



Swish Projects

Park Brake Assembly Kit

REV. 0 2021



CONTENTS

REVISIONS.....	3
COMPLIANCE DETAILS	3
SCOPE	4
PURPOSE.....	4
STANDARD FEATURES.....	4
INSTALLATION.....	5
SCOPE	5
REQUIREMENTS.....	5
INSTALLATION PROCEDURE.....	5
POST INSTALL CHECK	6
OPERATIONAL CHECKS	6
WARRANTY	6
SCHEMATICS	7



REVISIONS

REVISION NO.	DATE	DESCRIPTION
0	20/01/2021	Initial Issue

IMPORTANT COMPLIANCE DETAILS

THIS DOCUMENT CONTAINS DATA FOR THE INSTALLATION OF THE PARK BRAKE ASSEMBLY DEVELOPED BY SWISH PROJECTS TO WORK WITH HYDRAULIC DISCK BRAKE ASSEMBLIES ON EXPERIMENTAL AIRCRAFT.

THE KIT IS NOT FOR USE ON CERTIFIED AIRCRAFT.

USE OF THE PARK BRAKE ASSEMBLY IS AT THE OPERATOR'S RISK. THE PARK BRAKE KIT IS DESIGNED AND INTENDED TO **TEMPORARILY** HOLD THE AIRCRAFT IN PLACE WHILE THE PILOT INTALLS CHOCKS AND TIE-DOWNS. **DO NOT RELY SOLELY UPON THE PARK BRAKE ASSEMBLY TO HOLD YOUR AIRCRAFT IN PLACE.**

OVER TIME (IT COULD BE HOURS OR IT COULD BE DAYS) – YOUR BRAKE ASSEMBLY WILL LOSE PRESSURE AND WILL NOT BE DOING ANYTHING TO PREVENT YOUR AIRCRAFT FROM ROLLING AWAY.

THIS DOCUMENT IS NOT APPROVED MAINTENCE DATA

The installer is responsible to certify as airworthy, fit for purpose and determine eligibility of this product for installation, in accordance with regulations applicable to your country.

If you are not ready to accept responsibility for the suitability of this product for your application, then please return it for a full refund. I have been using this assembly in my CH750 for about a year now and I am happy with it. Please understand though – it is only good to stop your aircraft from rolling away long enough for you to chock and tie your aircraft. Do not leave it overnight on sloping ground or in windy conditions and expect it to still be in the same place when you return.

I really hope you love the park brake assembly and I look forward to hearing back from you with your experience and suggestions for improvements.

Regards,

James K. Fisher

Swish Projects.

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SCOPE

This manual provides data for the installation of Swish Projects Park Brake Assembly.

PURPOSE

The Swish Projects Park Brake Assembly is intended to be added to your existing hydraulic brake circuit. The Park Brake Assembly are preassembled components, in accordance with the MATCO MFG OEM specifications for interconnection between the hydraulic lines and the disk brakes. The install of the Park Brake Assembly to existing braking systems may otherwise require the installer to substitute the brass quick-connections supplied to interface the Assembly to the size of the brake lines that you are using.

STANDARD FEATURES

- Easy installation with basic workshop tools.
- Light weight.
- Durable.
- Easy to operate.
- Versatile installation options

SPECIFICATIONS

GENERAL

MATERIAL	T2024-T3 0.050" brackets and MATCO valve
DIMENSIONS	130mm long x 90mm wide x 100 max height. Cable length 1600mm
WEIGHT	170g
CONNECTORS	N/A
MOUNTING	Bulkhead, four screws (supplied)

COMPONENT LIST

SWISH PARK BRAKE ASSEMBLY

'PARK BRAKE' panel label x 1	AN525-832R8 screw x 4
MS2183N-08 nut x 4	NAS 1149F0332P Washer x 8
2024-T3 0.050" Mounting Bracket x 1	2024-T3 0.050" Cable Guide x 1
5FT Push / Pull Cable x 1	MATCO MFG PVPV-D Valve + Instruction sheet x 1
Brass Straight 1/8" NPT - 1/4" Compression fittings x 4	Rubber Washer x 2 (supplied by MATCO)
Champion Panel Pack #PP75 6mm long captive nut x 1	6 mm metric fine thread 10mm long bolt x 1
Aeroshell Fluid 41 Hydraulic fluid 200ml bottle (not supplied outside Australia due difficulty shipping by air – sorry)	Cable retainer x 1 inc. grub screw.



EQUIPMENT SUPPLIED

1	EACH	Swish Projects Park Brake Assembly, partially assembled.
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EQUIPMENT REQUIRED

1	EACH	Drill
1	EACH	5/32 drill bit
1	EACH	3/8 drill bit
1	EACH	Side cutters or hose cutter for brake lines
Small quantity	EACH	Rags for clean-up of brake fluid
1	EACH	Socket and spanner set (7/16" open spanner,
1	EACH	Medium sized slotted/blade screw driver and #2 Phillips head screw driver

INSTALLATION

SCOPE

- ❖ These instructions will work very well for most installations. You may find that your brake line configuration does not call for the saddle bracket, so just omit it from the installation. The valve will work just as well without it and can be flush-mounted against any solid surface at any orientation.
- ❖ Use this instruction sheet with the green instruction sheet provided by MATCO. PLEASE ALSO NOTE the reference to the 'CAM ORIENTATION NOTE' on the green sheet. If you find after installation that your brakes are not working then you just need to remove one screw, rotate the cam 90 degrees and try again. You can do this with full fluid and nothing will lead. It's a very quick job to make the adjustment and depending upon the orientation that you choose you may or may not need to make it (50/50% chance – are you feeling lucky?).

REQUIREMENTS

- ❖ No qualifications or previous experience are necessary to perform this installation. A second set of hands may be helpful for keeping the brake fluid from going all over the place (depending on when you do the installation and how your brake bleed system works).

INSTALLATION PROCEDURE

- ❖ Find a spot in your panel to install the push-pull handle and to add the label. Make sure that your cable run is planned so that the cable reaches and any bends have a nice large radius in them.
- ❖ Drill the required 3/8" hole and add the handle to your panel. Don't attach it to the valve yet.
- ❖ Install the saddle bracket over your fuel lines in the centre of the cabin floor (this is a good spot), or skip the saddle bracket if you like and install the valve directly to the aircraft body some where along your brake line circuit. Pass the screws up from the bottom and bolt from the inside (reduced drag).
- ❖ Back off the brass collet on each of the four fittings. Cut the brake lines nice and neatly at 90 degrees and press them into the valve unit firmly. Tighten the collets with your 7/16" open spanner. Don't gorilla it – just enough to make sure the hose doesn't pop out.
- ❖ Position the valve lever in the upright (closed) position, push your panel-mounted handle all the way in and then fit the core of the cable through the retainer and tighten the grub screw with your flat screw driver.



- ❖ Spread open the silver captive nut fitting and press it over the cable sheath (to secure the sheath from moving with the inner core) and over the hole in the cable guide. Install the 6mm bolt and tighten. You can move the cable retainer clip left and right a bit to get an angle you are happy with for the core of the cable to meet the valve arm.
- ❖ Fill your brake lines and bleed out all the air as per your original brake installation guide. Don't forget to open the park brake valve or you'll really struggle with this step (handle pushed all the way in).

POST INSTALL CHECK

Give it a go! Pull the handle out, pump the toe-brakes to set the brakes and then jump out and try to push your aircraft.

If it moves freely then you should first check for brake fluid leaking (it will be easy to spot) or air in the brake lines. If it all looks good then take out the little #2 screw that holds the arm on the valve and rotate the cam by 90 degrees. Re-install the arm and try again (as per the green sheet instructions). If that doesn't fix it then we're in trouble. I'm out of ideas.

OPERATIONAL CHECKS

This set up does not require any specific maintenance or checks. Provided you use the correct fluid (NOT BRAKE FLUID) – MATCO specify AeroShell Fluid 41 – then it should last for many years.

One final time – do not rely on this valve to maintain pressure and secure your aircraft for hours on end. In my experience the brake pressure fades over a few days.

Also, consider incorporating a lanyard to connect your park brake lever to your ignition keys. Think about a way to remind yourself that you must release the park brake before taxi. Consider that if the lever is pulled (park brake is set, but the pressure has slowly released over a week or so), and you use the brakes for the first time after taxi to line-up and stop then guess what – you have now applied full park brake immediately before commencing take off. This may end badly.

Another good thing to do is to incorporate a deliberate 'toe brake test' immediately after you commence taxi. Apart from confirming that your brakes actually work, it will also allow you to quickly identify that the park brake handle is set – as you will come to a stop and be stuck in place until you release the park brake properly.

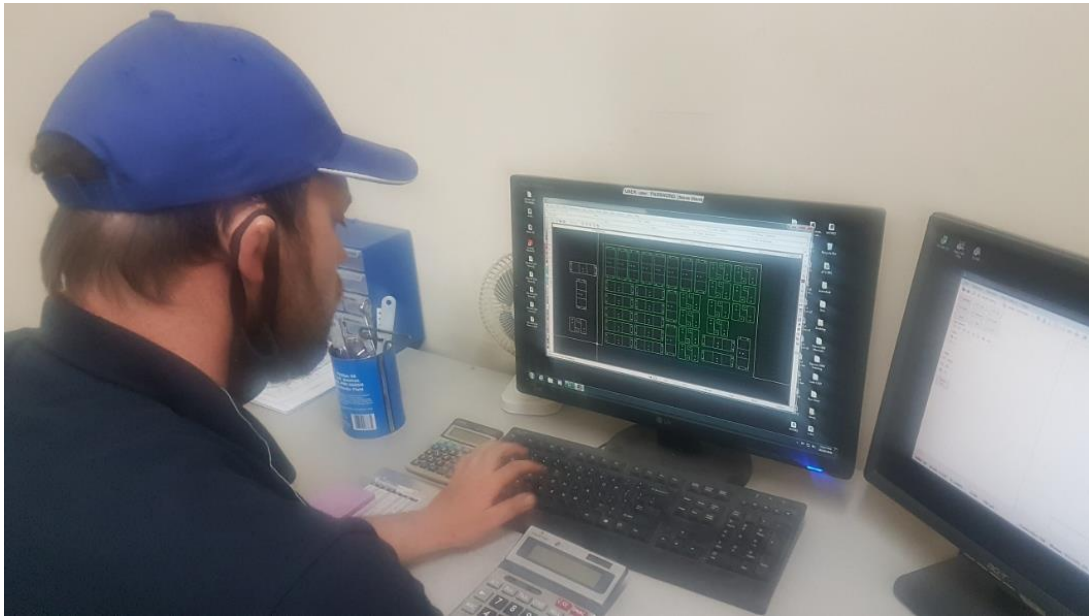
WARRANTY

Three (3) years on the valve and handle. Nothing on the sticky panel label and lifetime on the other components. MATCO VALVE WARRANTY VOID if you use the incorrect fluid. You'll need to contact me in advance to claim. In all likelihood I'll ask you to send the valve off to MATCO for inspection and George will investigate it for us. They can be repaired if you use the wrong fluid – it's just a few seals that need to be replaced. There's really not much that can go wrong with the Assembly so you should get ages out of it.

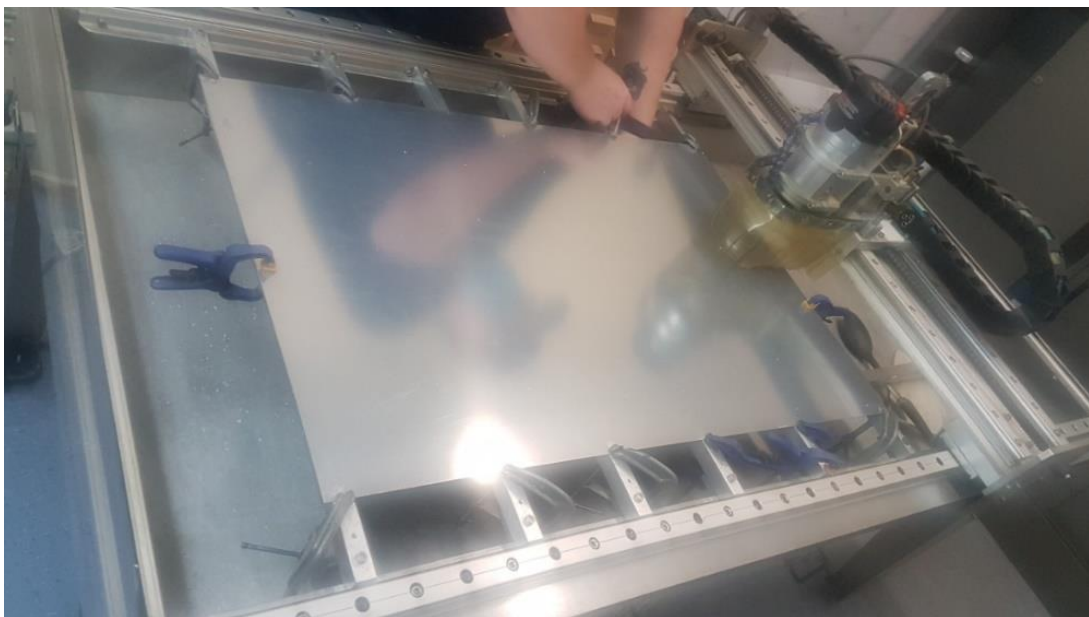


PICTURES

You can refer to these pictures to help you with ideas for your installation.



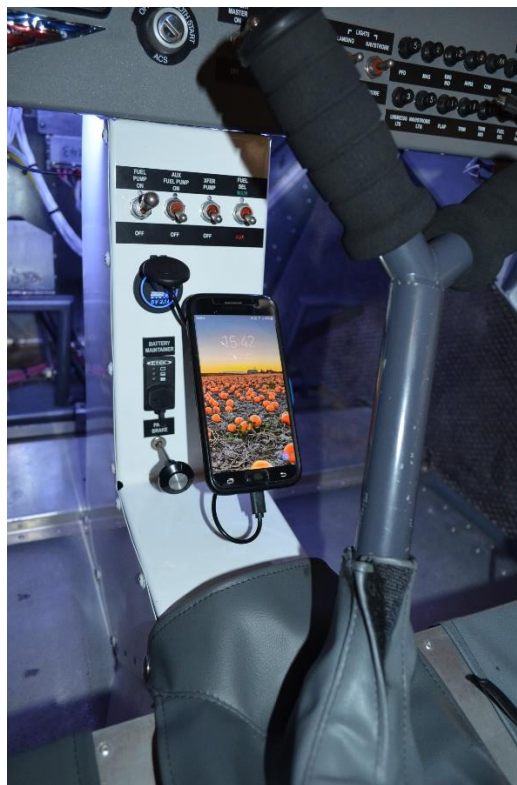
Setting up the CNC run.



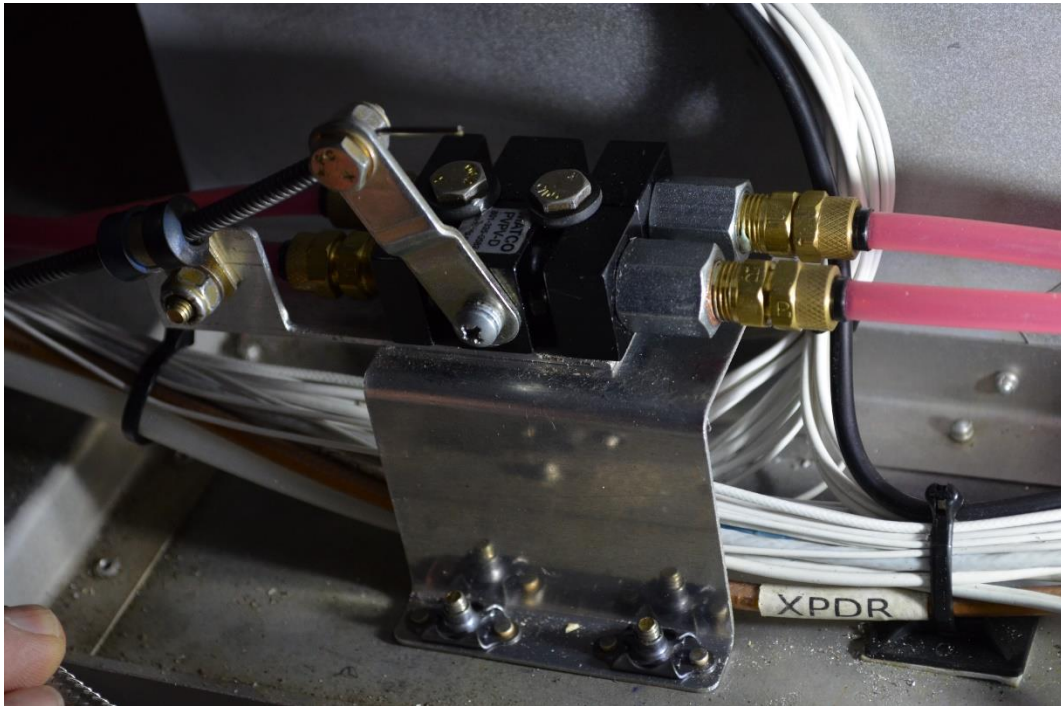
Cutting the sheet for the brackets.



This is how your kit should arrive. Instruction sheet has been added and the AeroShell Fluid may not be supplied for customers outside Australia (airlines get a bit funny about carrying it).



My installation – I used a cheaper handle. Yours is better!



This installation shows the saddle bracket going over an umbilical of wiring. There are some differences with this prototype. Your installation does not use the P-Clamp on the guide or the drilled retainer bolt and does not need the nutsets. The above and below pictures show the same thing in different lighting.

