













2.14.3 Clefs

Macros that define clefs have already been discussed in section 2.1.3. By way of review, here are all of the possible clefs (applied to the lowest staff):

<code>\setclef1\treble</code> <code>\setclef10</code> 	<code>\setclef11</code> 	<code>\setclef12</code> 	<code>\setclef1\alto</code> <code>\setclef13</code> 	<code>\setclef14</code> 
<code>\setclef15</code> 	<code>\setclef1\bass</code> <code>\setclef16</code> 	<code>\setclef17</code> 	<code>\setclefsymbol1\empty</code> ¹⁹ <code>\setclef18</code> 	<code>\setclef19</code> 

Just as with key signatures, these commands only *prepare* for clef changes. To *activate* them, any of the first 11 commands listed in section 2.14.1 could be used. However, one should keep in mind that according to modern conventions, a clef change at a bar line is posted before the bar line, while for example `\changecontext` would post it after the bar line. In part for this reason, we have the special command `\changeClefs`. It can be used anywhere outside `\notes... \enotes` to activate a clef change and insert an amount of horizontal space to accommodate the new clef symbol(s), without printing a bar line. Sometimes no added space is required, in which case `\zchangeClefs` should be used.

Here are some examples of clef changes:

```

\instrumentnumber2\setstaves22%
\setclef1{\bass}\generalsignature2%
\startextract
% Change in one staff only, with added space
\setclef1\treble\changeClefs%
\Notes\qu k&\cu{.d}\ccu{e}|\qu e\en%
% Combined with signature change, also no extra space needed
\setclef1\bass\zchangeClefs\setsign1{-2}\setsign2{-2}%
\ignorenats\changesignature%
\Notes\qu K&\cu{de}|\qu e\en%
% Clef change before barline
\setclef1\treble\zchangeClefs\bar%
```

¹⁹Details of the macro `\setclefsymbol` will be discussed later

```

\Notes\qu k&\cu{de}|\qu e\en%
% Clef change after barline
\setclef1\bass\bar\changeClefs%
\Notes\qu K&\cu{de}|\qu e\en%
% clef change after barline with changecontext
\setclef1\treble\changecontext%
\Notes\qu k&\cu{de}|\qu e\en%

```

Of course the last two examples are contrary to accepted practice.

Clef changes initiated with the `\setclef` command have several features in common. When activated after the beginning of the piece, the printed symbol is smaller than the normal one used at the beginning of the piece. Also, MusiX_{TEX} automatically adjusts vertical positions of noteheads consistent with the new clef.

There is an additional group of macros for setting new clefs which does not share either of these features. In other words, they will always print full sized symbols, and they won't change the vertical positions of noteheads from what they would have been before the new symbol was printed. We could call this process "clef symbol substitution", because all it does is print a different symbol (or no symbol at all) in place of the underlying clef which was set in the normal way.

You'll need to use clef symbol substitution if you want to have a so-called octave treble clef or octave bass clef, i.e., one containing a numeral 8 above or below the normal symbol. The syntax for setting upper octavation is `\setbassclefsymbol{n}\bassoct` or `\settrebleclefsymbol{n}\trebleoct`; for lower octavation it is `\setbassclefsymbol{n}\basslowoct` or `\settrebleclefsymbol{n}\treblelowoct`. Because these sequences act to *replace* normal bass or treble clefs with a different symbol, they require that the normal clefs be set first. For example

```

\parindent 19mm
\instrumentnumber{4}
\generalmeter{\empty}
\setclef1\bass \setclef2\bass
\setclef3\treble \setclef4\treble
\setbassclefsymbol1\basslowoct
\setbassclefsymbol2\bassoct
\settrebleclefsymbol3\treblelowoct
\settrebleclefsymbol4\trebleoct
\startextract
\Notes\qu{' abcdefghi}&\qu{' abcdefghi}%
&\qu{abcdefghi}&\qu{abcdefghi}&\enotes
\endextract

```

Another application of clef symbol substitution is to cause no clef to be printed, as for example might be desired in percussion music. This can be accomplished with `\setclefsymbol{n}\empty`,

which once activated would replace *all* clef symbols in the first (lowest) staff of instrument n with blanks.

Normal symbols for those clefs that have been substituted can be restored by `\resetclefsymbols`.

The various clef symbol substitution commands can only be used to substitute for `treble`, `alto`, or `bass` clefs.

In the following example, (1) is two normal clef changes. At (2) the clef is first changed back to treble and then the `\treblelowoct` symbol is substituted by using `\settrebleclefsymbol`. When changing the clef away from treble and then back as at (3), the substitution symbol is still in force. At (4), `\resetclefsymbols` cancels the symbol substitution. If using `\setclefsymbol` all available clefs are changed to the same symbol, as you can see in the two clefs after (5) in comparison with (2). Obviously the second clef after (5) is nonsense; `\resetclefsymbols` puts matters in order at (6) and (7).



This is the code:

```
\begin{music}
\instrumentnumber1\setclef1\bass
\startpiece
\notes\zchar{-5}{1}\qu H\en\setclef1\treble\changeClefs
\notes\qu i\en\setclef1\bass\changeClefs\bar
\notes\zchar{-5}{2}\qu J\en
\setclef1\treble\settrebleclefsymbol1\treblelowoct\changeClefs
\notes\qu i\en\setclef1\bass\changeClefs\bar
\notes\zchar{-5}{3}\qu I\en\setclef1\treble\changeClefs
\notes\qu i\en\setclef1\bass\changeClefs\bar
\notes\zchar{-5}{4}\qu J\en\resetclefsymbols\setclef1\treble\changeClefs
\notes\qu i\en\setclef1\bass\changeClefs\doublebar
\notes\zchar{-5}{5}\qu J\en
\setclef1\treble\setclefsymbol1\treblelowoct\changeClefs
\notes\qu i\en\setclef1\bass\changeClefs\bar
\notes\zchar{-5}{6}\qu I\en\setclef1\treble\changeClefs
\notes\qu i\en\resetclefsymbols\setclef1\bass\changeClefs\bar
\notes\zchar{-5}{7}\qu J\en\setclef1\treble\changeClefs
\notes\qu i\en
\endpiece
```

2.14.4 Meter changes

As mentioned in section 2.1.3, a common *meter* for all staves can be specified by `\generalmeter{m}`, where m denotes the meter. On the other hand, meter changes in specific staves are implemented with `\setmeter{n}{m1}{m2}{m3}{m4}`, where n is the number of the instrument, $m1$ specifies the meter of the first (lowest) staff, $m2$ the second staff, and so forth. (Only enter as many m 's as necessary.)

Since meter changes are meaningful only across bars, there is no special command to activate a new meter; rather, they are activated with the general commands `\changecontext`, etc., listed in section 2.14.1.

The next example shows a few methods to get a meter change, in all staves or in a single staff.