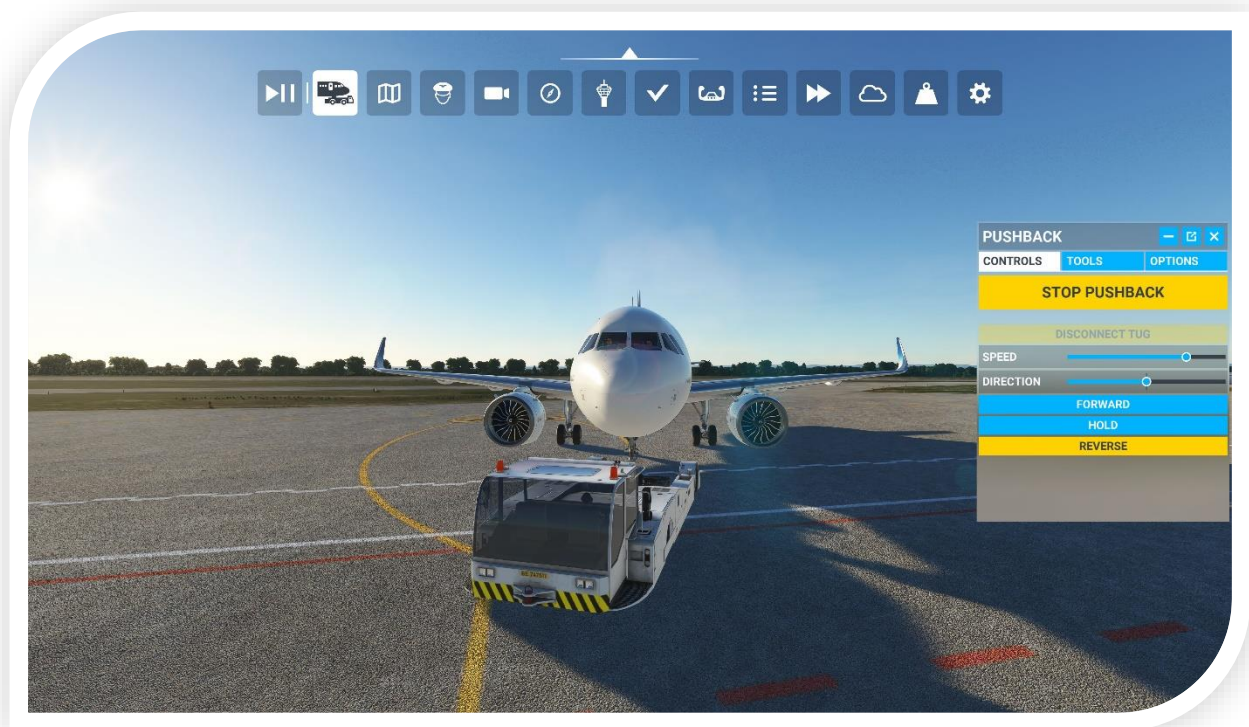# **Aerosoft** Toolbar Pushback Pro

for Microsoft Flight Simulator

USER MANUAL

*edition **March 2024***

Thank you for choosing Aerosoft Toolbar Pushback Pro!

Aerosoft **Toolbar Pushback Pro**, in this manual also called **"TPP"**,
is your pushback companion and one of the most valuable tools currently available for
Microsoft Flight Simulator on Windows and Xbox.

This manual will guide you through the installation and first steps with TPP,
and serves as guide providing information regarding features and operating procedures,
as well as extensibility and customization options.

For technical support, please head on over to https://helpdesk.aerosoft.com
or the Aerosoft forum https://forum.aerosoft.com

For questions about your order, please feel free to contact Aerosoft
customer service at https://www.aerosoft.com/en/contact

Table of Contents

Copyrights

Credits

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Project Management:	Raphael Jakob
Manual:	Andreas Güntert
Sounds:	William Lennox, Andreas Güntert, contributors
Testing:	Voluntary testing team

Installation

The installation steps below outline the two ways you can install Aerosoft Toolbar Pushback Pro. This depends on where you've acquired the tool. Please follow the steps accordingly.

Aerosoft One

When you have purchased TPP directly through the Aerosoft Shop, then Aerosoft One is the client used for installing and updating TPP as well as displaying related news and product information.
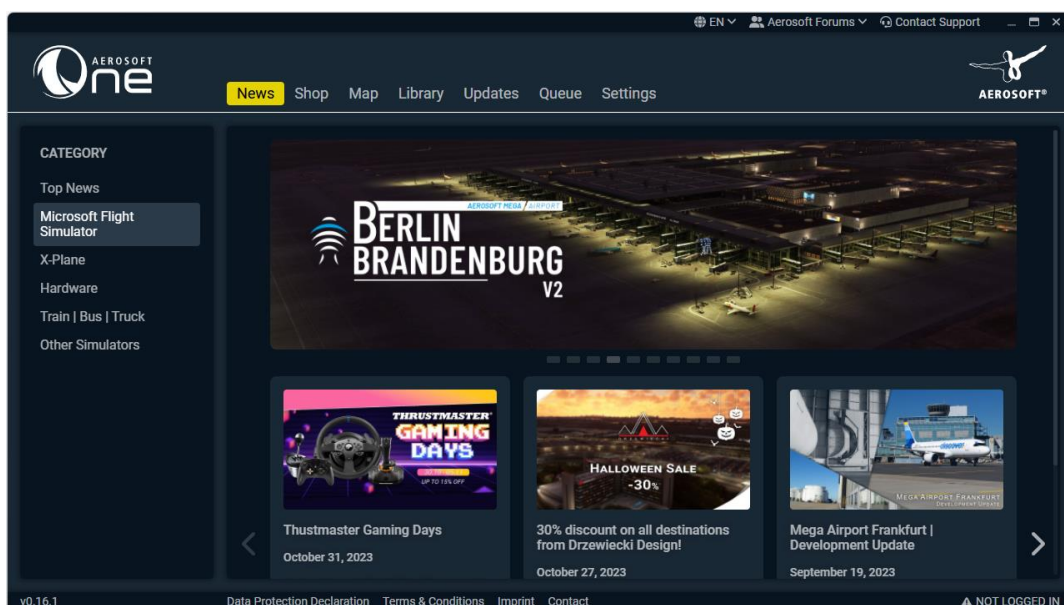
Aerosoft One Client

Aerosoft One is available as download on https://one.aerosoft.com/ .

Go ahead and install the client if you haven't done so yet. After starting Aerosoft One you will need to log into your Aerosoft account.

Open the "Library" tab which you'll find in the top center and select "Microsoft Flight Simulator" in the left pane. Then locate Aerosoft Toolbar Pushback Pro in the list of "Available Add-ons". Hit "Install" and follow the instructions on screen.

You will be notified in the "Updates" tab whenever an update of TPP becomes available.

Further information about Aerosoft One can be found in the corresponding User Guide or FAQs.

Microsoft Marketplace

You are likely already familiar with installing products purchased from the in-sim marketplace. With TPP it's the same simple procedure. After purchase, simply hit "Download" any time you'd like to install the tool. Don't forget to leave your rating :-)
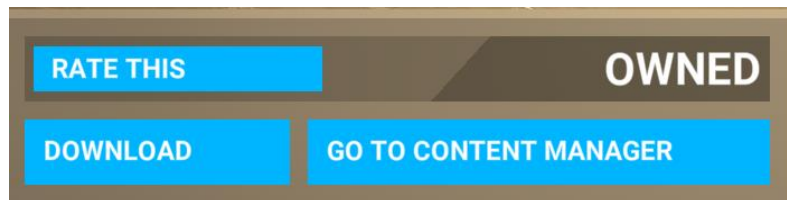
In-Sim Marketplace Download Option

When an update of TPP is available, you'll be notified in the notifications tab of Microsoft Flight Simulator next to your account name in the top right of the screen.
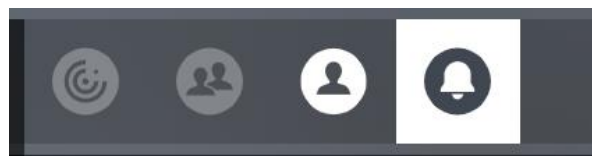
Notifications Tab in Microsoft Flight Simulator

Support and additional info about the Microsoft Flight Simulator Marketplace is available here: https://flightsimulator.zendesk.com/hc/en-us/sections/360004492360-Content-Manager-Marketplace-Troubleshooting-Support

Getting Started

The key concept of Aerosoft Toolbar Pushback Pro is its simplicity.

Designed for ease of use. You will be up and running in an instant, so let's get started by loading a flight on any airport you like parking at a gate of choice.

Opening the Tool in the Toolbar

Once loaded into the flight, open the toolbar and click on the "Pushback" icon as shown below:
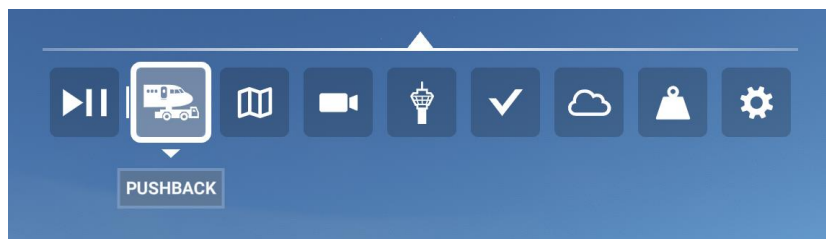
TPP icon in toolbar

What you see now is the user interface of TPP, further referred to as "panel":
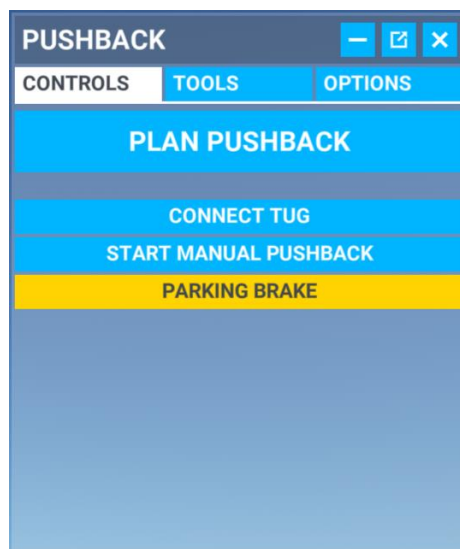
TPP User Interface (Panel)

Navigating the Panel

The panel is split into three parts: "Controls", "Tools" and "Options". The **controls tab** will always be the first that is shown when opening the panel and houses all pushback related actions.

Any buttons and sliders displayed vary depending on the state the pushback is in, such as planning phase, active pushback or post pushback. This ensures that only required input elements are shown keeping you in control of what matters in each phase.

Now open the **tools tab** and you'll be presented with buttons of available ground services for your currently loaded aircraft, as well as door controls and any custom defined action buttons (more about these in the extensibility and customization section).

Panel "Tools" Tab

Heading on to the **options tab** where you can adjust individual settings of TPP.
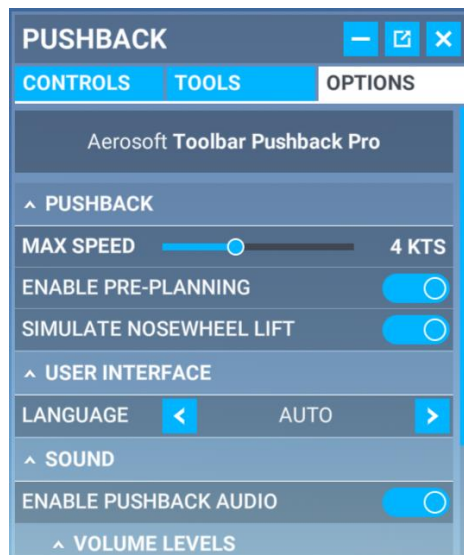
Panel "Options" Tab

See the options section in this manual if you want to learn more about the available options.

Planning your first Pushback

Go back to the controls tab and hit the "Plan Pushback" button:
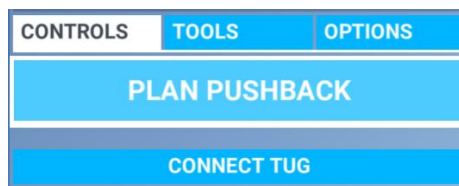
Plan Pushback Button

Pro Tip: At this point you can request connection of the tug whenever one is available in your vicinity. Whilst you're planning, the tug will be connected saving time later on.

Now a new panel has been opened, namely the "Pushback Planner" which you'll use to pre-plan your desired pushback route for the automated pushback:
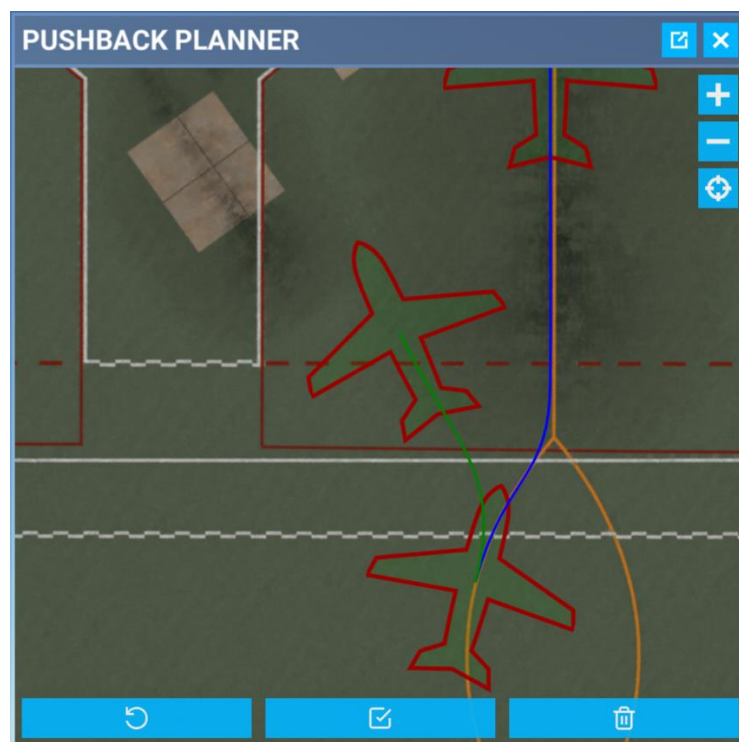
Pushback Planner Panel

The aircraft marker represents the position of your aircraft. **Move it around** by using your mouse or left stick on your controller. The first marker will stay in place indicating your starting position. To **place a waypoint**, click your left mouse button (LMB) or press A on your Xbox controller. Use the scroll wheel of your mouse to **change heading**. On controller press LT or RT respectively.

Pan the map around by clicking and holding LMB or press and hold A and use left stick on your controller. **Zoom in and out** by holding down the control key and scrolling the mouse wheel or on controller press and hold A, then pressing LT or RT.

The line color in between the waypoints tells you the direction of the pushback as well as its reachability. **Blue** represents "reverse", **green** "forward" and **red** designates an impossible to follow path, mainly caused by too steep angles.

Go ahead and set a couple of waypoints to reach your desired end position. Then press the checkmark button in the middle at the bottom of the panel to accept the plan. This will close the panel automatically for you.

Accept Plan Button

Sidenote: To **undo a waypoint** simply hit the curly arrow button on the left. Should you want to start off again, you can **discard any set waypoints** by hitting the bin button on the right, which will also re-center the map to your current aircraft position.

The TPP panel has adapted itself to the new situation since you have successfully planned your first pushback:

Updated TPP Panel Controls Tab

Congratulations! See how easy this was? And this works on all airports…

Controlling the Pushback

Now it's time to get moving.

Whenever a tug is available nearby, the "Connect Tug" button will be enabled. This is optional, but adds a lot to the experience. Hit the button to request connection of the tug. Once connected, the "Start Pushback" button will be enabled.

Hit the start pushback button to request the planned pushback. When pushback audio is enabled (see options section) the ground crew will contact you. Follow their instructions.

As the process is automated the only options available now are "Hold", which allows you to hold the tug when required, and "Cancel Planned Pushback" which will cancel the automated pushback and switch to manual pushback in case you need to finish the pushback yourself.
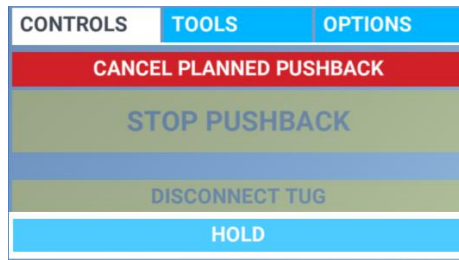
Planned Pushback Controls

When the automated pushback has been completed, you'll be instructed to set your parking brake. Any time your action is required, the corresponding action button will enlarge and start to blink.

At this point the tug will be disconnected whereafter you may proceed with taxiing to your designated runways holding point.

Commanding a Manual Pushback

So, you want to be in control of the pushback yourself? That's indeed possible.

Start Manual Pushback Button

Hit the "Start Manual Pushback" button, release parking brake and off you go:

Manual Pushback Controls

Control the speed and direction with the corresponding sliders, change direction with the given forward and reverse buttons, hold whenever there is need to and stop the pushback when done.

But there is more to it! TPP gives you full control of your pushback.

To steer the tug, you may use your rudder pedals or rudder axis on your joystick as well as the left and right trigger buttons (LT, RT) on your Xbox controller.

By using the thrust axis on your joystick or y-axis of the left stick on the controller you adjust the pushback speed.

Double tap LT and RT on your controller to toggle "Hold Position".

Ground Service Handling

The tools tab shows you the currently available ground services. This varies depending on the loaded aircraft. Hit the button of the ground service you'd like to request. A highlighted button (yellow by default) states that the service has been requested. To dismiss, simply hit the button again. Grayed out buttons depict a ground service that is not available.

Ground Service Buttons

On the same tab you'll also find the controls for any **doors that can be opened and closed** for the current aircraft as well as other **custom defined action buttons** (see customization section).

Doors and Custom Buttons

NOTE: In case you've got an issue during the operation of TPP, please check out the Troubleshooting section first before contacting support.

Options

In the options tab of TPP you will be presented with options that allow you to customize this tool to your needs and liking. This section describes the available options in detail.

Pushback

- **Max Speed** *(default: 4 knots)*
  The maximum speed in knots the aircraft is allowed to reach during automated and manual pushback operation. An optimal speed of 4 knots is set by default.

  Note: During automated pushback the speed is dynamically calculated based on driving situation. However, depending on aircraft, a higher max. speed may yield unpredictable driving behavior of the automated pushback procedure.

- **Enable Pre-Planning** *(default: On)*
  When this option is set to off, the controls tab will only show control-items of the manual pushback procedure, completely omitting pushback pre-planning functionality.

- **Simulate Nosewheel Lift** *(default: On)*
  For airliners such as the Airbus A320, the pushback tug will attempt to lift the nose wheel off the ground before moving the aircraft. Setting this option to off will disable the simulation and skip the corresponding dialog when "Pushback Audio" (see below) is enabled.

User Interface

- **Language** *(default: AUTO)*
  This option overrides the language the user interface is displayed in. By default (AUTO), the language set in the Microsoft Flight Simulator options (*General Options -> Misc -> International Settings -> Language*), is used.

  Note: TPP supports more languages than the simulator supports, such as Arabic, which you may set using this option. Also note, that the Pushback Audio system automatically selects voice language based on airport location and not this option.

Pushback Audio

- **Enable Pushback Audio** *(default: On)*
  Switching off this option disables the interaction between ground crew and flight deck. All dialogs will be skipped. This might be useful when wanting to get a pushback started as fast as possible with the least input required and without the need to wait for any instructions.

- **Volume Levels** *(default: 100%)*
  Here you can adjust the volume level of the **flight deck** and **ground crew** separately. The voices volume level of the simulator (*General Options -> Sound -> Volume Levels -> Voices*) is used as baseline, where the volume levels of TPP allow a split and fine-grained volume adjustment on top.

  Note: You may route Pushback Audio to any connected audio device such as your headset by adjusting the "Communication Device Output Selection" option in *General Options -> Sound*.

Ground Services

- **Manually dismiss ground services** *(default: true)*
  After about 30 seconds Microsoft Flight Simulator sends away any called ground service, such as the catering truck or boarding stairs. TPP allows you to overwrite this behavior by toggling on any of the following options: **Boarding Stairs**, **Catering Truck**, **Baggage Loader** and **Fuel Truck**.

  Note: There is a little difference regarding the fuel truck. Once the fuel hose is attached, the truck will stay until you close the weight and balance panel.

Troubleshooting

Pushback Audio does not play any audio

Ensure the following settings are set correctly in both the simulator and TPP.

Set **"Enable Pushback Audio"** to **ON** in the TPP Options tab under "Sound" and set the **volume levels** for Flight Deck and Ground Crew to **100** as shown in the picture below:
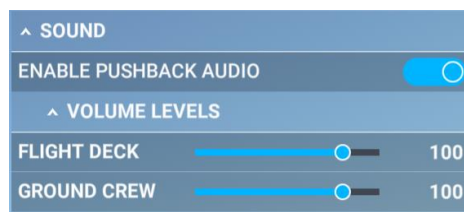
TPP Options Tab - Sound Settings

In the simulator options under *General Options -> Sound,* set the **Main- and Communication Device Output Selection** to the proper device selection (such as headphones), or select "System's Default Device" in case you're not sure what to set these options to:
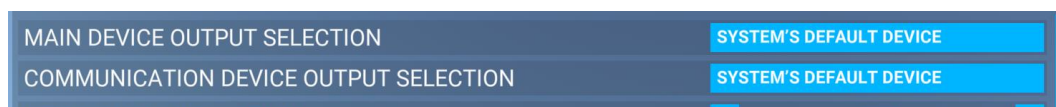
Simulator Sound Options

In the same window set the **volume levels** of "**Master**", "**Voices**" and "**Warnings**" to **100**:
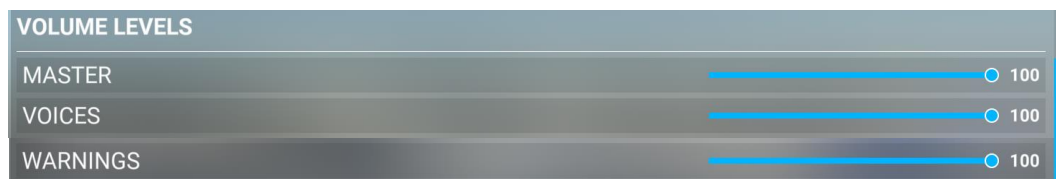
Simulator Volume Levels

Finally, test your audio device(s) and check your system's sound settings.

Pushback slow even though max speed is set high

The automated pushback sets the actual speed depending on driving situation. When driving straight the maximum speed may be reached, whereas in curves the speed is lowered the steeper the angle becomes. Hence, setting a max speed does not mean the pushback will always be this fast.

Pro Tip: To troubleshoot any issue, try to disable all installed ground-service related add-ons and load a flight at a default airport with a default aircraft. Then check if the issue persists.

"Connect Tug" option available in TPP but no Tug present

Sometimes Microsoft Flight Simulator erroneously reports that a pushback tug is present at the given location even though this is not the case. This can be confirmed by trying to request pushback through the simulator ATC:
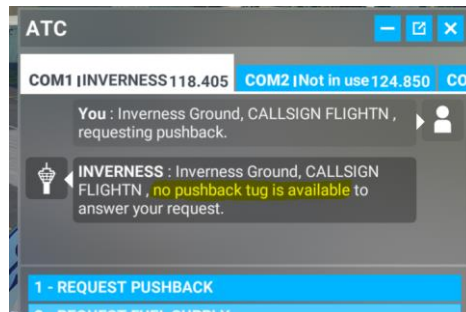
Simulator ATC Pushback Request Response

Nonetheless, pushback should also work without a tug.

Pushback Tug connected but invisible

Add-ons that enhance ground services as well as third-party airports may change pushback tug objects and settings in a way, that possibly interferes with TPP's pushback procedure. For example, add-ons that replace ground services with their own, may render objects, such as the default pushback tugs, inoperable. Also, the connect tug issue mentioned above may cause the tug to be invisible.

Jittery movement during pushback

The custom logic of certain third-party aircraft, such as PMDG Boeing, can interfere with the TPP pushback process. This is mainly the case when pushback is in progress without a connected pushback tug. In such cases, simply press "shift + p" to trigger the simulators pushback mode, whereafter the movement should no longer be jittery. If the movement remains problematic, this could be caused by environmental influences such as weather or ground surfaces.

Difficult to align Path in Pushback Planner

The path is restricted to certain angles depending on aircraft loaded. The bigger the aircraft, the more restricted the path will be. This is to prevent angles that would be impossible to follow. However, it should not be impossible to follow the airport taxiway centerline. Experiment by moving the aircraft marker around, change heading where necessary and try to set fewer or more waypoints in curves to achieve the path you'd like the pushback tug to follow.

Fuel Truck does not appear

Depending on airport and gate / parking position, it **may take some time for the fuel truck to arrive** at your aircrafts position. Also, a fuel truck might not be available at the area you requested the ground service.

Xbox Controller vibration during Pushback

During pushback the Xbox controller may vibrate depending on aircraft and ground surface. To mitigate this effect, go to the simulator *General Options -> Accessibility* and set the slider at *Controller Vibration* to a lower intensity or **0** to disable vibration completely.

Ground Services are still dismissed automatically

Other add-ons that overwrite the ground services with their own logic cause these services to behave differently, which means that the settings of TPP may become ineffective.

How to perform Nosewheel Lift only just before starting Pushback

Simply release parking brake and then press "Connect Tug". This will call for the pushback tug and connect it without lifting the aircraft's nosewheel. **Do this before requesting other ground services**, as these would be dismissed when calling the pushback tug. Once you're ready for pushback, set the parking brake, whereafter the nosewheel will be lifted. *Note:* Please make sure, that all ground services are dismissed, before continuing the pushback procedure, as this is only performed automatically when requesting the pushback tug.

How to use TPP Pushback with GSX

The GSX add-on uses its own custom logic for the pushback procedure. To use TPP for pushback whilst using GSX for other ground services, simply start and **control the pushback ONLY through the TPP toolbar panel** and DO NOT initiate a pushback via GSX. Best practice is, to connect the pushback tug via TPP before starting to use GSX. Otherwise, GSX may take control over the pushback tug.

Connected Pushback Tug gone when switching to VR

Microsoft Flight Simulator resets the ground services around the aircraft when switching to VR mode. As this is a limitation of the simulator, please make sure to **connect the pushback tug after switching to VR mode**. However, *planning a pushback beforehand is possible*, so you don't have to create the plan whilst wearing the VR headset.

Aircraft Marker in Pushback Planner keeps spinning

When using an Xbox controller and the aircraft marker of the pushback planner keeps spinning without any input, it's likely that the controller sensitivity settings are set too sensitive. Head on over to *Options -> Controls Options -> Controller -> Sensitivity*. The relevant axes are "LS X" and "LS Y". Press RESET for these two axes to reset the sensitivity. Should the spinning of the aircraft marker persist, please also reset the sensitivity of the remaining controller axes.

Extensibility and Customization

This section describes additional customization options of TPP and how to extend compatibility with third-party aircraft by creating profiles.

Aircraft Profiles

TPP aims to find the best settings for each aircraft automatically. Aircraft Profiles allow you to adjust these settings yourself. The profiles are stored as .json files in the following location of the TPP add-on in your Microsoft Flight Simulator community directory:

aerosoft-toolbar-pushback\html_ui\Data\Aerosoft\TPP\AircraftProfiles

Each file is named according to the package name of the aircraft the profile was created for. To find this name, simply load a flight with the aircraft, open up TPP and switch to the Options tab where you'll find the aircraft package name at the top (e.g. Asobo_A320_NEO in the picture below):
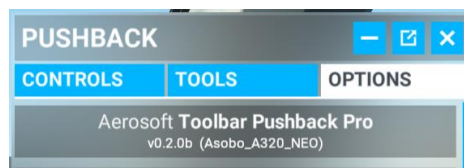
Aircraft Package Name "Asobo_A320_NEO"

The *default.json* profile acts as base for new profiles. Create a copy and rename as described above. Make sure the name consists only of alphanumeric characters, all lower case and replace spaces and dashes (-) with underscores (_). The profile is divided into the following parts:

`"aircraft":`	Holds the readable name of the aircraft. Has no further effect.
`"tug_type":`	**default** equals to big pushback truck and **small** to small hand driven tug. Has effects on pushback speed, nosewheel lift animation and pushback planner.
`"services":`	Sets availability of ground service buttons in the Tools tab - **true** enables and **false** disables the given button. Can be further customized (see below).
`"doors":`	Sets availability of door buttons in the Tools tab - **false** disables the given button. **fwd**, **aft** and **cargo** can be set to the integer ID of the door starting at 0 (zero) upwards. See Flight Simulator SDK documentation. **closeall** specifies custom logic to close all doors. **false** disables button. Can be further customized (see below).
`"other":`	Holds options for individualized buttons (see below).

"pushback":	Holds specific options for pushback procedure:
	
	"events":
	    `on_tug_connect` specifies actions to carry out when tug is connected.
	    `on_push_request` specifies actions for when pushback is requested.
	
	"steering":
	    `state` specifies custom logic for rudder position evaluation.
	
	"parking_brake":
	    `input` specifies custom logic for toggling parking brake.
	    `state` specifies custom logic for parking brake state evaluation.
	
	Pro Tip: Check out the *pmdg_737* profile for an applied example of these options.

The buttons under *services*, *doors* and *other* can be specified with custom logic. See the custom action buttons section below for further details.

Custom Action Buttons

The Application Programming Interface called TPP_API allows you to technically communicate with the simulator by getting and setting values required to enhance TPP's functionality via the Aircraft Profiles described in detail in the section above.

The API syntax is kept simple and JavaScript oriented. The following describes each available method with an example. Let's start off by getting a simulation variable:

```
TPP_API.GetSimVar('BRAKE PARKING POSITION', 'Bool')
```

This will return the Boolean value **true** when the parking brake is set or **false** otherwise. As you can see, the first parameter holds the name of the SimVar to get the value from and the second parameter holds the unit of the SimVar, in this case *Bool*. Further information about SimVars and available units can be found in the official Flight Simulator SDK documentation.

Continuing with setting a simulation variable value:

```
TPP_API.SetSimVar('K:PARKING_BRAKES', 'Number', 1)
```

SetSimVar basically has the same syntax as GetSimVar, but with one more parameter which holds the value to set. The above code sets the value of *K:PARKING_BRAKES* to *1*, toggling the parking brake on/off. However, this is a special variable due to the *K:* prefix that is required when setting values to so called Key Events. These events can trigger all sorts of mechanisms in the simulator. Hence, SetSimVar allows you to set SimVar values, LocalVars using the *L:* prefix, as well as trigger key events using the *K:* prefix.

Up next is iterating an array of values:

```
TPP_API.ForEach([...], (el) => {...})
```

The first parameter holds the array that should be iterated, followed by the callback that is executed for each value of the array. An example of this can be found in the *pmdg_737* profile under "doors".

In case you need to wait for a specific amount of time before continuing an action, you can use:

```
TPP_API.Wait(2000).then(() => {...})
```

The above code would wait 2 seconds (2000 milliseconds) before executing the code specified in the `.then` callback. An example of this can be found in the *pmdg_737* profile under "pushback".

Please note, that TPP_API.SetState and TPP_API.ToggleState are currently reserved for the Fenix A320 aircraft profile.

Let's continue by specifying a custom door button:

```
"doors": {
  "custom_01": {
    "name": "DOOR 1",
    "action": "TPP_API.SetSimVar('K:TOGGLE_AIRCRAFT_EXIT', 'Number', 1);"
    "state": "(TPP_API.GetSimVar('INTERACTIVE POINT OPEN:0', 'Percent') > 99)"
  },
  ...
},
```

`"custom_01"` specifies the first custom action button for the doors section. The second action button would be `"custom_02"` and so on. `"name"` holds the name of the button which is displayed in the Tools tab of TPP. `"action"` specifies the custom code the action button should execute; in this case the button would open/close the door with ID *1*. With `"state"` the custom code for the action button state is specified that will highlight the button when the given code returns Boolean `true`. In case the button should not have a state, leave this parameter out or set it to `null`.

This structure applies to the *"services"*, *"doors"* and *"other"* sections, with the exception of the services section that does not accept the *"name"* parameter.

The *"pushback"* section follows the same principle, but is structured a little different. Simply have a look at the *pmdg_737* profile for an applied example.

Language- and Voice Packs

Information on this topic follows.

Enjoy!