

# CalendarPicker

## Developer Manual

GemsFX • com.dlsc.gemsfx • JavaFX Custom Controls



*CalendarPicker combines a text editor, a calendar trigger and a CalendarView popup.*

CalendarPicker is an editable CustomComboBox for selecting a LocalDate. Its popup is a CalendarView, so applications get direct month and year navigation, date filtering and the same cell styling hooks as the standalone calendar view.

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## 1. Introduction

**CalendarPicker** extends `CustomComboBox<LocalDate>`. It is a replacement-style date picker whose popup content is an actual `CalendarView`. The control is editable by default; typed text is parsed by the converter and the popup selection is bound to the picker value.

### 1.1 Key features

- Editable text field with a non-null `LocalDateStringConverter` by default.
- Popup calendar created by `getCalendarView()` and configurable before first use.
- Calendar popup defaults to showing today and a Today button.
- Keyboard day stepping: UP/DOWN in the editor, LEFT/RIGHT when not editable.
- Date filtering via `dateFilter`, passed through to the popup `CalendarView`.
- Button placement inherited from `CustomComboBox`.

### 1.2 Maven dependency

```
<dependency>
  <groupId>com.dlsc.gemsfx</groupId>
  <artifactId>gemsfx</artifactId>
  <version>4.4.1</version>
</dependency>
```

*CalendarPicker is in module `com.dlsc.gemsfx`, package `com.dlsc.gemsfx`.*

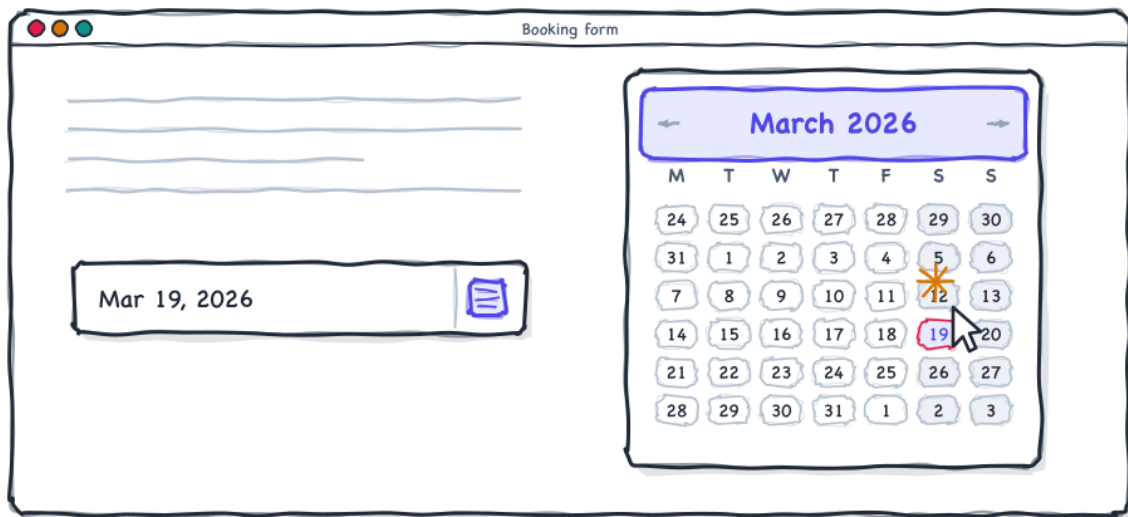
## 2. Getting started

Create the picker, set or bind its value and use the inherited `show()` and `hide()` methods when the popup must be controlled programmatically.

```
CalendarPicker picker = new CalendarPicker();
picker.setValue(LocalDate.now());
picker.setPromptText("Choose a date");

picker.valueProperty().addListener((obs, oldDate, newDate) -> {
    if (newDate != null) {
        System.out.println("selected " + picker.getConverter().toString(newDate));
    }
});
```

*A complete minimal CalendarPicker setup.*

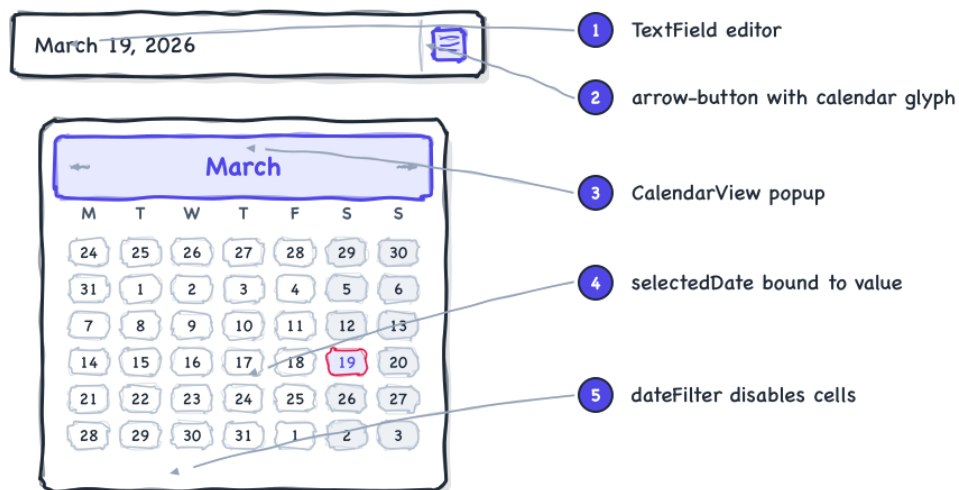


*A CalendarPicker in a small booking form.*

**Tip.** The constructor calls `setEditable(true)`. Setting `editable` to `false` keeps the field visible but prevents manual typing; `LEFT` and `RIGHT` then step by one day.

### 3. Anatomy

The skin places the editor and arrow button in an `HBox`. On first popup display it obtains the `CalendarView`, sets it to single-date mode and binds the selection model's selected date bidirectionally to the picker value.



*The parts of a CalendarPicker.*

| Part | Source         | Description                                                                                                         |
|------|----------------|---------------------------------------------------------------------------------------------------------------------|
| Root | CalendarPicker | Style classes <code>calendar-picker</code> and <code>text-input</code> ; accessible role <code>DATE_PICKER</code> . |

| Part            | Source                      | Description                                                                                    |
|-----------------|-----------------------------|------------------------------------------------------------------------------------------------|
| Editor          | TextField                   | Returned by <code>getEditor()</code> ; prompt text and editable state are bound to the picker. |
| Arrow button    | StackPane / Region          | Uses style classes <code>arrow-button</code> and <code>arrow</code> ; opens the popup.         |
| Popup           | CalendarView                | Returned by <code>getCalendarView()</code> ; shows today and the Today button by default.      |
| Selection model | CalendarView.SelectionModel | Forced to <code>SINGLE_DATE</code> and bound to <code>value</code> .                           |
| Filter          | Callback<LocalDate,Boolean> | The picker's <code>dateFilter</code> is bound into the popup view.                             |

## 4. Control API

### 4.1 Picker properties

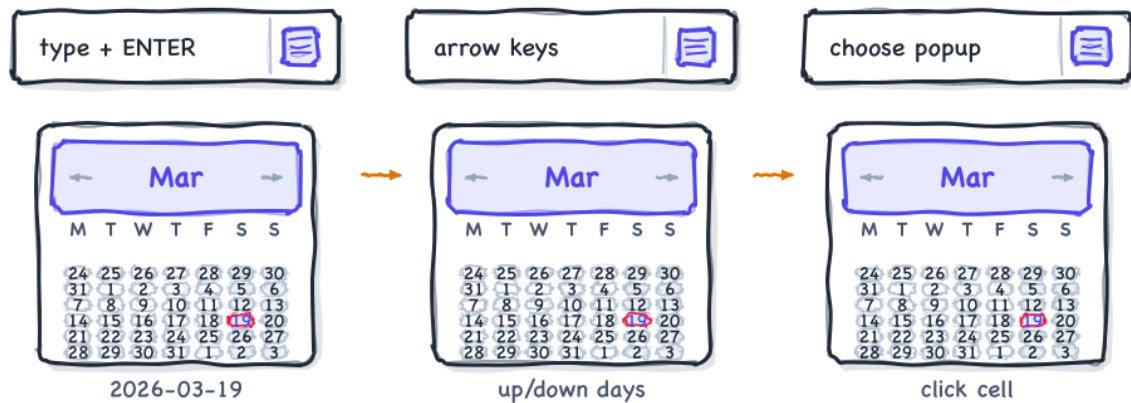
| Property                   | Type                                         | Default                  | Description                                                                                                 |
|----------------------------|----------------------------------------------|--------------------------|-------------------------------------------------------------------------------------------------------------|
| <code>value</code>         | ObjectProperty<LocalDate>                    | null                     | The selected date inherited from ComboBoxBase.                                                              |
| <code>editable</code>      | BooleanProperty                              | true                     | Controls whether the editor accepts typing.                                                                 |
| <code>promptText</code>    | StringProperty                               | null                     | Inherited prompt text; bound bidirectionally to the editor prompt.                                          |
| <code>converter</code>     | ObjectProperty<StringConverter<LocalDate>>   | LocalDateStringConverter | Parses and formats the editor text. Attempts to set it to null are rejected by restoring the old converter. |
| <code>dateFilter</code>    | ObjectProperty<Callback<LocalDate,Boolean>>  | null                     | Returns true for selectable dates and false for disabled dates in the popup.                                |
| <code>buttonDisplay</code> | ObjectProperty<CustomComboBox.ButtonDisplay> | RIGHT                    | Styleable inherited property: LEFT, RIGHT, BUTTON_ONLY or FIELD_ONLY.                                       |

### 4.2 CalendarView access

Override or call `getCalendarView()` to customize the popup calendar. The picker constructor already sets `showToday` and `showTodayButton` to true and binds the date filter.

```
CalendarPicker picker = new CalendarPicker();
picker.getCalendarView().setShowWeekNumbers(true);
picker.getCalendarView().setMonthDisplayMode(CalendarView.MonthDisplayMode.TEXT_AND_DROPDOWN);
picker.setDateFilter(date -> date.getDayOfWeek().getValue() < 6);
```

## 5. Editing and popup behaviour

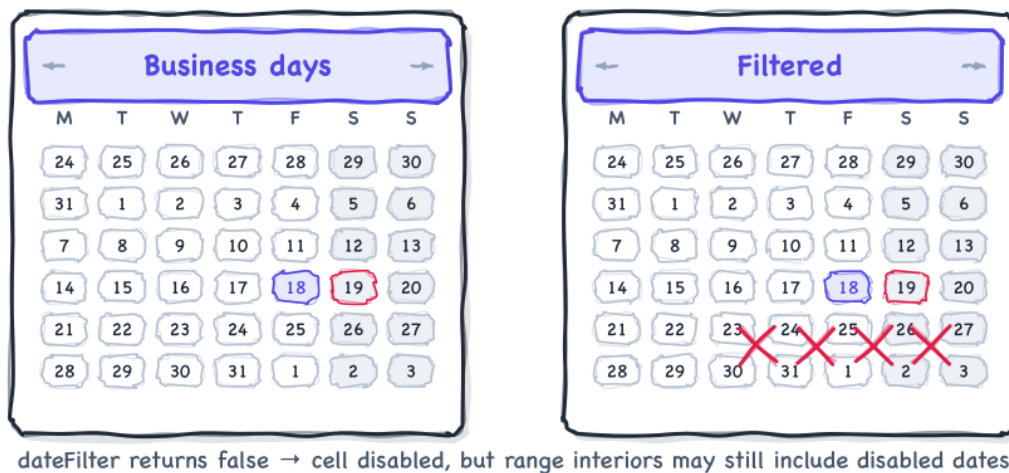


*The editor, keyboard stepping and popup selection all write the same value.*

| Action                          | Effect                                                       |
|---------------------------------|--------------------------------------------------------------|
| Press ENTER in editor           | Calls the converter and writes value.                        |
| Editor loses focus              | Commits the text.                                            |
| Touch press                     | Commits current text and shows the popup.                    |
| Select a date in popup          | Updates value and hides the popup.                           |
| UP / DOWN                       | Minus / plus one day, or today if the current value is null. |
| LEFT / RIGHT while not editable | Minus / plus one day.                                        |

## 6. Filtering dates

The filter is evaluated by CalendarView cells. If it returns false, the cell is disabled and cannot be used as the start or end point of a range selection. CalendarPicker itself uses single-date selection.



*A date filter disables cells in the popup calendar.*

```
picker.setDateFilter(date -> {
    boolean weekend = date.getDayOfWeek().getValue() >= 6;
    boolean holiday = holidays.contains(date);
    return !weekend && !holiday;
});
```

## 7. Styling

The user agent stylesheet is `calendar-picker.css`. CalendarPicker also inherits the styleable `-fx-button-display` property from CustomComboBox.

### 7.1 Style classes and pseudo classes

| Selector                                              | Meaning                                              |
|-------------------------------------------------------|------------------------------------------------------|
| <code>.calendar-picker</code>                         | Root control.                                        |
| <code>.text-input</code>                              | Additional root class set by the constructor.        |
| <code>&gt; .box</code>                                | HBox containing editor and arrow button.             |
| <code>&gt; .box &gt; .arrow-button</code>             | Popup trigger button.                                |
| <code>&gt; .box &gt; .arrow-button &gt; .arrow</code> | Calendar glyph region.                               |
| <code>&gt; .box &gt; .text-field</code>               | The editor.                                          |
| <code>:left, :right, :button-only, :field-only</code> | Button display states inherited from CustomComboBox. |
| <code>:focused</code>                                 | Mirrors editor focus.                                |

### 7.2 Styleable CSS properties

| CSS property                    | Type          | Default |
|---------------------------------|---------------|---------|
| <code>-fx-button-display</code> | ButtonDisplay | RIGHT   |

```
.calendar-picker {  
    -fx-button-display: left;  
}  
  
.calendar-picker > .box > .arrow-button > .arrow {  
    -fx-background-color: -fx-accent;  
}
```

*Moving and recolouring the calendar trigger.*

## 8. Accessibility

CalendarPicker sets `AccessibleRole.DATE_PICKER`. `AccessibilityUtil.bindAccessibleText` derives the accessible text from the current value and converter; a null value produces no automatic text. The binding yields once application code sets `accessibleText` manually.

## 9. Recipes

### 9.1 Disable weekends

```
picker.setDateFilter(date -> date.getDayOfWeek().getValue() < 6);
```

### 9.2 Use ISO text

```
picker.setConverter(new StringConverter<>() {  
    public String toString(LocalDate date) { return date == null ? "" : date.toString(); }  
    public LocalDate fromString(String text) { return text == null || text.isBlank() ? null  
        : LocalDate.parse(text); }  
});
```

### 9.3 Button only

```
picker.setButtonDisplay(CustomComboBox.ButtonDisplay.BUTTON_ONLY);
```

### 9.4 Customize the popup calendar

```
picker.getCalendarView().setShowWeekNumbers(true);  
picker.getCalendarView().setHeaderLayout(CalendarView.HeaderLayout.LEFT);
```

### 9.5 Checklist

- 1 Keep the converter non-null.
- 2 Prefer `dateFilter` over post-selection validation when dates are unavailable.
- 3 Customize `getCalendarView()` before the first popup is shown.
- 4 Set `buttonDisplay` from CSS when the choice is purely visual.



## 10. See also

- Demo application: `com.dlsc.gemsfx.demo.CalendarPickerApp` (run with `mvn javafx:run -f gemsfx-demo/pom.xml -Dmain.class=com.dlsc.gemsfx.demo.CalendarPickerApp`)
- Related controls: `CalendarView`, `DateRangePicker`, `YearMonthPicker`.
- API documentation: <https://dlsc-software-consulting-gmbh.github.io/GemsFX/api/>