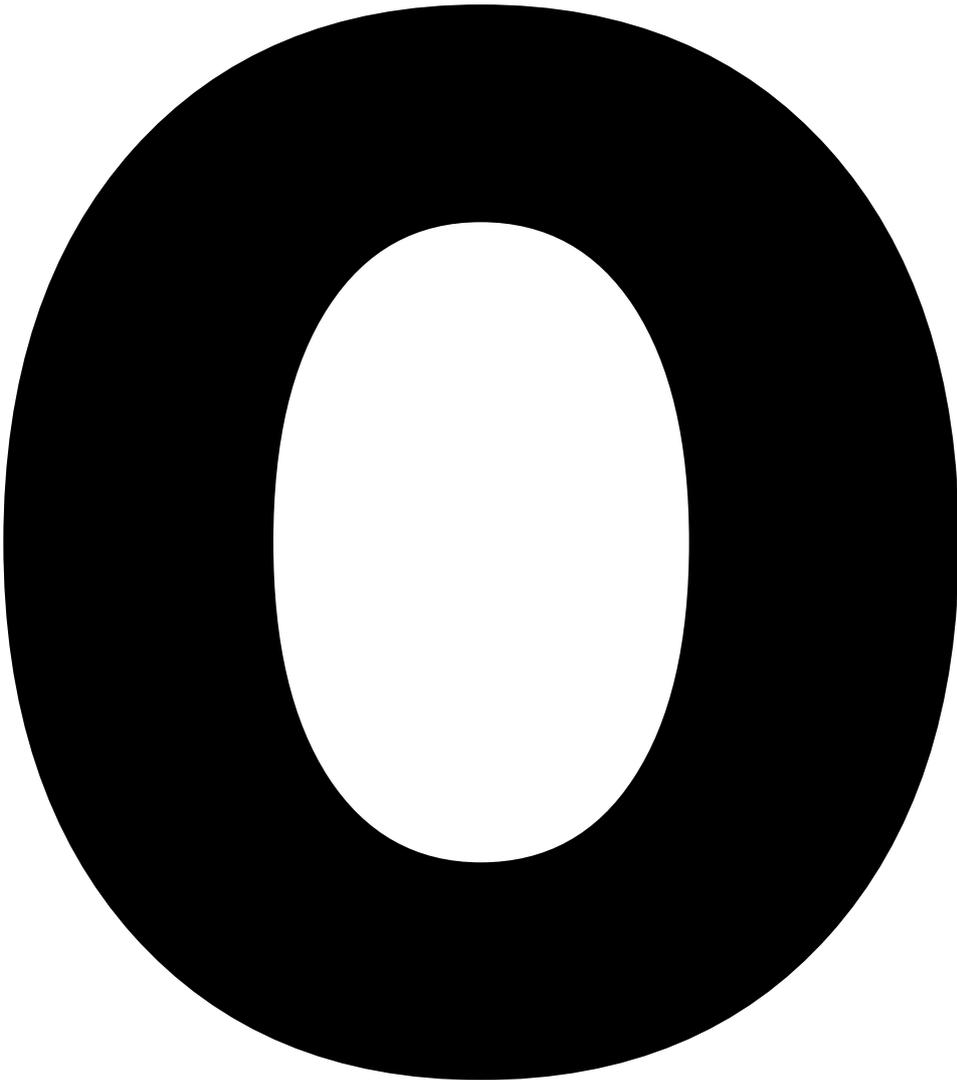


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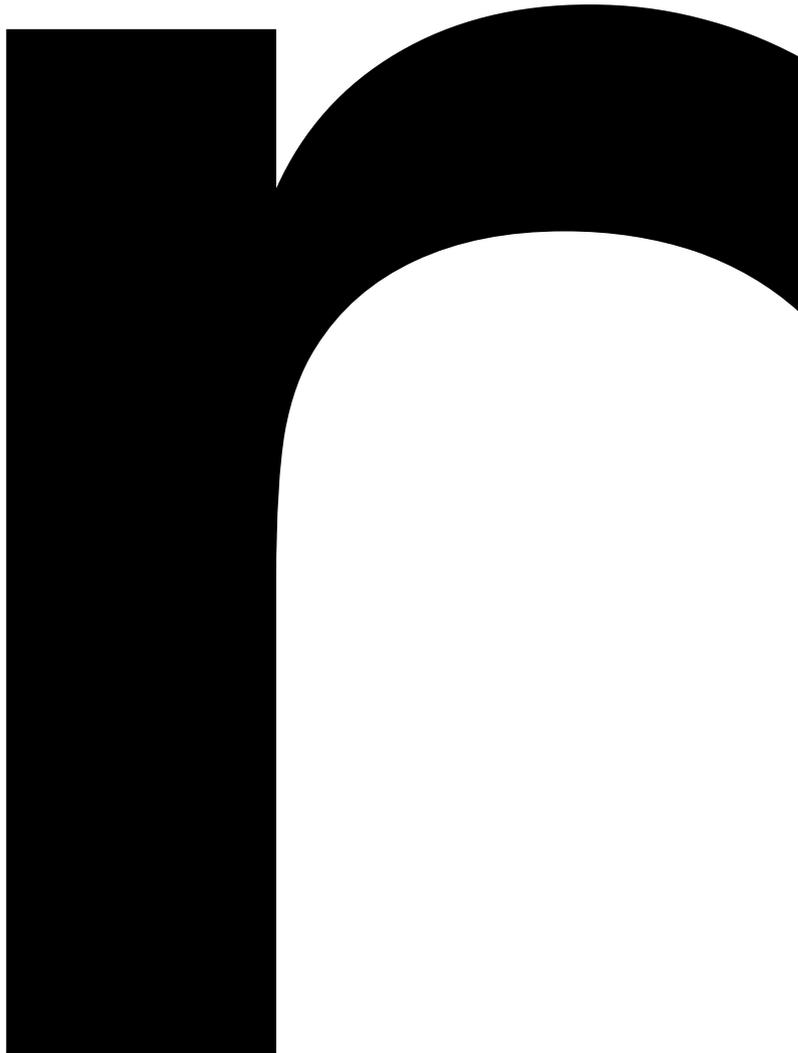
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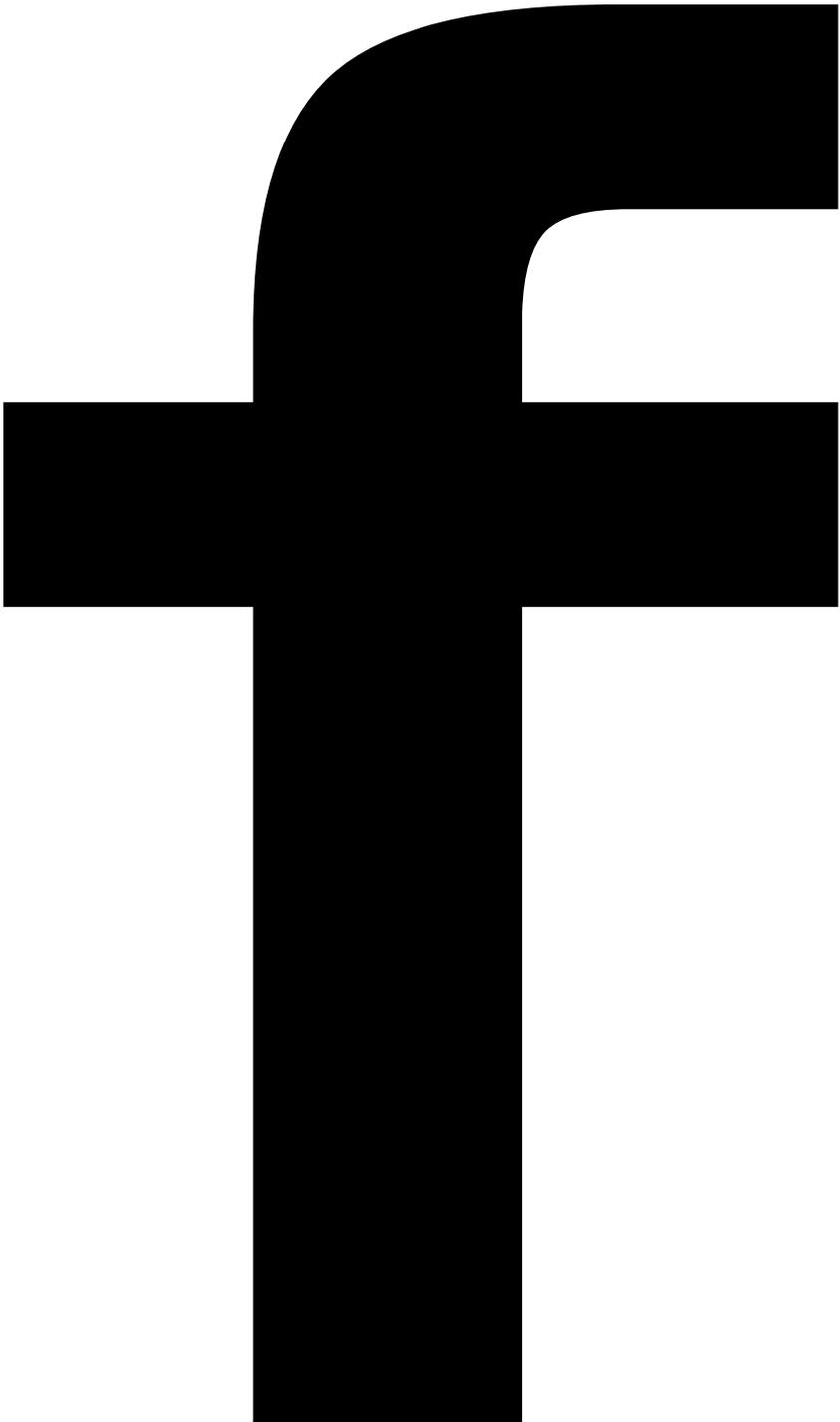
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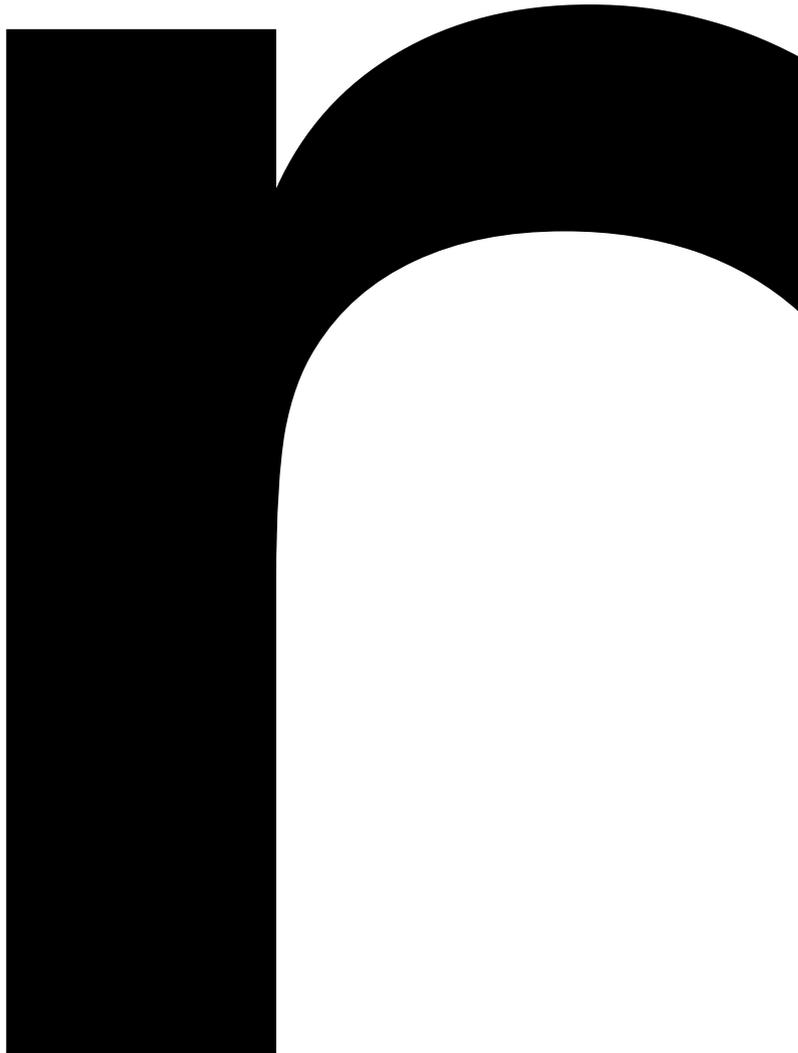
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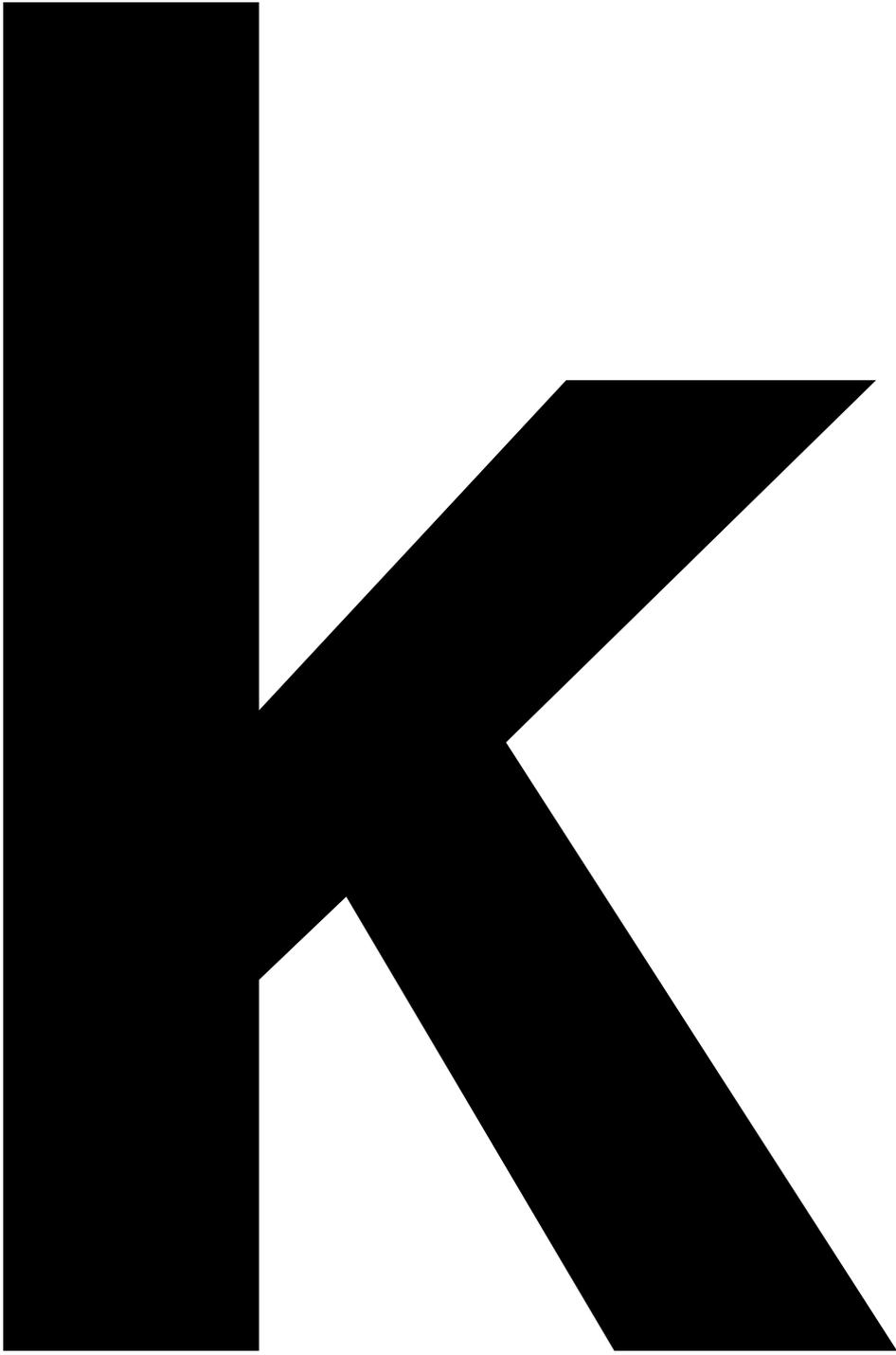
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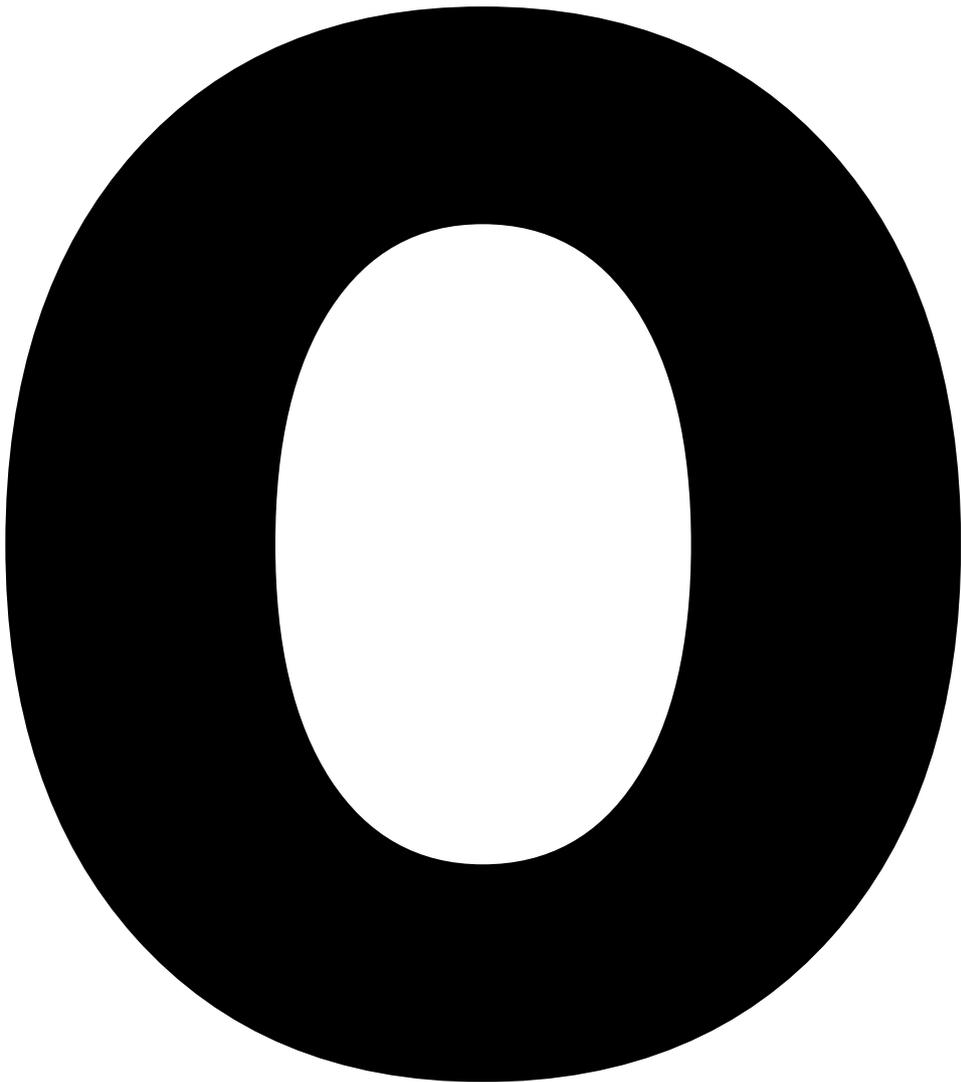
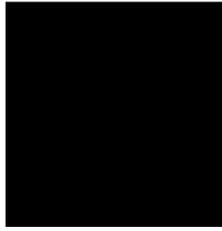
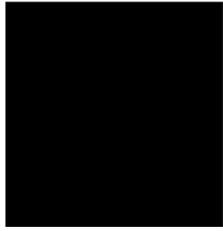
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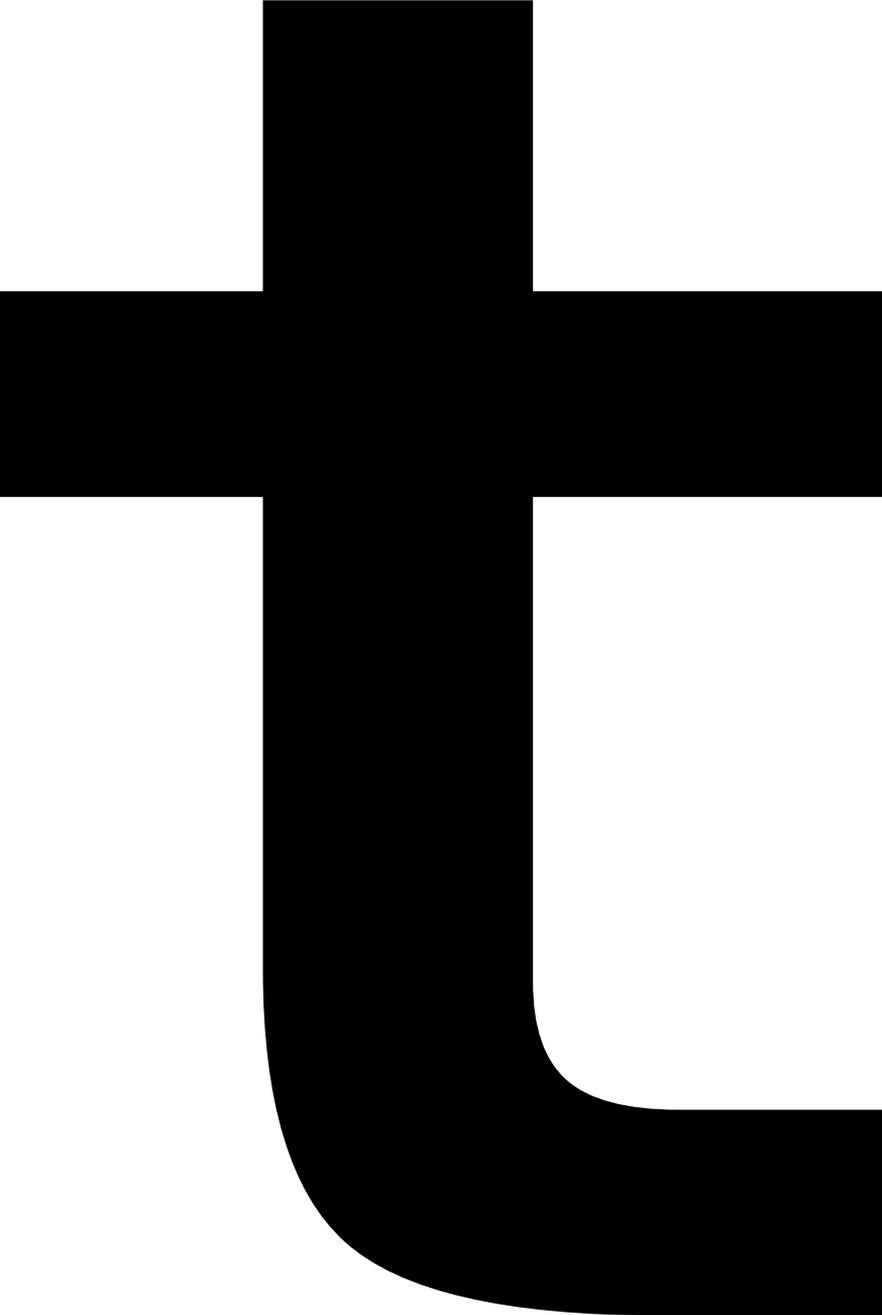
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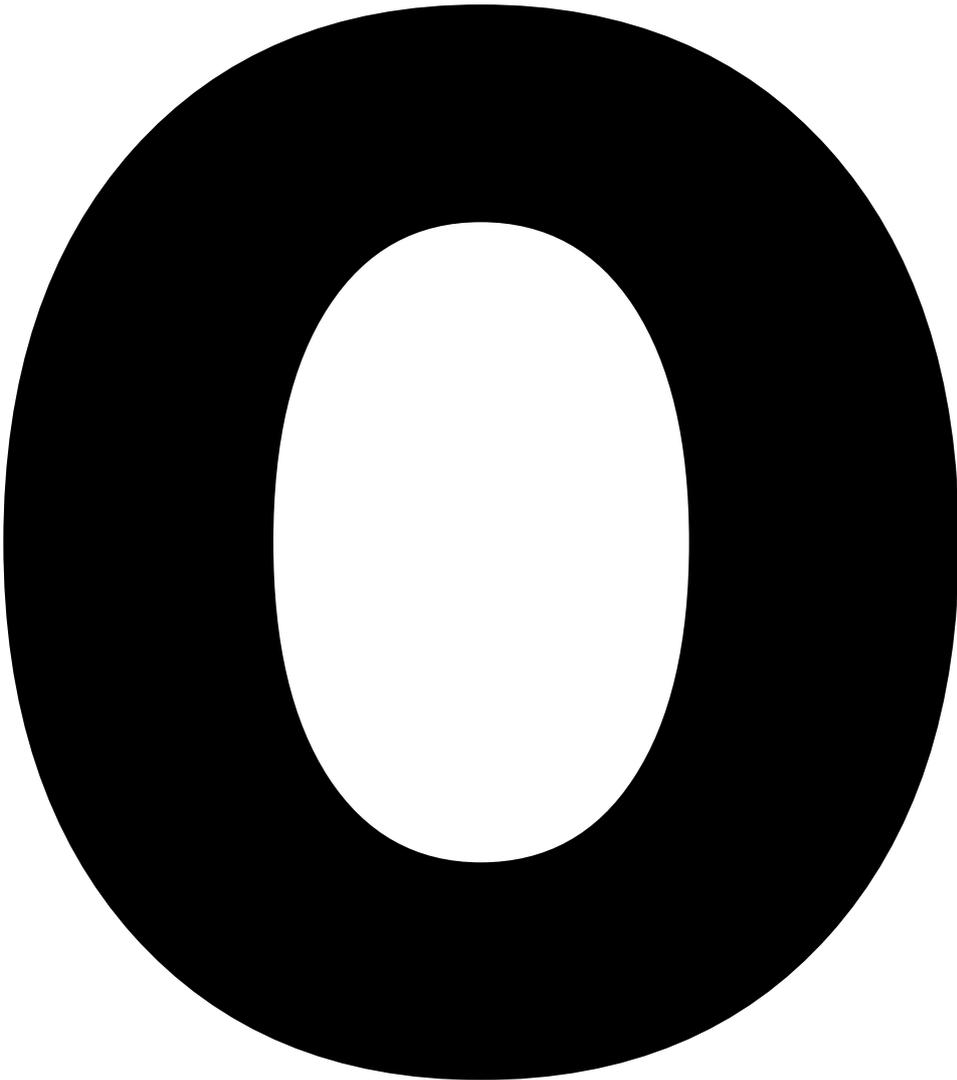
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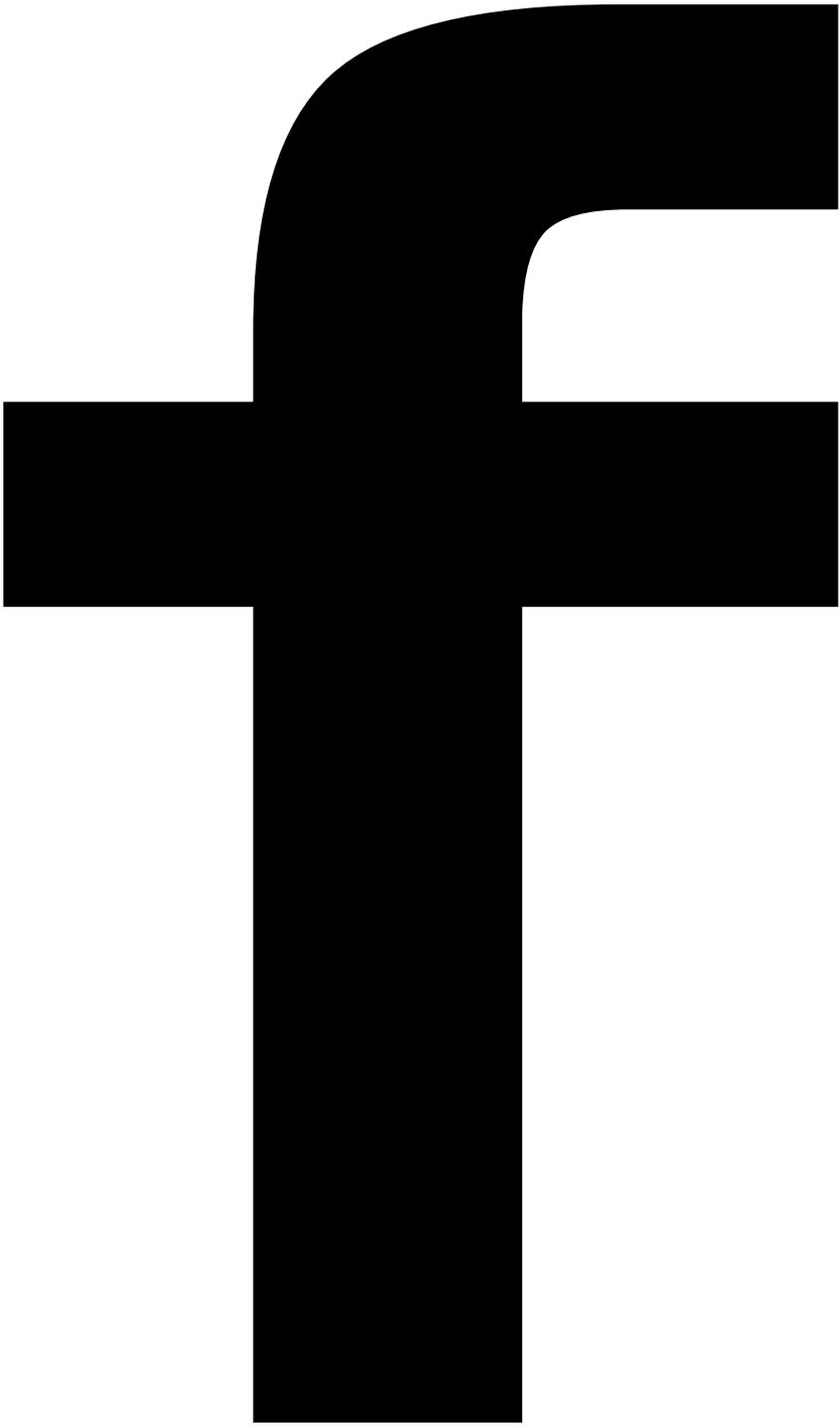


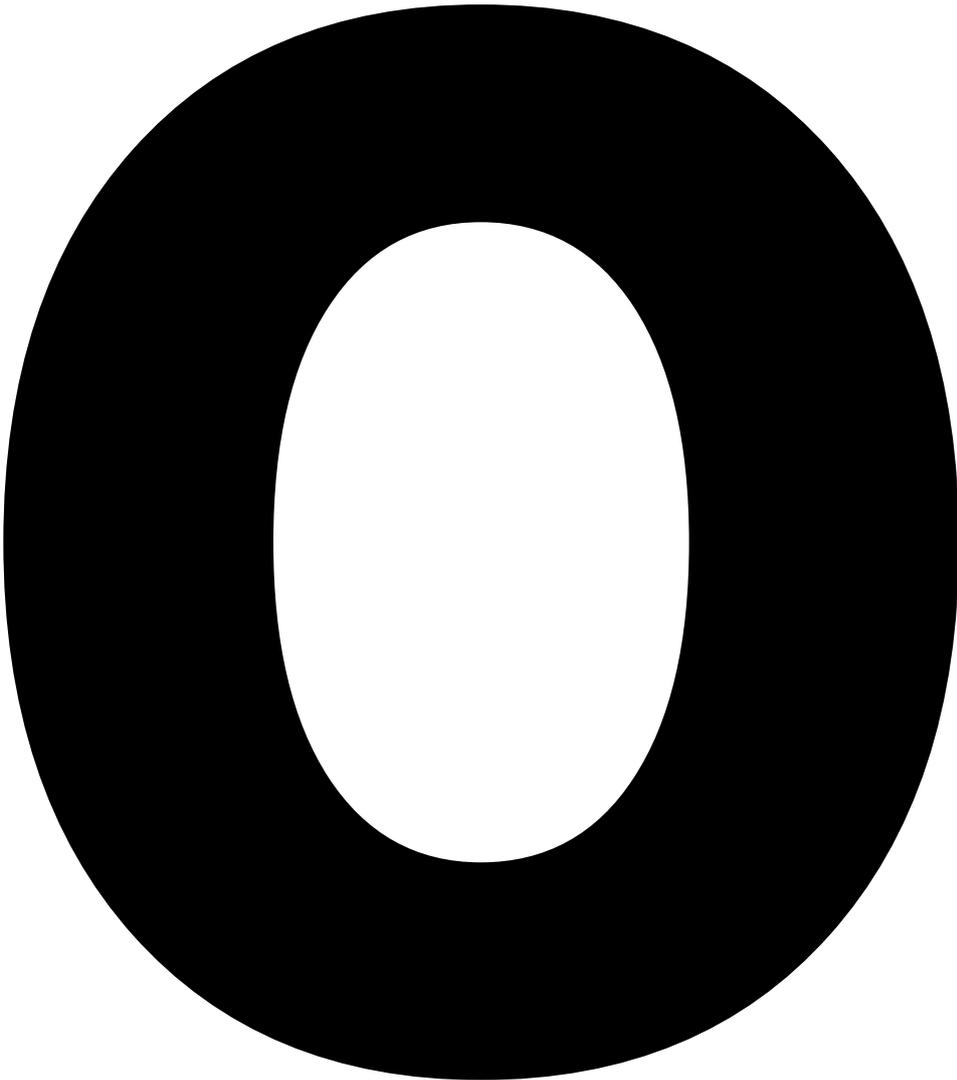
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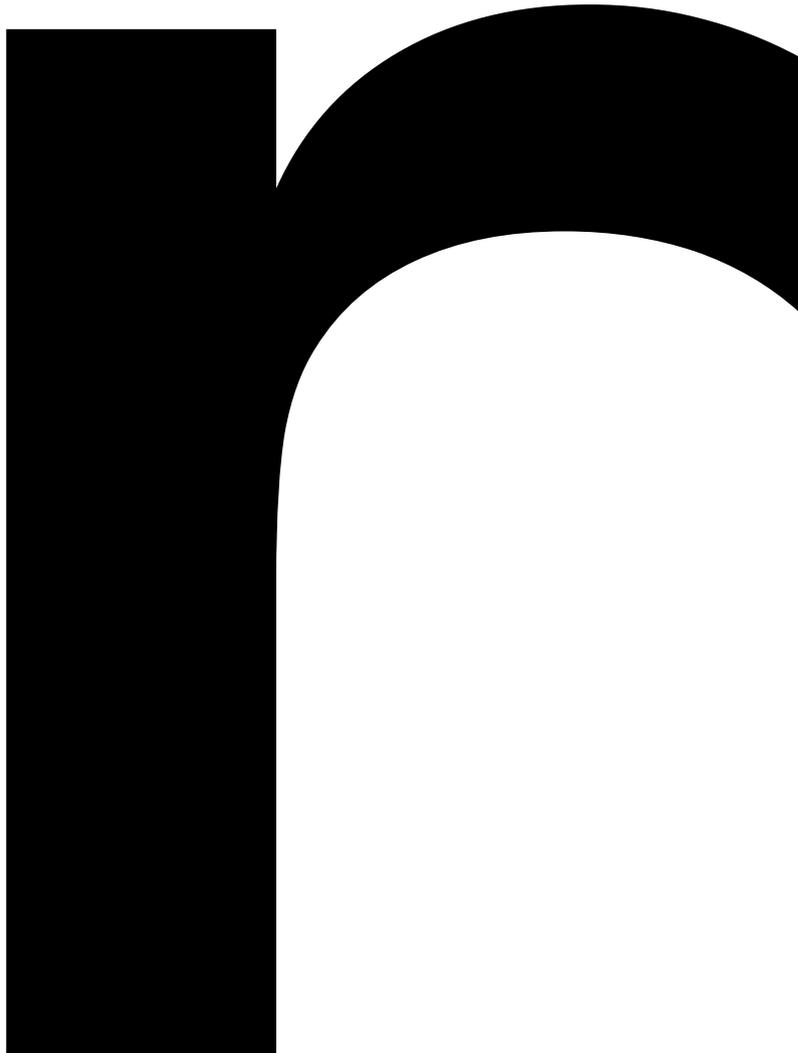
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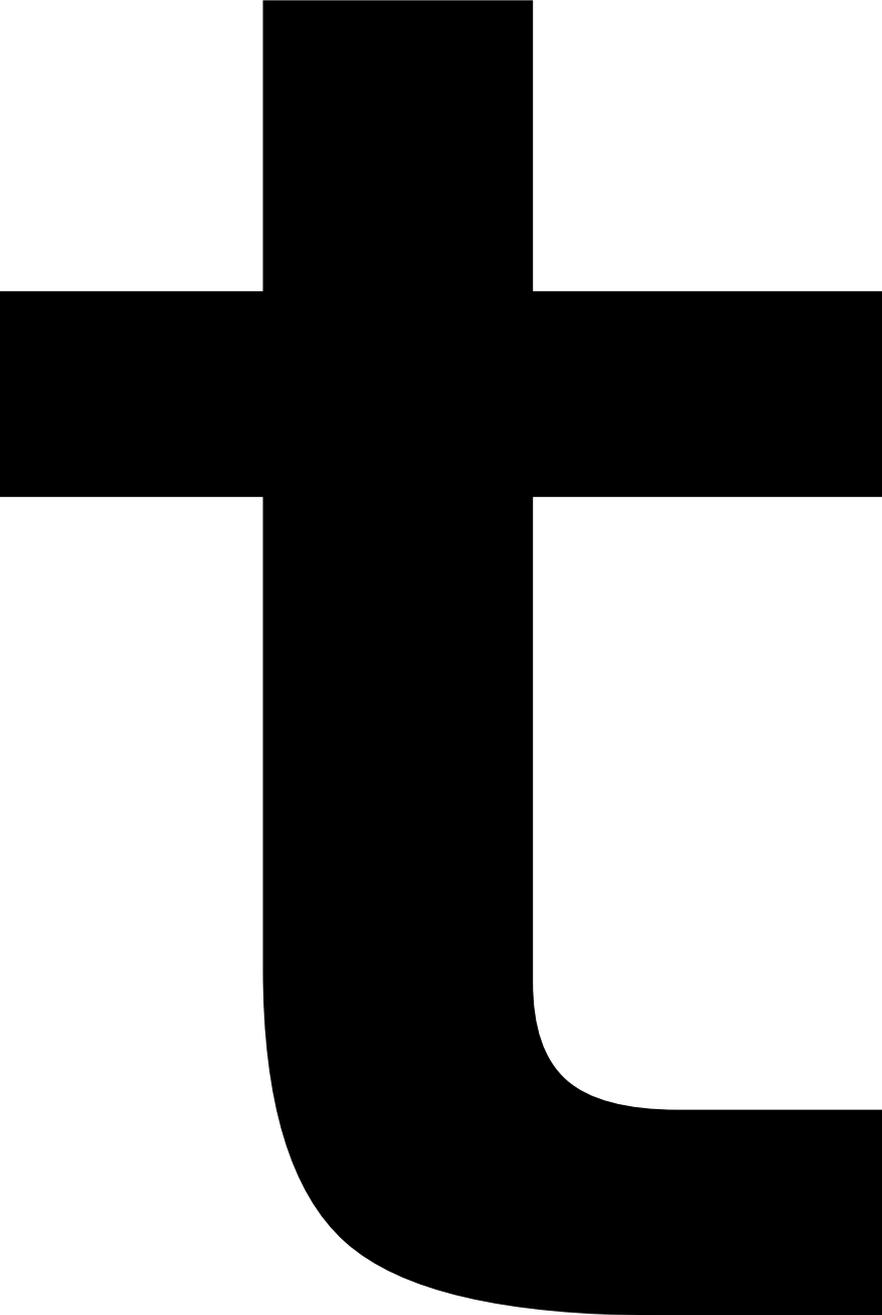
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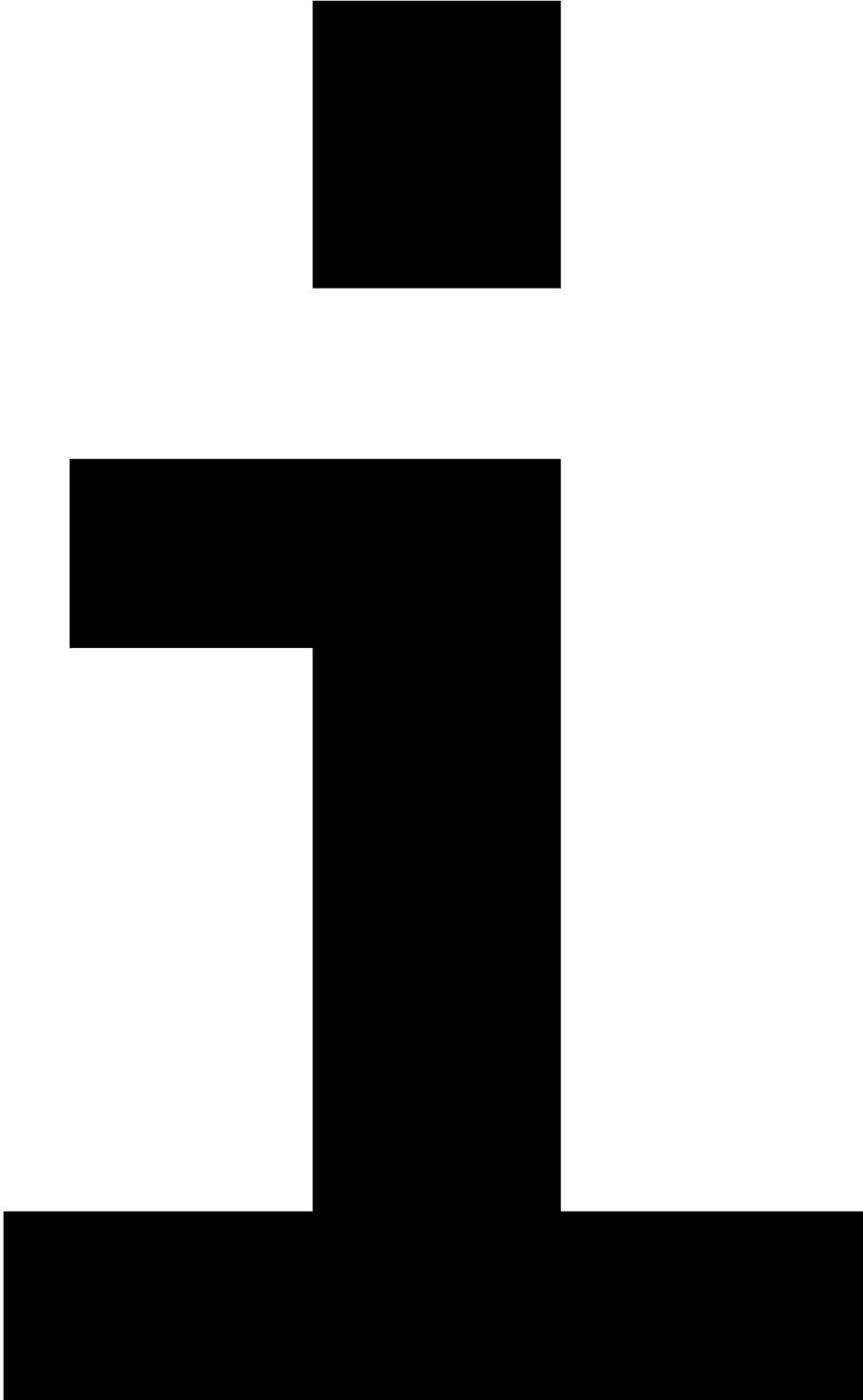




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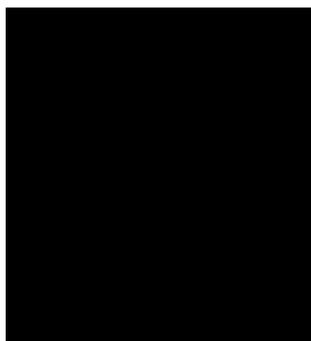


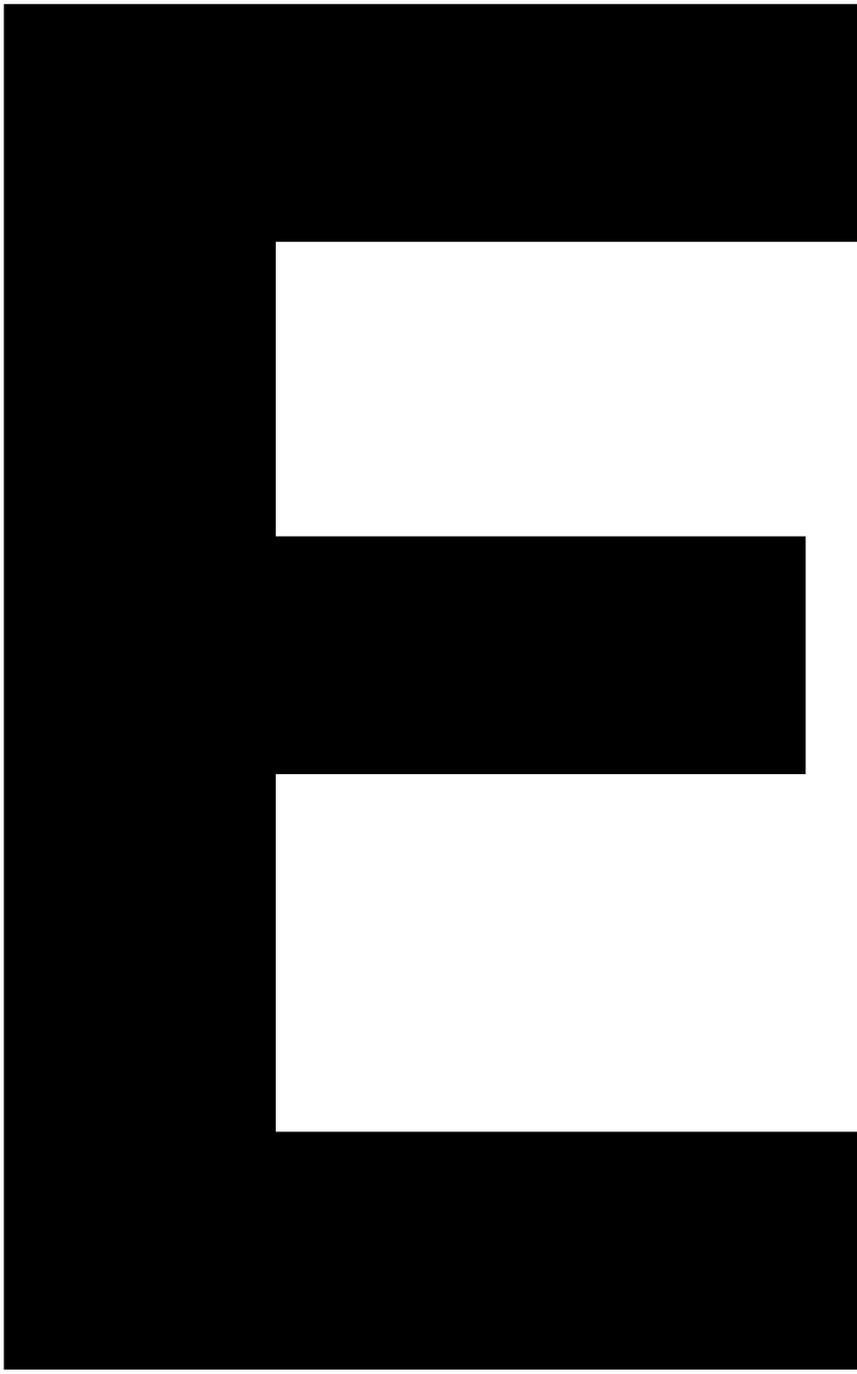
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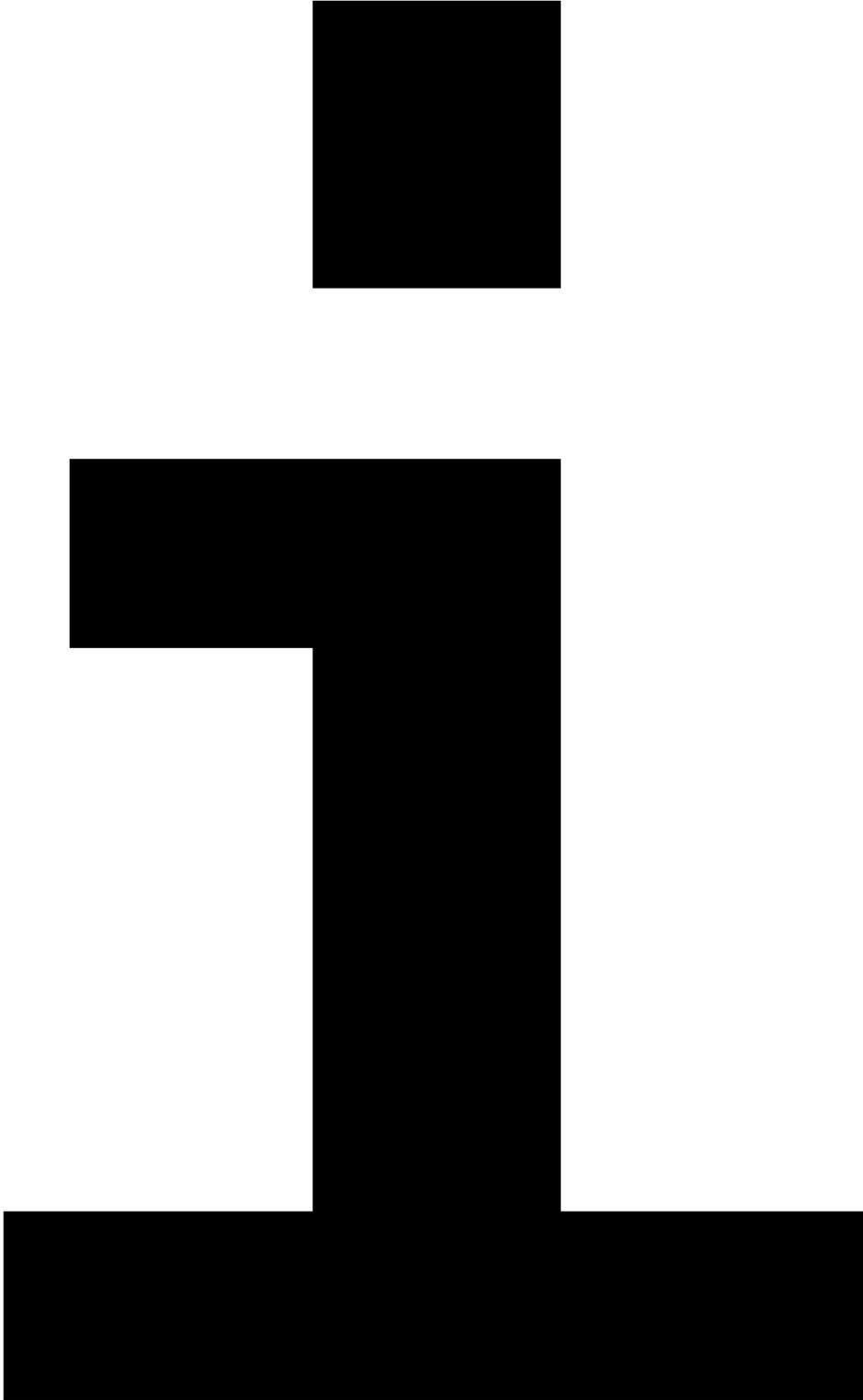
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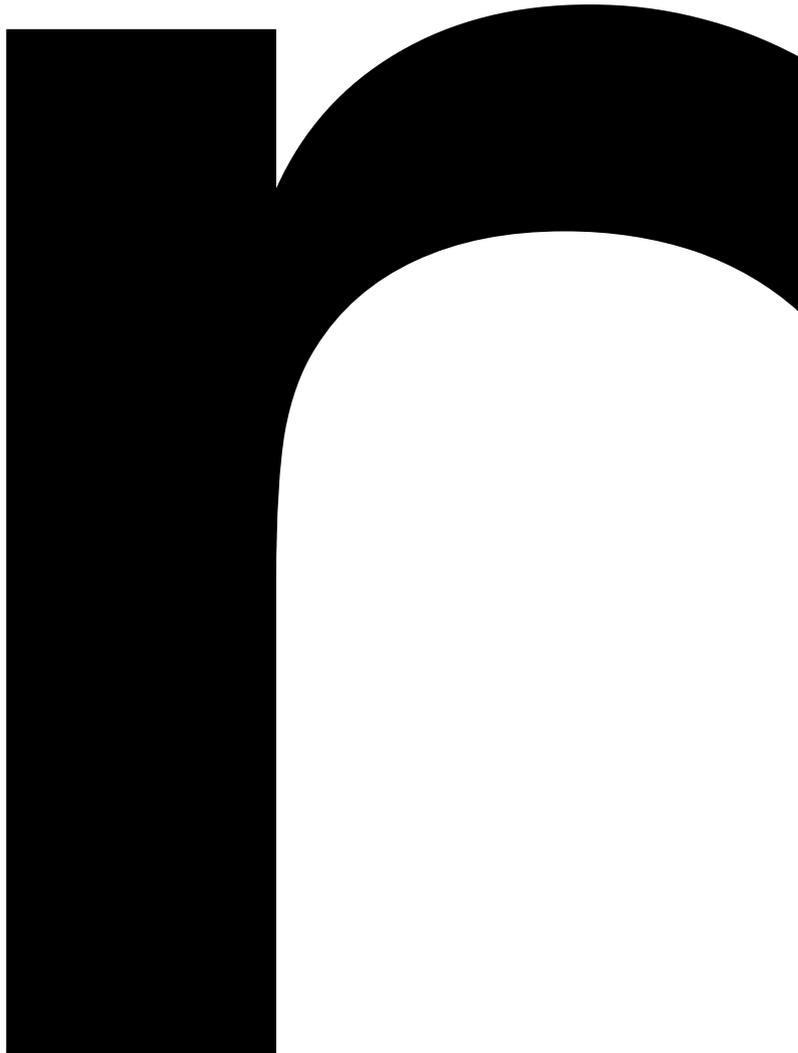
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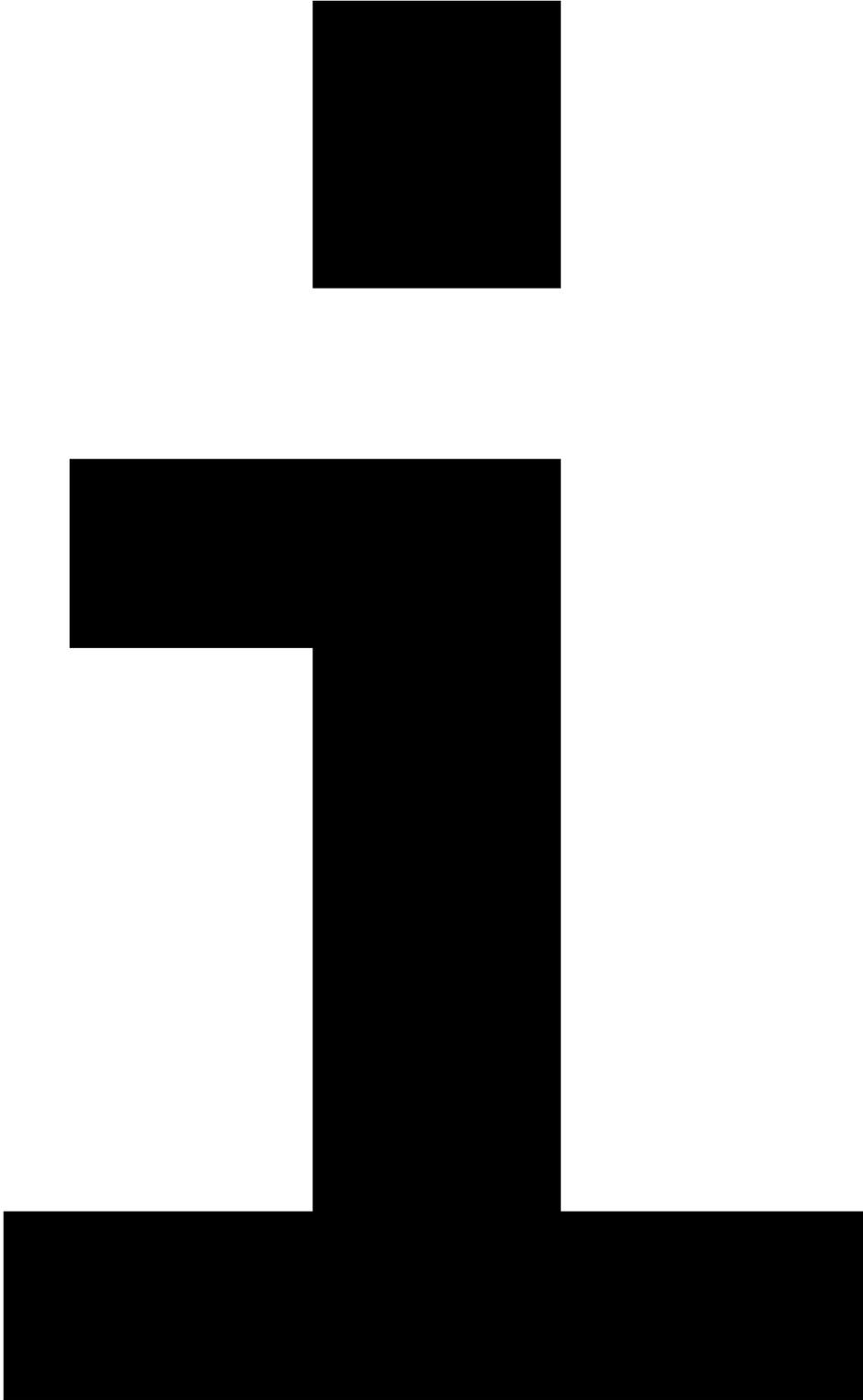
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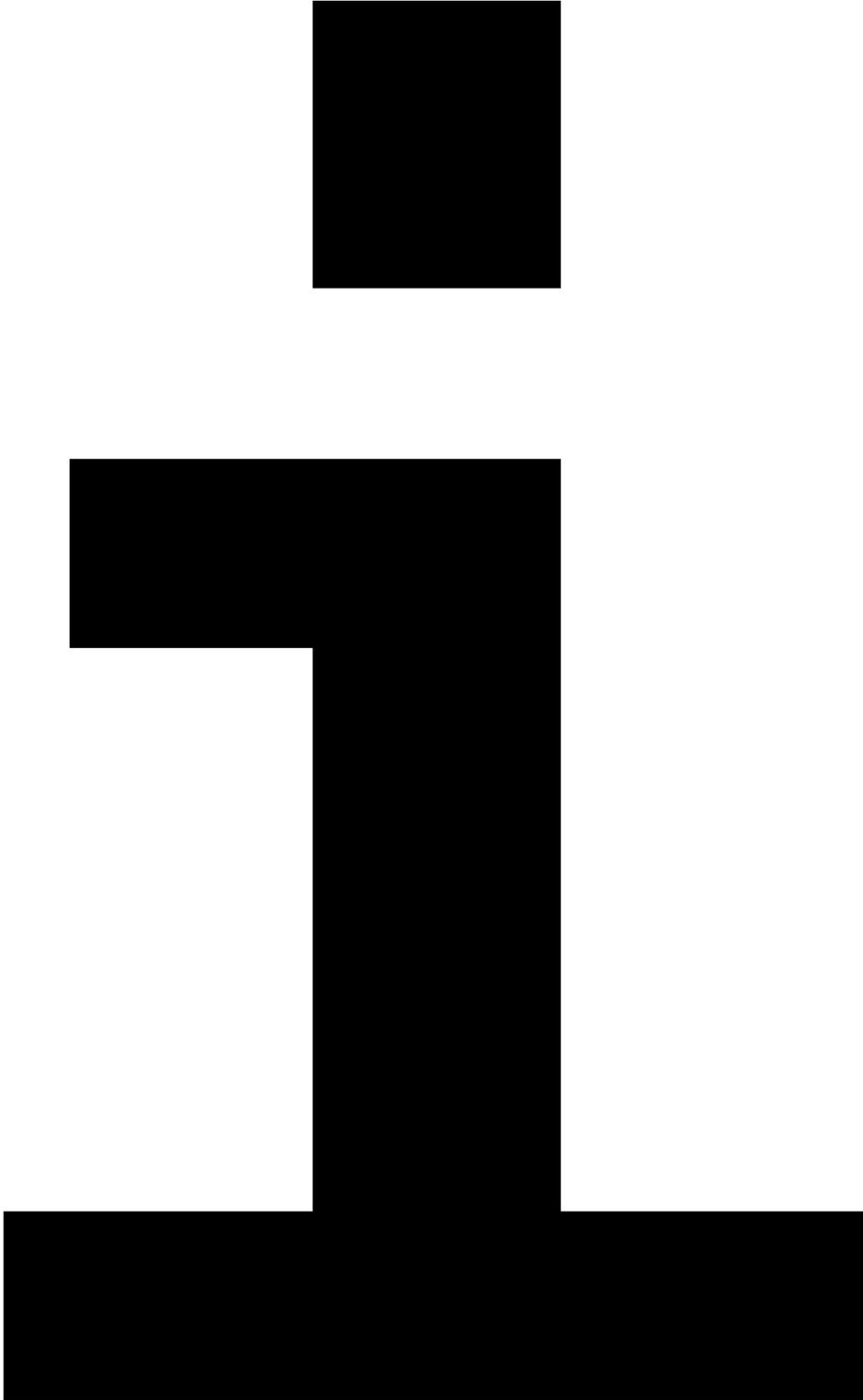


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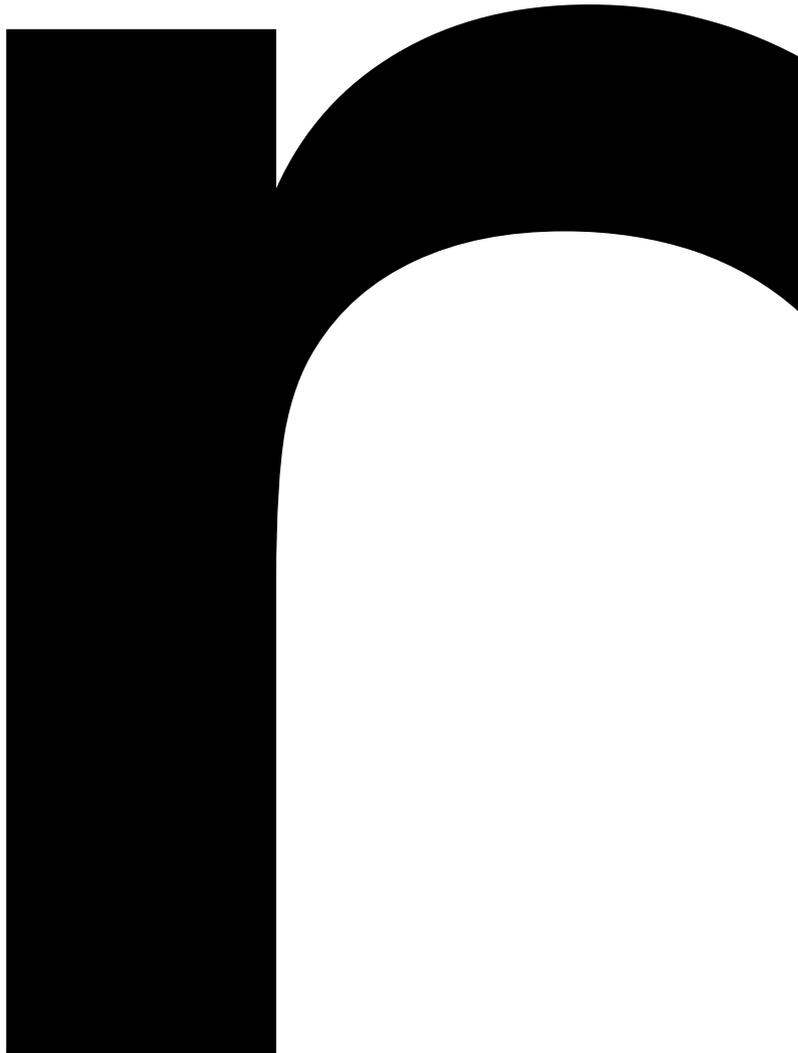
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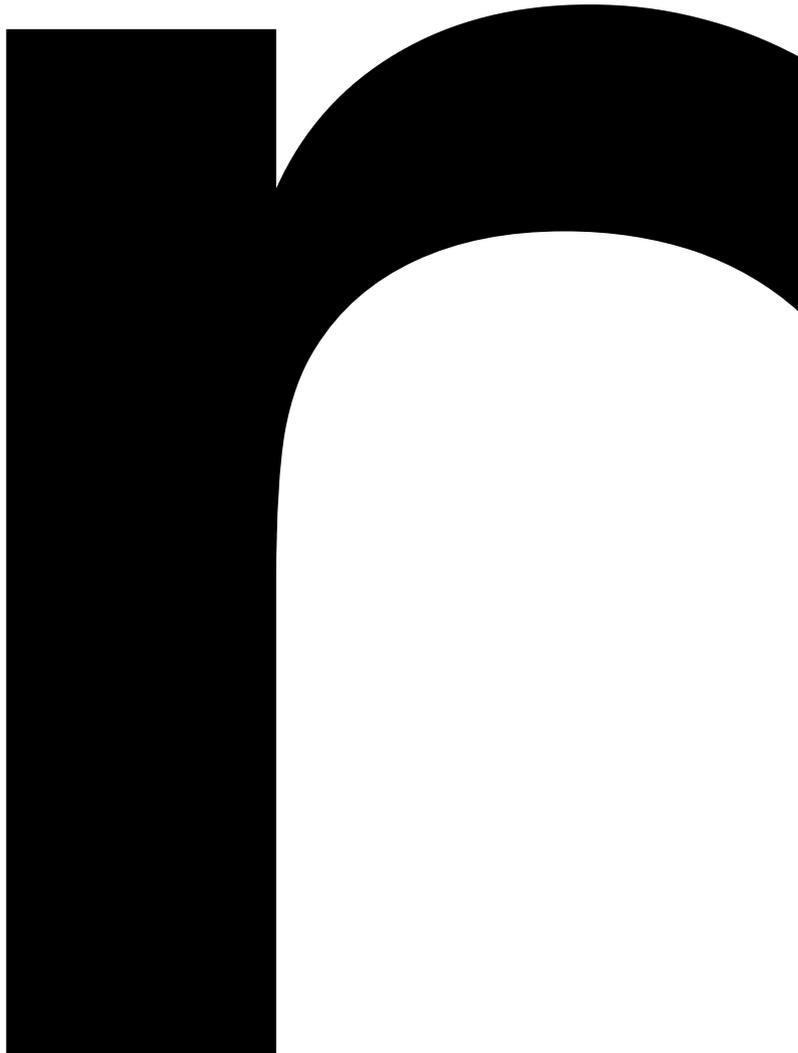
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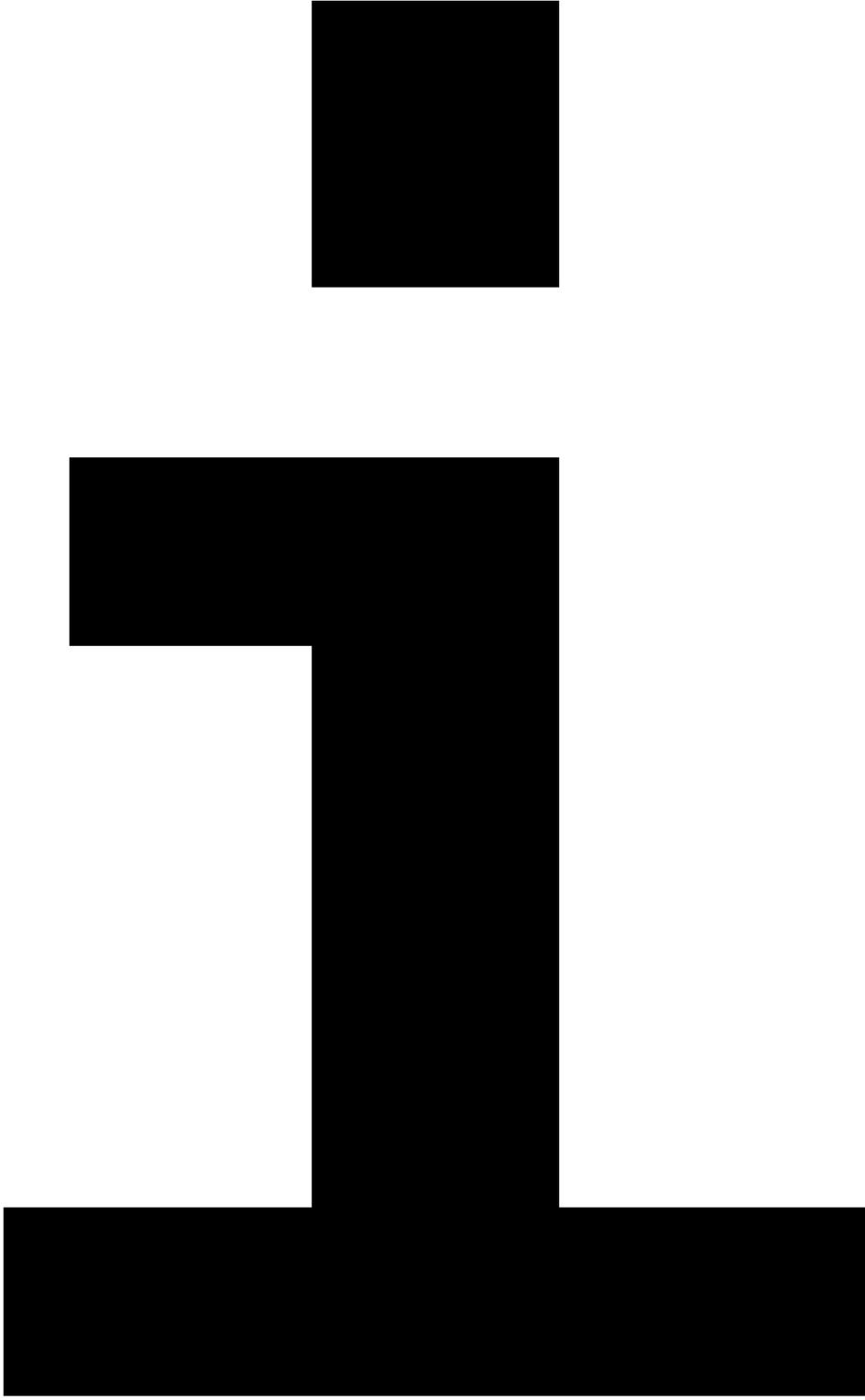
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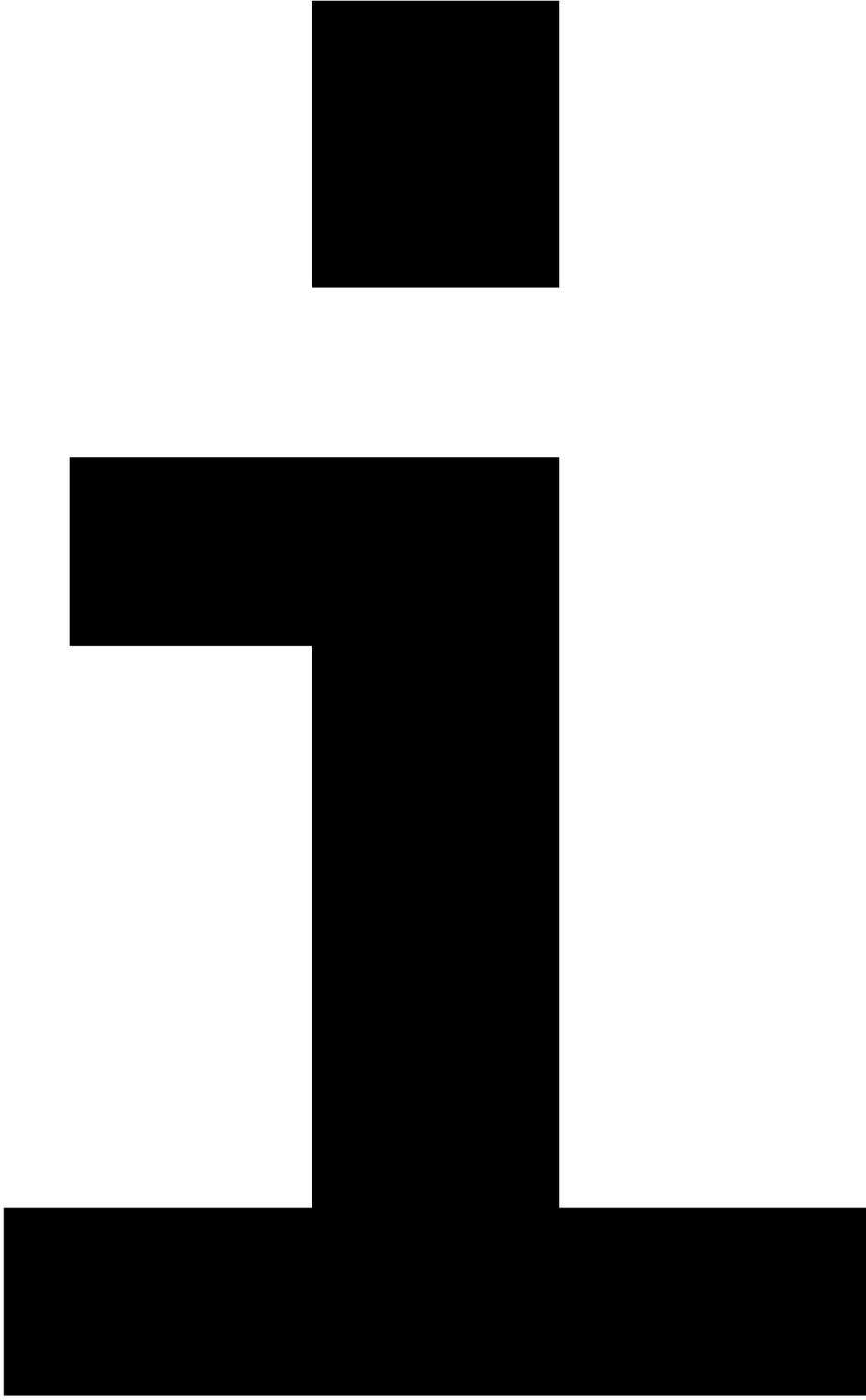
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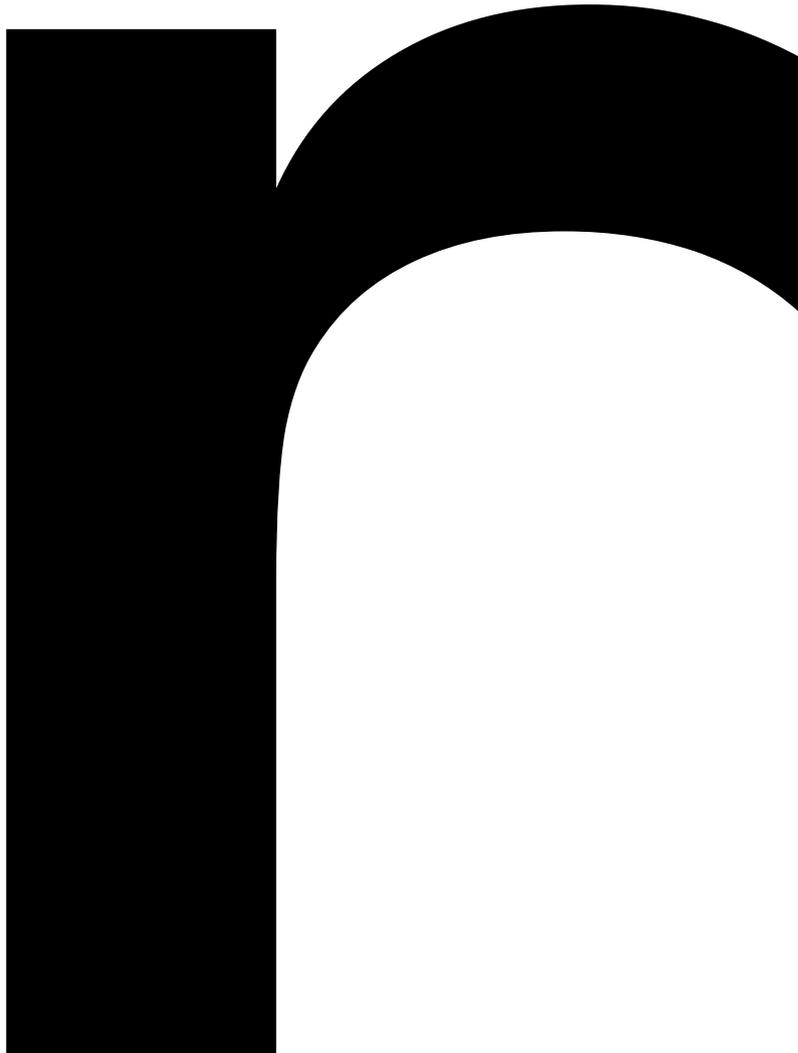
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