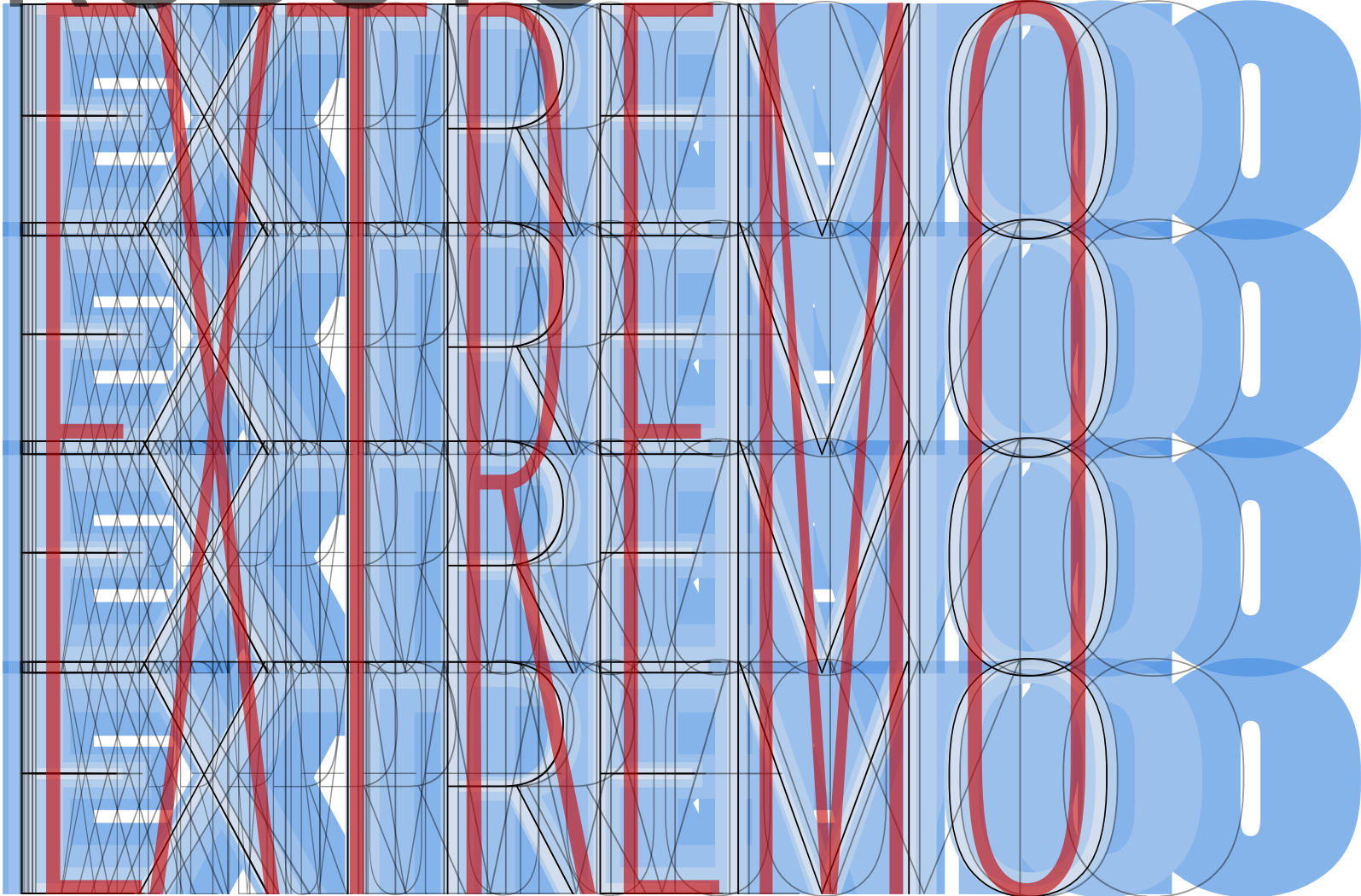


ROBOTO



GLYPHS IN PROTOTYPE

The specification began with the requirement of no apparent change to the regular weight (CSS 400), which is to be assigned an optical size axis value of 14 pts. and 100% width, (CSS 100).

The contour point structure had to be designed to enable large amounts of weight and width to be possible as well be suitable outlines for all possible parametric axes.

The lone composite in the ASCII set, “%”, is redesigned to match that of the figure zero, and is composed from a superior figure zero and fraction bar.

The alignments of the font match the original on a different size em, changing from 1000 to 2000 to ensure future accuracy of the broad design space.

The contours are native drawn quadratic beziers.

The figures are Tabular and the width of the default figures is 1/2 em.

opsz 14 @14pt

A B C D E F G H I J K L M N O P Q R S T U V  
W X Y Z & a b c d e f g h i j k l m n o p q r s t  
u v w x y z 0 1 2 3 4 5 6 7 8 9 . , : ; ! ? ( ) [ ]  
{ } / | \ # \$ % @ ' " \* ~ ^ \_ ` = + < > -

opsz 14 @42pt

A B C D E F G H I J K L M N O P Q R S T U  
V W X Y Z & a b c d e f g h i j k l m n o p q r  
s t u v w x y z 0 1 2 3 4 5 6 7 8 9 . , : ; ! ? ( )  
[ ] { } / | \ # \$ % @ ' "  
\* ~ ^ \_ ` = + < > -

opsz 14 @14pt

Two ideas altered the design of the printing press radically: First, the use of steam power for running the machinery, and second the replacement of the printing flatbed with the rotary motion of cylinders. Both elements were first successfully implemented by the German printer Friedrich Koenig in a series of press designs devised between 1802 and 1818. with assistance from engineer Andreas Friedrich Bauer.

HHAAHH HHBHH HHCHH HDDHH HHEHH HHFHH HHGHH HHHHH  
HHIHH HHJHH HHKHH HHLHH HHMHH HHNHH HHOHH HHPHH  
HHQHH HHRHH HHS HHTHH HHUHH HHVHH HHW HHXHH  
HHYHH HHZHH nnann nnbnn nncnn nndnn nnenn nnfnnn nngnn nnhnn  
nninn nnjn nnkn nnln nnmnn nnnnn nnonn nnpnn nnqnn nnrrnn  
nnsnn nntnn nnunn nnvnn nnwnn nnxn nnynn nnzn 00000 00100  
00200 00300 00400 00500 00600 00700 00800 00900 HH<HH HH(HH  
HH[HH HH{HH HH@HH HH#HH HH\$HH HH%HH HH&HH HH?HH HH!  
HH HH/HH HH|HH HH\HH HH"HH HH~HH HH`HH HH\*HH HH^HH  
HH'HH HH:HH HH;HH HH.HH HH,HH HH)HH HH]HH HH}HH HH>HH

AXES IN ALPHA VF opsz

The design space began with envisioning and then drawing an unbalanced range of size masters upon which to base the weight and width axes. the optical size’s “floor” at 8 point, and “ceiling” at 72 in the first design space is to provide more weight change at larger sizes, where it’s possible to use very bold and very light instances, and less range as the optical size of use gets smaller.

opsz 72 @24pt

ABCDEFGHIJKLMNOPQRSTUVWXYZ  
RSTUVWXYZ&abcdefgh  
hijklmnopqrstuvwxyz0  
123456789.,;:;!()?[]  
{}/|\# \$% @' " \* ~ ^ \_ ` =  
+ < > -

opsz 14 @24pt

ABCDEFGHIJKLMNOPQRSTUVWXYZ  
RSTUVWXYZ&abcdefgh  
hijklmnopqrstuvwxyz0  
123456789.,;:;!()?[]  
{}/|\# \$% @' " \* ~ ^ \_ ` =  
+ < > -

opsz 8 @24pt

ABCDEFGHIJKLMNOPQRSTUVWXYZ  
RSTUVWXYZ&abcdefgh  
hijklmnopqrstuvwxyz0  
123456789.,;:;!()?[]  
{}/|\# \$% @' " \* ~ ^ \_ ` =  
+ < > -

opsz 72 @72pt

ABCDEFGHIJKLMNOPQRSTUVWXYZ  
RSTUVWXYZ&abcdefgh

opsz 14 @14pt

ABCDEFGHIJKLMNOPQRSTUVWXYZ&  
abcdefghijklmnopqrstuvwxyz  
0123456789.,;:;!()? [] {} / | \  
# \$ % @ ' " \* ~ ^ \_ ` = + < > -

opsz 8 @8pt

ABCDEFGHIJKLMNOPQRSTUVWXYZ&  
abcdefghijklmnopqrstuvwxyz  
0123456789.,;:;!()? [] {} / | \  
# \$ % @ ' " \* ~ ^ \_ ` = + < > -

AXES IN ALPHA VF: MASTERS Default  
wght & width

The maximim and minimum  
weights and widths for 14 point  
were then drawn and tested at  
actual size.

opsz 14 wght 900 @24pt

A B C D E F G H I J K L  
M N O P Q R S T U V W  
X Y Z & a b c d e f g h i j  
k l m n o p q r s t u v w  
x y z 0 1 2 3 4 5 6 7 8  
9 . , : ; ! ? ( ) [ ] { } / \ # \$  
% @ ' " \* ~ ^ \_ ` = + < > -

opsz 14 width 50 @24pt

A B C D E F G H I J K L M N  
O P Q R S T U V W X Y Z & a  
b c d e f g h i j k l m n o p q  
r s t u v w x y z 0 1 2 3 4 5 6  
7 8 9 . , : ; ! ? ( ) [ ] { } / \  
# \$ % @ ' " \* ~ ^ \_ ` = + <  
> -

opsz 14 @24pt

A B C D E F G H I J K L M  
N O P Q R S T U V W X Y  
Z & a b c d e f g h i j k l m  
n o p q r s t u v w x y z 0  
1 2 3 4 5 6 7 8 9 . , : ; ! ?  
( ) [ ] { } / \ # \$ % @ ' " \*  
~ ^ \_ ` = + < > -

opsz 14 width 125 @24pt

A B C D E F G H I J K L  
M N O P Q R S T U V W  
X Y Z & a b c d e f g h i  
j k l m n o p q r s t u v  
w x y z 0 1 2 3 4 5 6 7 8  
9 . , : ; ! ? ( ) [ ] { } / \ # \$  
% @ ' " \* ~ ^ \_ ` = + < > -

opsz 14 wght 100 @24pt

A B C D E F G H I J K L M N  
O P Q R S T U V W X Y Z &  
a b c d e f g h i j k l m n o p  
q r s t u v w x y z 0 1 2 3 4  
5 6 7 8 9 . , : ; ! ? ( ) [ ] { } /  
\ # \$ % @ ' " \* ~ ^ \_ ` = +  
< > -

opsz 14, wght and width masters @14pt

- MEMORABLE Planning sessions
- MEMORABLE Planning sessions**
- MEMORABLE Planning sessions
- MEMORABLE Planning sessions
- MEMORABLE Planning sessions

AXES IN ALPHA VF: MASTERS  
Paramteric Axes

Parametric axes, i.e. variations to the underlying single parameters that combine to make the changes from one style to another, and from one size master to another, were drawn. These include the six axes shown here.

XTRA modifies the counter width of glyphs.

YTUC changes uppercase height.

YTLC changes lowercase height.

XOPQ changes stem weight.

YTAS changes lowercase ascender height and

YOPQ changes hairline weight.

opsz 14 XTRA minimum

A B C D E F G H I J K L M N O  
P Q R S T U V W X Y Z & a b c  
d e f g h i j k l m n o p q r s t u

opsz 14 XTRA maximum

A B C D E F G H I J K L  
M N O P Q R S T U V  
W X Y Z & a b c d e f

opsz 14 YOPQ minimum

A B C D E F G H I J K L M  
N O P Q R S T U V W X Y  
Z & a b c d e f g h i j k l m

opsz 14 YOPQ maximum

A B C D E F G H I J K L M  
N O P Q R S T U V W X Y  
Z & a b c d e f g h i j k l m

opsz 14 YTUC minimum

A B C D E F G H I J K L M  
N O P Q R S T U V W X Y  
Z & a b c d e f g h i j k l m

opsz 14 YTUC maximum

A B C D E F G H I J K L M  
N O P Q R S T U V W X Y  
Z & a b c d e f g h i j k l m

opsz 14 YTLC minimum

A B C D E F G H I J K L M  
N O P Q R S T U V W X Y  
Z & a b c d e f g h i j k l m

opsz 14 YTLC maximum

A B C D E F G H I J K L M  
N O P Q R S T U V W X Y  
Z & a b c d e f g h i j k l m

opsz 14 @24pt

A B C D E F G H I J K L M  
N O P Q R S T U V W X Y  
Z & a b c d e f g h i j k l m  
n o p q r s t u v w x y z 0  
1 2 3 4 5 6 7 8 9 . , : ; ! ?  
( ) [ ] { } / | \ # \$ % @ ' " \*  
~ ^ \_ ` = + < > -

opsz 14 YTAS minimum

A B C D E F G H I J K L M  
N O P Q R S T U V W X Y  
Z & a b c d e f g h i j k l m

opsz 14 YTAS maximum

A B C D E F G H I J K L M  
N O P Q R S T U V W X Y  
Z & a b c d e f g h i j k l m

opsz 14 XOPQ minimum

A B C D E F G H I J K L M N  
O P Q R S T U V W X Y Z & a  
b c d e f g h i j k l m n o p q r s

opsz 14 XOPQ maximum

A B C D E F G H I J K  
L M N O P Q R S T U V  
W X Y Z & a b c d e f g



AXES IN ALPHA VF: Corners

Together with the wght and wdth masters, (grey), and the default in the middle, the combination of five masters define their combinations, (black). The parametric axes were used to make minor adjustments to the completed style of the 14 point master.

opsz 14, wght and wdth masters @14pt

MEMORABLE Planning sessions  
MEMORABLE Planning sessions  
MEMORABLE Planning sessions

MEMORABLE Planning sessions  
MEMORABLE Planning sessions  
MEMORABLE Planning sessions

MEMORABLE Planning sessions  
MEMORABLE Planning sessions  
MEMORABLE Planning sessions

opsz 14 wght 900 wdth 50 @24pt

A B C D E F G H I J K L M  
N O P Q R S T U V W X Y Z  
& a b c d e f g h i j k l m n  
o p q r s t u v w x y z 0 1 2  
3 4 5 6 7 8 9 . , : ; ! ? ( ) [ ]  
{ } / \ # \$ % @ ' " \* ~ ^ \_ ` = + < > -

opsz 14 wdth 50 @24pt

A B C D E F G H I J K L M N  
O P Q R S T U V W X Y Z & a  
b c d e f g h i j k l m n o p q  
r s t u v w x y z 0 1 2 3 4 5 6  
7 8 9 . , : ; ! ? ( ) [ ] { } / \  
# \$ % @ ' " \* ~ ^ \_ ` = + <  
> -

opsz 14 wght 100 wdth 50 @24pt

A B C D E F G H I J K L M N O  
P Q R S T U V W X Y Z & a b c  
d e f g h i j k l m n o p q r s t u  
v w x y z 0 1 2 3 4 5 6 7 8  
9 . , : ; ! ? ( ) [ ] { } / \ # \$ %  
@ ' " \* ~ ^ \_ ` = + < > -

opsz 14 wght 900 @24pt

A B C D E F G H I J K L  
M N O P Q R S T U V W  
X Y Z & a b c d e f g h i j  
k l m n o p q r s t u v w  
x y z 0 1 2 3 4 5 6 7 8  
9 . , : ; ! ? ( ) [ ] { } / \ # \$  
% @ ' " \* ~ ^ \_ ` = + < > -

opsz 14 @24pt

A B C D E F G H I J K L M  
N O P Q R S T U V W X Y  
Z & a b c d e f g h i j k l m  
n o p q r s t u v w x y z 0  
1 2 3 4 5 6 7 8 9 . , : ; ! ?  
( ) [ ] { } / \ # \$ % @ ' " \*  
~ ^ \_ ` = + < > -

opsz 14 wght 100 @24pt

A B C D E F G H I J K L M N  
O P Q R S T U V W X Y Z &  
a b c d e f g h i j k l m n o p  
q r s t u v w x y z 0 1 2 3 4  
5 6 7 8 9 . , : ; ! ? ( ) [ ] { } /  
\ # \$ % @ ' " \* ~ ^ \_ ` = +  
< > -

opsz 14 wght 900 wdth 125 @24pt

A B C D E F G H I J K  
L M N O P Q R S T U V  
W X Y Z & a b c d e f  
g h i j k l m n o p q r  
s t u v w x y z 0 1 2 3  
4 5 6 7 8 9 . , : ; ! ? ( )  
{ } / \ # \$ % @ ' " \* ~ ^  
\_ ` = + < > -

opsz 14 wdth 125 @24pt

A B C D E F G H I J K L  
M N O P Q R S T U V W  
X Y Z & a b c d e f g h i  
j k l m n o p q r s t u v  
w x y z 0 1 2 3 4 5 6 7 8  
9 . , : ; ! ? ( ) [ ] { } / \ # \$  
% @ ' " \* ~ ^ \_ ` = + < > -

opsz 14 wght 100 wdth 125 @24pt

A B C D E F G H I J K L  
N O P Q R S T U V W X Y  
Z & a b c d e f g h i j k l m  
n o p q r s t u v w x y z 0  
1 2 3 4 5 6 7 8 9 . , : ; ! ?  
( ) [ ] { } / \ # \$ % @ ' " \*  
~ ^ \_ ` = + < > -

AXES IN ALPHA VF

These weights and widths were then extrapolated to the optical size maximum for approval of the larger appearances. Projection of the lightest weight at 72 point was determined to be too light for some rendering, so the maximum optical size was doubled to 144 pt, in effect doubling the minimum weight at the maximum size.

opsz 144 @24pt  
ABCDEFGHIJKLMNOPQRSTUVWXYZ  
abcdefghijklmnopqrstuvwxyz  
0123456789.,:;!()?[]  
{}/|\#\$\$%@"'~^\_`=+<>-

opsz 14 @24pt  
ABCDEFGHIJKLM  
NOPQRSTUVWXYZ  
Z&abcdefghijklm  
nopqrstuvwxyz0  
123456789.,:;!?  
()[]{}|\#\$\$%@"'~^\_`=+<>-

opsz 8 @24pt  
ABCDEFGHIJKL  
MNOPQRSTUVW  
XYZ&abcdefghij  
klmnopqrstuvw  
xyz012345678  
9.,:;!()?[]{}|\#  
\$%@"'~^\_`=+<>-

opsz 72 wght 100 wdth 125, 100 & 25 @72pt  
ABCDEFGHIJKLMNOPQRSTUVWXYZ  
abcdefghijklmnopqrstuvwxyz

opsz 144 wght 100 wdth 125, 100 & 25 @144pt  
ABCDEFGHIJK  
PQRSTUVWXYZ  
abcdefghijklmnopqrstuvwxyz

AXES IN ALPHA VF

The same stage included designing the width axes to narrow more than the default 14 pt width axes narrows. So the 144 pt masters produce dense fonts with counters as small as most rendering allows.

The comparative line lengths show that the 14 pt has narrowed around 2 characters from A to T, while the 144 pt has narrowed around 10 characters over the same text, (yellow arrows).

The boldest most condensed 144 pt (far right), shows the impactful density of black allowed in the design and spacing at large sizes, compared to the boldest most condensed 14 pt (left and enlarged below), where more generous interior and inter-character spaces present the user with better readability.

opsz 14 wght 400 width 25 @144pt

ABCDEFGHIJKLMNOPQRSTUVWXYZ&  
abcdefghijklmnopqrstuvwxyz  
0123456789 . , : ; ! ? ( ) [ ] { } / | \\  
# \$ % @ ' " \* ~ ^ \_ ` = + < > -

opsz 14 wght 400 width 100 @14pt

ABCDEFGHIJKLMNOPQRSTUVWXYZ&  
abcdefghijklmnopqrstuvwxyz  
0123456789 . , : ; ! ? ( ) [ ] { } / | \\  
# \$ % @ ' " \* ~ ^ \_ ` = + < > -

opsz 14 wght 900 width 25 @14pt

**ABCDEFGHIJKLMNOPQRSTUVWXYZ&**  
**abcdefghijklmnopqrstuvwxyz**  
**0123456789 . , : ; ! ? ( ) [ ] { } / | \\  
# \$ % @ ' " \* ~ ^ \_ ` = + < > -**

opsz 14 wght 900 width 25 @144

**PQ**

opsz 144 wght 400 width 25 @144pt

ABCDEFGHIJKLMNOPQRSTUVWXYZ&

opsz 144 wght 400 width 100 @144pt

ABCDEFGHIJK

opsz 144 wght 900 width 25 @144pt

**ABCDEFGHIJK**  
**PQRSTUWVWXY**  
**abcdefghijkl**



AXES IN ALPHA VF

The same stage included designing the width axes to widen more than the default 14 pt width axes. So the 144 pt masters produce fonts with counters as large as the design allows.

The comparative line lengths show that the 14 pt has widened around 1/2 character from A to F, while the 144 pt has widened more than 3 characters in the same short string, (yellow arrows).

opsz 14 wght 400 wdth 151 @144pt

ABCDEFGHIJKLMNOPQRSTUVWXYZ&  
abcdefghijklmnopqrstuvwxyz  
0123456789 . , ; : ! ? 0 1 2 3 4 5 6 7 8 9  
#\$%&'()\*~^\_`=+<>-

opsz 14 wght 400 wdth 100 @14pt

ABCDEFGHIJKLMNOPQRSTUVWXYZ&  
abcdefghijklmnopqrstuvwxyz  
0123456789 . , ; : ! ? 0 1 2 3 4 5 6 7 8 9  
#\$%&'()\*~^\_`=+<>-

opsz 14 wght 900 wdth 151 @14pt

**ABCDEFGHIJKLMNOPQRSTUVWXYZ  
Z& abcdefghijklmnopqrstuvwxyz  
0123456789 . , ; : ! ? 0 1 2 3 4 5 6 7 8 9  
#\$%&'()\*~^\_`=+<>-**

**PQ**

opsz 144 wght 400 wdth 151 @144pt

A B C D E F G

opsz 144 wght 400 wdth 100 @144pt

A B C D E F G H I J K

opsz 144 wght 900 wdth 151 @144pt

**A B C D E  
H I J K L M**

AXES IN Beta VF opsz minimum

Variable fonts with Parametric axes allow a font developer, and potentially the user, to make adjustments to every instance in a variable font. These axes were developed and added to Extremo with this in mind, with axes name abbreviations for x/y direction, opaque/transparent, the glyph group, uc/lc/figures, and more in some cases.

An example shown here, is the detailed variation of the 14 pt regular, top line at left, to the 8 pt regular, bottom line at left, (i.e. changes from the default opsz to the opsz minimum to become a new extreme instance in the variable font).

This starts from 14 pt with a slight increase in the main stem weight, (XOPQ ), to compensate for a smaller size needing to be a little bolder to look like the 14 pt weight. Then the 8 pt needs to be a little wider, increasing the width, (XTRA), so the spaces of the 8 pt will be shrinking less as well. The secondary stem weight controlling the lighter stem is increased (YOPQ),to maintain proper balance with the main stem weight. Finally the lowercase height is slightly raised, (YTLC), to compensate for the smaller type size, and the other changes. The result, from a carefully chosen set of slightly more robust parameters, the smallest regular optical size is more readable as are the other sizes ranging down form 14 pt to 8.

Each 8 pt master for width and weight can be defined similarly.

The formula for each instance in the font can be found in the ParametricRoundup file at [link to final file, current at: github.com/TypeNetwork/Parama-roundup/tree/master/export].

opsz 144 @144pt

A B C D E F G H I J K L

opsz 14 @14pt

A B C D E F G H I J K L M N O P Q R S T U V  
W X Y Z & a b c d e f g h i j k l m n o p q r s t  
u v w x y z 0 1 2 3 4 5 6 7 8 9 . , ; : ! ? ( ) [ ]  
{ } / | \ # \$ % @ ' " \* ~ ^ \_ ` = + < > -

opsz 14 @72pt

Alpine

XOPQ 94, XTRA 359, YOPQ 78, YTLC 514

Alpine

XOPQ 100, XTRA 359, YOPQ 78, YTLC 514

Alpine

XOPQ 100, XTRA 381, YOPQ 78, YTLC 514

Alpine

XOPQ 100, XTRA 381, YOPQ 84, YTLC 514

Alpine

XOPQ 100, XTRA 381, YOPQ 84, YTLC 532

opsz 8 @72pt

Alpine

XOPQ 100, XTRA 381, YOPQ 84, YTLC 532

opsz 8 @8pt

A B C D E F G H  
I J K L M N O P  
Q R S T U V W X  
Y Z & a b c d e f  
g h i j k l m n o  
p q r s t u v w x  
y z 0 1 2 3 4 5 6

Captions can add a lot to reading as they can tie text matter to one or more of the many other forms of media. Many practical uses

opsz 8 @8pt

A B C D E F G H I  
J K L M N O P Q  
R S T U V W X Y  
Z & a b c d e f g h  
i j k l m n o p q r  
s t u v w x y z 0 1  
2 3 4 5 6 7 8

Captions can add a lot to reading as they can tie text matter to one or more of the nany other forms of media. Many practical uses of this can be

opsz 8 @8pt

A B C D E F G H I J  
K L M N O P Q R S  
T U V W X Y Z & a  
b c d e f g h i j k l  
m n o p q r s t u v  
w x y z 0 1 2 3 4 5  
6 7 8 9 . , ; : ! ? ( )

Captions can add a lot to reading as they can tie text matter to one or more of the many other forms of media. Many practical uses of this can be found.

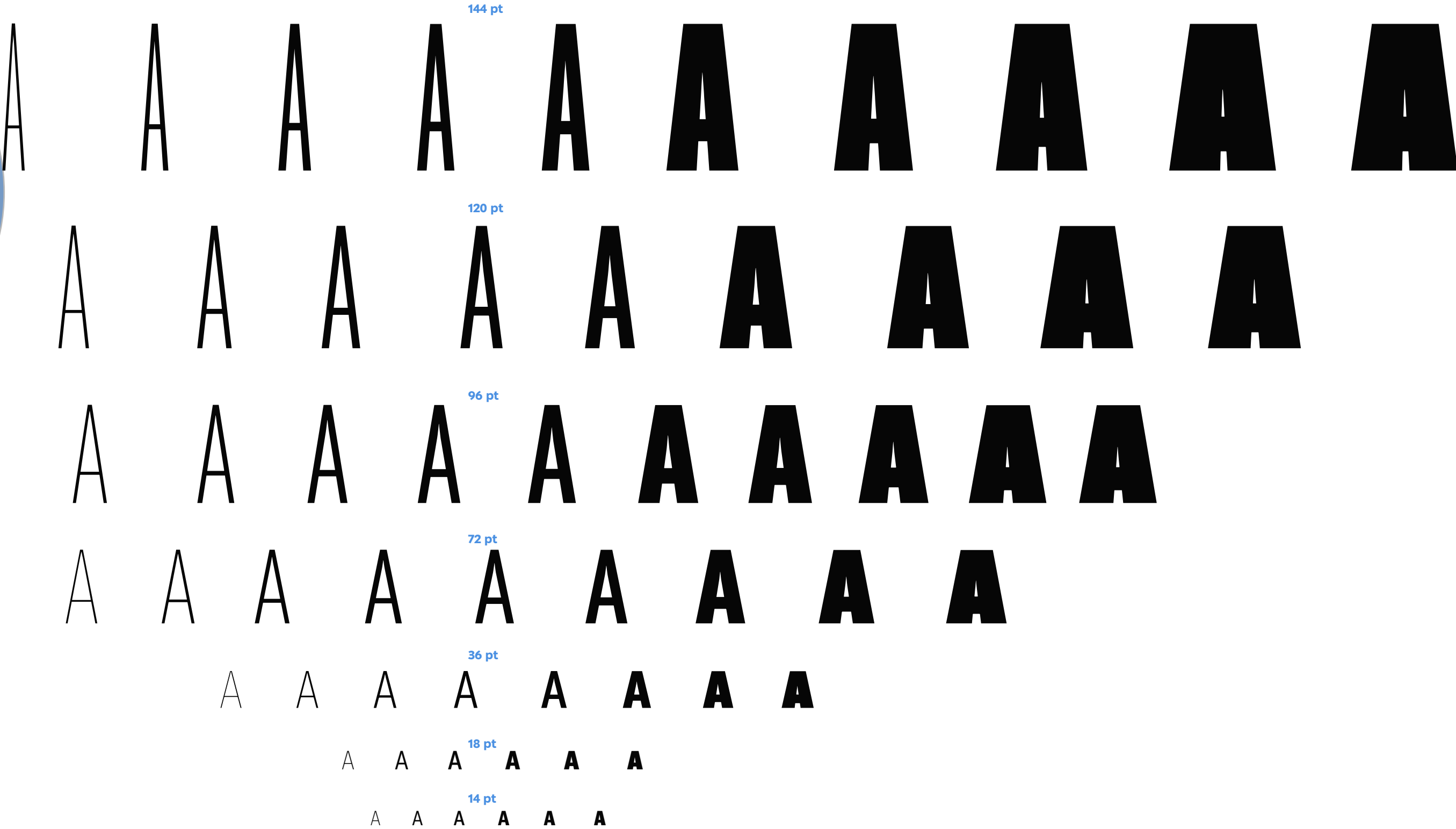
opsz 8 @8pt

A B C D E F G H  
I J K L M N O P  
Q R S T U V W  
X Y Z & a b c d  
e f g h i j k l m n  
o p q r s t u v w  
x y z 0 1 2 3 4 5

Captions can add a lot to reading as they can tie text matter to one or more of the many other forms of media. Many practical uses

AXES IN Beta VF  
Transparently available  
size-safe styles

The design brief began with envisioning a design space where the quality of every instance was as good as the default, and that the user would be able to use all the styles in the space safely, with the knowledge that regardless of their choice of width weight or other instances along other axes, the style would work at the chosen size, if the same optical size was also used. While the type designer cannot help if the user overlaps styles or uses black type on a dark blue background, the casual user having the ability to safely select weights and widths befitting their topic matter, template, and scale and to customize compositions with such selections, can produce a much improved typographic result.



AXES IN Beta VF Editorial  
Scaleability

The combination of optical size and fluid weight and widths (left), allow the composition to “collapse” editorially from a full hierarchy of fonts helping the reader navigate from complete textual content, down to a single line of information, for a link or ad e.g. without completely losing a typographic identity in the process.

The right side shows the need to make adjustments, if possible, including changes to style, size and tracking, when using a non-variable version of the same font. Below shows the editorial content collapsing in stages.

EXTREMO

144pt 200 wght 70 wdth

REFRESHER

36pt 250 wght 90 wdth

REFRESHER BUILDS PEOPLE-TALKING SOFTWARE TO YOU

18pt 400 wght 100 wdth

Networked landscapes with operational tone of voice in multiple-platform type is not a thing of the past.

13pt 400 wght 100 wdth

Two ideas altered the design of the printing press radically: First, the use of steam power for running the machinery, and second the replacement of the printing flatbed with the rotary motion of cylinders. Both elements were first successfully implemented by the German printer Friedrich Koenig in a series of press designs devised between 1802 and 1818, with assistance from engineer Andreas Friedrich Bauer.\* Koenig and Bauer sold two of their first models to The Times in London in 1814, capable of 1,100 impressions per hour. The first edition so printed was on 28 November 1814.

9 pt 400 wght 100 wdth

\* Not valid engineering in Connecticut, California, Massachusetts, Minnesota, Mississippi, New Hampshire, North Carolina, Pennsylvania, Tennessee, Washington, West Virginia or American Samoa. Pending in Idaho, Iowa, Texas, Ohio and Maine.

36 pt 200 wght 70 wdth

REFRESHER BUILDS SOFTWARE

16 pt 400 wght 100 wdth

Networked landscapes with operational tone of voice in multiple-platform type is not a thing of the past.

13 pt 400 wght 100 wdth

Two ideas altered the design of the printing press radically: First, the use of steam power for running the machinery, and second the replacement of the printing flatbed with the rotary motion of cylinders.

24 pt 200 wght 70 wdth

REFRESHER BUILDS SOFTWARE

13 pt 400 wght 100 wdth

Two ideas altered the design of the printing press radically: First, the use of steam power for running the machinery, and second the replacement of the printing flatbed with the rotary motion of cylinders.

13 pt 400 wght 100 wdth  
13 pt 200 wght 70 wdth

Two ideas make talking software with REFRESHER, well you know...

ROBOTO “Classic”

144 pt Roboto Thin

REFR

36 pt Roboto Light  
Tracked a lot

REFRESHER BUILDS PEOPLE-TALKING SOFTWARE TO YOU

18 pt Roboto Regular  
Tracked quite a bit

Networked landscapes with operational tone of voice in multiple-platform type is not a thing of the past.

13 pt Roboto Regular

Two ideas altered the design of the printing press radically: First of steam power for running the machinery, and second the repl of the printing flatbed with the rotary motion of cylinders. Both were first successfully implemented by the German printer Frie Koenig in a series of press designs devised between 1802 and assistance from engineer Andreas Friedrich Bauer.\* Koenig and sold two of their first models to The Times in London in 1814, c 1,100 impressions per hour. The first edition so printed was on November 1814.

9 pt Roboto Regular

\* Not valid engineering in Connecticut, California, Massachusetts, Minnesota, Mississippi, N North Carolina, Pennsylvania, Tennessee, Washington, West Virginia or American Samoa. P Iowa, Texas, Ohio and Maine.

36 pt Roboto Thin

REFRESHER BUILDS SOFTWARE

16 pt Roboto Regular

Networked landscapes with operational tone of voice in multiple-platform type is not a thing of the past.

13 pt Roboto Regular

Two ideas altered the design of the printing press radically: First of steam power for running the machinery, and second the repl of the printing flatbed with the rotary motion of cylinders.

24 pt Roboto Light

REFRESHER BUILDS SOFTWARE

13 pt Roboto Regular

Two ideas altered the design of the printing press radically: First of steam power for running the machinery, and second the repl of the printing flatbed with the rotary motion of cylinders.

13 pt Roboto Regular  
13 pt Roboto Light

Two ideas make talking software with REFRESHER, well you know...

AXES IN Beta VF Portal  
Scaleability

The combination of optical size and fluid weight and widths allows the composer of responsive typography to safely scale type from a series of sizes for one portal or page, to a series of larger or smaller sizes for another portal or page, without any style, spacing or other refinements. Larger sizes used at left scale more than smaller sizes with the optical size axis providing a smooth transition for the type from one portal size to another, the smaller shown at right.

144pt 200 wght 70 wdth

36 pt 250 wght 90 wdth

18pt 400 wght 100 wdth

13pt 400 wght 100 wdth

9.5 pt 400 wght 100 wdth

REFRESHER  
REFRESHER BUILDS PEOPLE-  
TALKING SOFTWARE TO YOU  
Networked landscapes with operational tone of voice  
in multiple-platform type is not a thing of the past.

Two ideas altered the design of the printing press radically: First, the use of steam power for running the machinery, and second the replacement of the printing flatbed with the rotary motion of cylinders. Both elements were first successfully implemented by the German printer Friedrich Koenig in a series of press designs devised between 1802 and 1818, with assistance from engineer Andreas Friedrich Bauer.\* Koenig and Bauer sold two of their first models to The Times in London in 1814, capable of 1,100 impressions per hour. The first edition so printed was on 28 November 1814.

\* Not valid engineering in Connecticut, California, Massachusetts, Minnesota, Mississippi, New Hampshire, North Carolina, Pennsylvania, Tennessee, Washington, West Virginia or American Samoa. Pending in Idaho, Iowa, Texas, Ohio and Maine. ,

57 pt 200 wght 70 wdth

21 pt 250 wght 90 wdth

14pt 400 wght 100 wdth

11pt 400 wght 100 wdth

8 pt 400 wght 100 wdth

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AXES IN Beta VF Tabular  
Figures Introduction

Tabular figures, (the numerals of a font style and sometimes other glyphs on the same width), are common in fonts today and are the default in Roboto Extremo. This feature allows composition of figures in columns, making it easier for the reader to locate and read values more easily.

Font families with multiple weights, usually have tabular figures that share the same width, giving the composer the ability to remove and add emphasis to individual values, or whole columns or rows of values. Most tabular composition is done in smaller size use, rather than in headlines, as the spacing of zero and 1 on the same width leaves the visual impression at large sizes, that there is too much space between some figures, and not enough between others.

Variable fonts can bring the issue of tabular figures into new opportunities, but also can present challenges in variable fonts with broad ranges of optical size, weight and width. What tabular width should be defined for the weight axis of each optical size? Can that same width be shared over an entire range of sizes and all their weights? What tabular width should be defined for the all the weights of each width in the width axis of each optical size?

In Roboto Extremo the user can find matching widths of figures where they are needed most.

opsz 14 @42

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

opsz 24 @24 200, 400, 600 overlay

2048	192	94	192
2048	192	94	192
2048	192	94	192
2048	54	27	545
2048	350	77	350
2049	192	94	192
2048	192	94	192
2048	192	94	192

opsz 14 @42

01 01

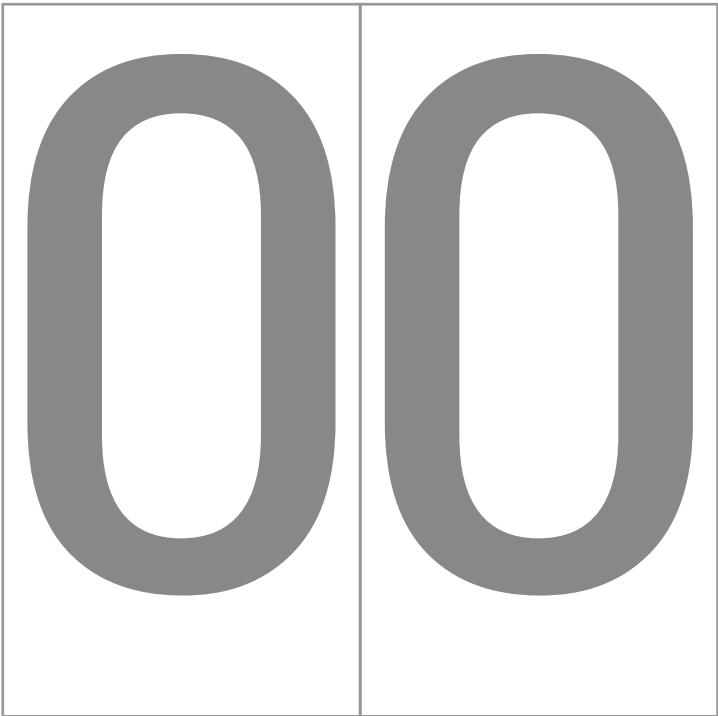
opsz 14 @42

01 01

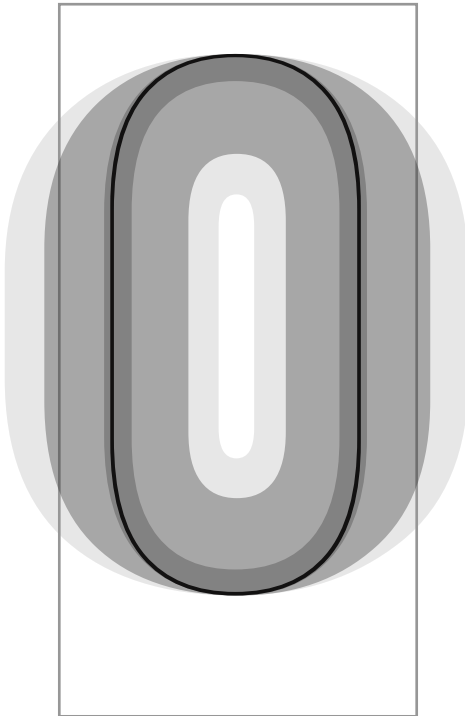
opsz 14 @42

01 01

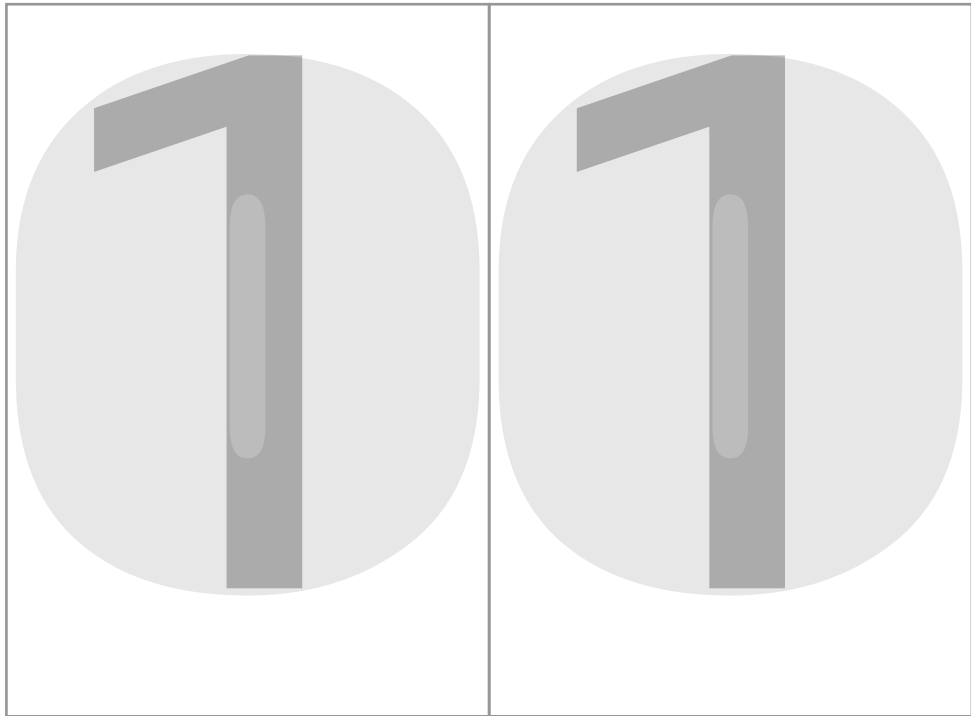
opsz 144 wght 500 width 100 @278 pt



opsz 144 wght 100 to 900



opsz 144 backgroun "0" wght 900 width 100, wght 500 "1" overlaid



AXES IN Beta VF  
Tabular figures 8 pt

In Roboto Extremo the user can find matching widths of figures In all the widths and weights of optical size 8. Each width has all matching tabular figures of all the weights.

opsz 8 @42

wdth 25

wght 900

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

wdth 100

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

wdth 150

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

wght 400

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

wght 100

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

AXES IN Beta VF  
Tabular figures 14 pt

In the 14 point the default optical size, all of the widths have matching tabular figures for all weights. This, along with the same situation in the minimum optical size, (opsz 8), make all the the tabular figures from 8-14 match across all the widths of each optical size.

wght 900      width 25

**0123456789**  
**1234567890**  
**2345678901**  
**3456789012**  
**4567890123**

width 100

**0123456789**  
**1234567890**  
**2345678901**  
**3456789012**  
**4567890123**

width 150

**0123456789**  
**1234567890**  
**2345678901**  
**3456789012**  
**4567890123**

wght 400

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

opsz 14 @42

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

wght 100

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

AXES IN Beta VF  
Tabular figures 24 pt

At 24 point, figures above wght 700 are not tabular as the style range of both weight and width begin to serve the uses of display type. But from wght 100 to 700 and for all widths, the figures remain tabular.

opsz 24 @42  
width 25  
wght 700  
0123456789  
1234567890  
2345678901  
3456789012  
4567890123

width 100  
0123456789  
1234567890  
2345678901  
3456789012  
4567890123

width 150  
0123456789  
1234567890  
2345678901  
3456789012  
4567890123

wght 400  
0123456789  
1234567890  
2345678901  
3456789012  
4567890123

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

wght 100  
0123456789  
1234567890  
2345678901  
3456789012  
4567890123

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

0123456789  
1234567890  
2345678901  
3456789012  
4567890123



AXES IN Beta VF  
Tabular figures 36 pt

At 36 point the figures above wght 700 are, like the 24 point, not tabular. The tabular width is properly narrower, and with the style range of both weight and width bolder, lighter, wider and more condensed than 24 point the figures on the fringe of 36 point are stressed, but functional tabular figures.

All the figures from 100 to 700 wght and from 36 pt to 144 pt are also tabular at each size in that range for all the weights and widths.

opsz 36 @42

width 25

wght 700

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

width 100

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

width 150

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

wght 400

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

wght 100

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

0123456789  
1234567890  
2345678901  
3456789012  
4567890123



AXES IN Beta VF  
Tabular figures 144 pt

The 144 point optical size is designed for users seeking large impactful numbers, and tabular versions of those are secondary. The extreme range of the weights and widths make for very small segments of tabular figures, in the bolder and condensed areas of the 144 pt design space. The light and wide range, i.e. 100 to 400 wght and 100 to 150 wdth, remain tabular.

opsz 144 @42

width 25

wght 700  
wght 900

0123456789789  
1234567890890  
2345678901901  
3456789012012  
4567890123123

width 100

01234567899  
12345678900  
23456789011  
34567890122  
45678901233

width 150

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

wght 400

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

wght 100

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

AXES IN Beta VF  
Tabular Figure Finding

While 144 point has no documented tabular figures, within the combination of weight and width at opsz 144, the user can find tabular figures for any weight or width they choose, from among the weights and widths of 144 point.

In the left column, e.g. the 360 wght, 35 wdth has tabular figures that match at 453 wght, 25 wdth, for bolder tabular figures, and the 100 wght, 46 wdth is a lighter set of matching tabular figures.

opsz 144 @42

wght 453 wdth 25

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

wght 610 wdth 42

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

wght 688 wdth 73

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

wght 770 wdth 122

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

wght 360 wdth 35

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

wght 373 wdth 77

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

wght 400 wdth 100

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

wght 400 wdth 151

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

wght 100 wdth 46

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

wght 100 wdth 80

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

wght 100 wdth 108

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

wght 100 wdth 151

0123456789  
1234567890  
2345678901  
3456789012  
4567890123

AXES IN Beta VF single  
parametric axes use

Parametric axes may be used individually to refine type manually or automatically. The example illustrates the programmatic use of one parametric axis, XTRA, in conjunction with two composition parameters, (letterspacing and word spacing), to smooth out the text justification of a column. At different sizes, the program makes different decisions about the ranges of the parameters to favor lettershape preservation at large sizes, and letterspace preservation at smaller sizes.

Justificaiton via wordspacing alone

YOPQ 50; CW 40; LH 1.18

I remembered the case well, for it was one in which Holmes had taken an interest on account of the peculiar ferocity of the crime and the wanton brutality which had marked all the actions of the assassin. The commutation of his death sentence had been due to some doubts as to his complete sanity, so atrocious was his conduct. Our wagonette had topped a rise and in front of us rose the huge expanse of the moor, mottled with gnarled and craggy cairns and tors. A cold wind swept down from it and set us shivering. Somewhere there, on that desolate plain, was lurking this fiendish man, hiding in a burrow like a wild beast, his heart full of malignancy against the whole race which had cast him out. It needed but this to complete the grim suggestiveness of the barren waste, the chilling wind, and the darkling sky. Even Baskerville fell silent and pulled his overcoat more closely around him.

ws 91  
ws 158  
ws 36  
ws 42  
ws 693  
ws 361  
ws 594  
ws 553  
ws 122  
ws 63  
ws 77  
ws 204  
ws 274  
ws 229  
ws 85  
ws 399  
ws 82  
ws 38  
ws 361  
ws 292  
ws 789

Justificaiton via word space, letterspace and XTRA

YOPQ 50; CW 42; LH 1.18

I remembered the case well, for it was one in which Holmes had taken an interest on account of the peculiar ferocity of the crime and the wanton brutality which had marked all the actions of the assassin. The commutation of his death sentence had been due to some doubts as to his complete sanity, so atrocious was his conduct. Our wagonette had topped a rise and in front of us rose the huge expanse of the moor, mottled with gnarled and craggy cairns and tors. A cold wind swept down from it and set us shivering. Somewhere there, on that desolate plain, was lurking this fiendish man, hiding in a burrow like a wild beast, his heart full of malignancy against the whole race which had cast him out. It needed but this to complete the grim suggestiveness of the barren waste, the chilling wind, and the darkling sky. Even Baskerville fell silent and pulled his overcoat more closely around him.

xtra 346 ws 0 ls 0  
xtra 385 ls 39 ws -3  
xtra 365 ws 0 ls 1  
xtra 365 ws 0 ls 0  
xtra 385 ls 50 ws 283  
xtra 385 ls 28 ws -4  
xtra 351 ws 0 ls 0  
xtra 385 ls 9 ws 6  
xtra 368 ws 0 ls 0  
xtra 385 ls 46 ws -3  
xtra 363 ws 0 ls 1  
xtra 346 ws 0 ls 0  
xtra 385 ls 36 ws -4  
xtra 385 ls 31 ws -4  
xtra 346 ws 0 ls 0  
xtra 385 ls 5 ws -3  
xtra 377 ws 0 ls 1  
xtra 363 ws 0 ls 0  
xtra 368 ws 0 ls 1  
xtra 368 ws 0 ls 1

AXES IN Beta VF  
parametric custom ID

Users can customize Roboto Extremo to a “regular” anywhere in the designspace, here shown step-by-step from Roboto to a wider “—Custom Regular”, parameter by parameter in five steps, ending with a taller lowercase height for a more modern look.

From there, the typographer/use can employ the weight axis to define a “—Custom Bold”. The optical size axis (opsz), can also be used to define versions for small uses and small bold use.

CSS Custom Properties can then be defined so the user can reference those design space locations easily, with names like “—Regular”, “—Small Regular” or any names they wish.

The bottom samples show the original Robot and Bold, Custom Small and Custom Samll Bold and the Custom 60 pt deign at small size.

--Roboto Regular

HanSeatic Furniture

--Custom Regular width +13.5%

HanSeatic Furniture

--Custom Regular width +13.5% XTRA +74

HanSeatic Furniture

--Custom Regular width +13.5% XTRA +74 XOPQ +23

HanSeatic Furniture

--Custom Regular 60 pt width +13.5% XTRA +74 XOPQ +23 YOPQ +27

HanSeatic Furniture

--Custom Bold 60 pt wght 525

HanSeatic Furniture

--Small opsz 12

HanSeatic Furniture

--Small Bold wght 600

HanSeatic Furniture

Roboto Regular & Bold opsz 12 @12 pt

**HanSeatic** Furniture comes from the finest materials, designers and manufacturers, bringing you the look and feel of the north without the cold.

--Custom Small, Regular and Bold

**HanSeatic Furniture** comes from the finest materials, designers and manufacturers, bringing you the look and feel of the north without the cold.

-- Custom Regular, opsz 60 @12 pt

**HanSeatic** Furniture comes from the finest materials, designers and manufacturers, bringing you the look and feel of the north without the cold.



AXES IN Beta VF  
Parametric step-by-step  
to another of the world’s  
scripts: Arabic

The OpenType font standard contains only alignment values for Latin and similar scripts, like the uppercase and lowercase heights. Other scripts in the same font are typically aligned, and assigned weights and widths as well as possible in the same font, to appear similar to the Latin. Given separate, interoperable alignment values, the scripts within a font can adjust to the reader’s preference of scripts within that font for a better composition and reading experience.

There is also the issue of matching fallback fonts when a script is not available in a font. Here the composer with a Latin font that has parametric flexibility, can adjust that font to another script’s parameters to produce harmonious typography.

This harmonization may start with deciding that for body type, the Arabic should be used at a larger size than Latin or other similar alphabets.

شكها	14
شكها	24
شكها	48

opsz 14 @72

شكها Hhpx

opsz 48 @72

شكها Hhpx

opsz 48 @72 XTRA 382

شكها Hhpx

opsz 48 @72 XTRA 382 YTLC 430

شكها Hhpx

opsz 48 @72 XTRA 382 YTLC 430 YTUC 644

شكها Hhpx

opsz 48 @72 XTRA 382 YTLC 430 YTUC 644 YTAS 677

شكها Hhpx

opsz 48 @72 XTRA 382 YTLC 430 YTUC 644 YTAS 677 YOPQ 58

شكها Hhpx

opsz 14 @24

Rememberance كلما تغيرت الأشياء كلما بدا شكلها  
مختلفاً. الشيء المهم هو أن تبقي عينيك مفتوحة.  
— James Maydon 1806

Rememberance كلما تغيرت الأشياء كلما بدا شكلها  
مختلفاً. الشيء المهم هو أن تبقي عينيك مفتوحة.t.  
— James Maydon 1806

Rememberance كلما تغيرت الأشياء كلما بدا شكلها  
مختلفاً. الشيء المهم هو أن تبقي عينيك مفتوحة.t.  
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— James Maydon 1806



AXES IN Beta VF Editorial  
Scaleability

The combination of optical size and fluid weight and widths (left), allow the composition to “collapse” editorially from a full hierarchy of fonts helping the reader navigate from complete textual content, down to a single line of information, for a link or ad e.g. without completely losing a typographic identity in the process.

The right side shows the need to make adjustments, if possible, including changes to style, size and tracking, when using a non-variable version of the same font. Below shows the editorial content collapsing in stages.

EXTREMO wght 750

width 46

width 60

width 90

width 25

PLANT CROSSING  
EYE OF STORM OVER DOVER  
Mansfield and Goodwin Builders  
Files Depicted Pattern of Plain Stipulation  
ORION MANUFACTURING & SUPPLY CORPORATION  
Classic comedy involving an all-star cast of characters frolicking in Rome  
Having been east, west and north, he boarded a southbound train that had a sign for Ypes  
NORTHWESTERLY WINDS THIS EVENING UNTIL MORNING AT 10 - 20 MPH WITH GUSTS UP TO 35 MPH  
Valid in all Connecticut, California, Massachusetts, Minnesota, New Hampshire, Tennessee, Washington, West Virginia or  
American Samoa, and Pending in Puerto Rico, Idaho, Iowa, Texas, Ohio & Maine counties that begin and end with a vowel.  
OPERA SINGER FALL FROM STAGE AT EDGE OF CONTINENTAL DIVIDE AND LANDS IN BUSY BAY WHERE RESEARCHERS ARE BAITING SHARKS  
Crammming for exams made some students turn to massive inhalations of sugar, coffee and a kind of quickly-made sandwiches called “sliders”  
A ZOOLOGICAL RESEARCH POST IN THE ALTAI MOUNTAINS BETWEEN A FROZEN STREAM AND A PARTY  
Glad to see them, we threw out bats and mitts in the car and drove off  
EACH PEDAL BRIMMING WITH SWEET NECTAR  
Planets offer rarest view from Venus  
FIRE SAFETY TEST AT 11:00  
PLIANT FUR

AXES IN Beta VF Width

The combination of optical size and fluid weight and widths (left), allow the composition to “collapse” editorially from a full hierarchy of fonts helping the reader navigate from complete textual content, down to a single line of information, for a link or ad e.g. without completely losing a typographic identity in the process.

The right side shows the need to make adjustments, if possible, including changes to style, size and tracking, when using a non-variable version of the same font. Below shows the editorial content collapsing in stages.

EXTREMO  
wght 750

**BASIC Functions**

**BASIC Functions**

**BASIC Functions**

**BASIC Functions**

**BASIC Functions**

**BASIC Functions**

**BASIC Functions**

**BASIC Functions**

**BASIC Functions**

EXTREMO  
wght 750

**BASIC Functions**

**BASIC Functions**

**BASIC Functions**

**BASIC Functions**

**BASIC Functions**

**BASIC Functions**

**BASIC Functions**

**BASIC Functions**

**BASIC Functions**

AXES IN Beta VF Editorial  
Scaleability

The combination of optical size and fluid weight and widths (left), allow the composition to “collapse” editorially from a full hierarchy of fonts helping the reader navigate from complete textual content, down to a single line of information, for a link or ad e.g. without completely losing a typographic identity in the process.

The right side shows the need to make adjustments, if possible, including changes to style, size and tracking, when using a non-variable version of the same font. Below shows the editorial content collapsing in stages.

EXTREMO  
wght 750

BASIC Functions

BASIC Functions

BASIC Functions

BASIC Functions

BASIC Functions

BASIC Functions

BASIC Functions

BASIC Functions

BASIC Functions

EXTREMO  
wght 750

BASIC Functions

BASIC Functions

BASIC Functions

BASIC Functions

BASIC Functions

BASIC Functions

BASIC Functions

BASIC Functions

BASIC Functions

## AXES IN Beta VF Editorial Scaleability

The combination of optical size and fluid weight and widths (left), allow the composition to “collapse” editorially from a full hierarchy of fonts helping the reader navigate from complete textual content, down to a single line of information, for a link or ad e.g. without completely losing a typographic identity in the process.

The right side shows the need to make adjustments, if possible, including changes to style, size and tracking, when using a non-variable version of the same font. Below shows the editorial content collapsing in stages.

**EXTREMO**  
wght 750

[illegible]

**EXTREMO**  
wght 750

[illegible]



AXES IN Beta VF Editorial  
Scaleability

EXTREMO  
wght 750

The combination of optical size and fluid weight and widths (left), allow the composition to “collapse” editorially from a full hierarchy of fonts helping the reader navigate from complete textual content, down to a single line of information, for a link or ad e.g. without completely losing a typographic identity in the process.

The right side shows the need to make adjustments, if possible, including changes to style, size and tracking, when using a non-variable version of the same font. Below shows the editorial content collapsing in stages.

012345678901234567890123456789012345678901234567890123456789012345678901  
234567890123456789012345678901234567890123456789012345678901234567890123  
**45678901**2345678901234567890123456789012345678901234567890123456789012345  
6**78901****23**4567890123456789012345678901234567890123456789012345678901234567  
**8901**23**456**789012345678901234567890123456789012345678901234567890123456789  
**01****23**456**78**901234567890123456789012345678901234567890123456789012345678901  
**23**45678**901**23456789012345678901234567890123456789012345678901234567890123  
**456**7890**1****23**45678901234567890123456789012345678901234567890123456789012345  
6**78901****23**4567890123456789012345678901234567890123456789012345678901234567  
**8901****23**456789012345678901234567890123456789012345678901234567890123456789  
**01****23**45**6**78901234567890123456789012345678901234567890123456789012345678901  
**23**4567**8901**23456789012345678901234567890123456789012345678901234567890123  
**456**7890**1****23**45678901234567890123456789012345678901234567890123456789012345  
6**78901****23**4567890123456789012345678901234567890123456789012345678901234567  
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