

# Installation / Operation Manual

Start Key Switch 9iS



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# 1. Preface

Thank you for purchasing an RS Flight Systems Start Key Switch 9iS. We are pleased that you have chosen our product and are confident that it will meet all your expectations. In case of questions or problems with the unit, feel free to contact us:

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## 2. System Description

The Start Key Switch 9iS is a starter switch specifically developed for the BRP Rotax iS engines. The switching characteristics offer the same behavior same as the ones for the Rotax 912 and 914 engine series. Therefore, the different engine series have an identical starting procedure. The Start Key Switch 9iS includes the control of LANE A and LANE B as well as the Main Fuel Pump and the Auxiliary Fuel Pump. Further, the Engine Management Unit (EMU) and the System Control Unit (SCU) are controlled by the Start Key Switch 9iS. The Start Key Switch 9iS is shown in Figure 2-1.



**Figure 2-1: Start Key Switch 9iS**

### 3. Technical Specifications

The technical specifications of the Start Key Switch 9iS are listed in Table 3-1 and the dimensions of the panel cut-out are shown in Figure 3-4.

	Start Key Switch 9iS
Mechanical Dimensions (width, height, depth)	46 x 42 x 120 mm 1.81 x 1.65 x 4.72 in
Panel Cutout Dimensions	Ø 22.4 mm Ø 0.88 in
Mounting Depth excl. Connectors	103 mm 4.06 in
Maximum Panel Thickness	6 mm 0.23 in
Mounting	Included Nut
Total Mass	0.20 kg 0.44 lbs
Maximum Current	20 A
Maximum Voltage	36 VDC
Operating Temperature Range	-20 to +70 °C -4 to +158 °F
Humidity	< 95 %, non-condensing

**Table 3-1: Technical specification**

The mechanical dimensions are shown in the drawings in Figure 3-1, Figure 3-2 and Figure 3-3.

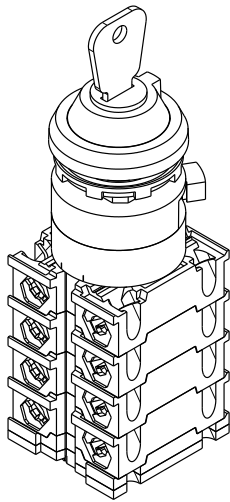


Figure 3-1: SKS 9iS isometric view

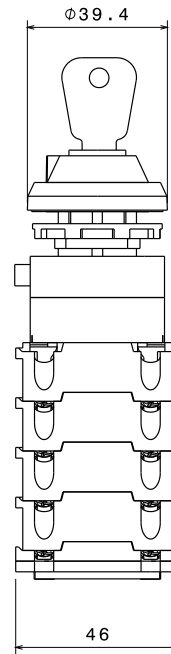


Figure 3-2: SKS 9iS front view

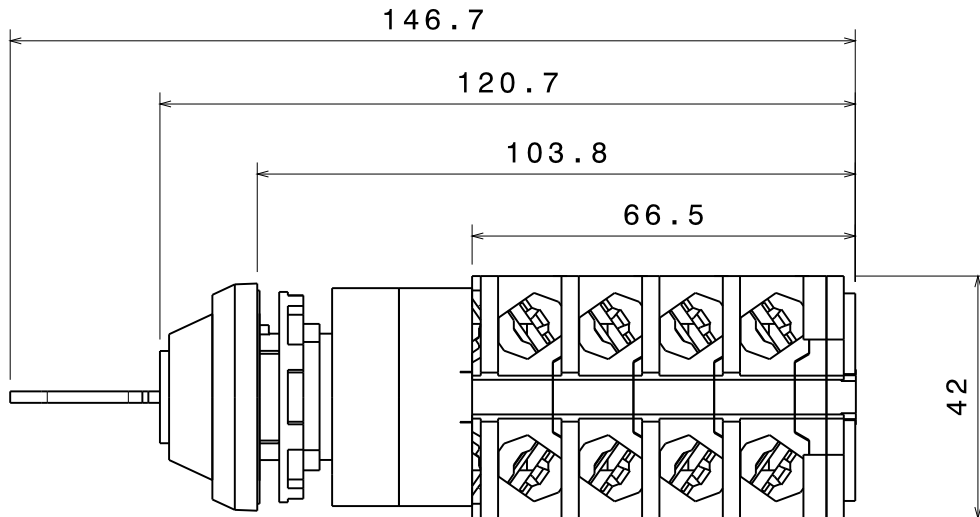
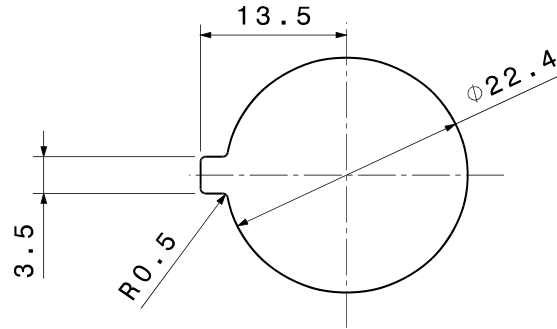


Figure 3-3: SKS9 iS side view [mm]



**Figure 3-4: Panel Cutout [mm]**

The switching logic is listed in Table 3-2. “On” means that the corresponding pin numbers are electrically conductive. “-” means that the corresponding pin numbers are electrically non-conductive.

		Name	LANE A	LANE B	Fuel Pump Main	Fuel Pump AUX	Starter	GND	PWR EMU/SCU
Name	Position Pin	1/2	3/4	5/6	7/8	9/10	11/12	13/14	
Off EMU / SCU Lane A Switch Lane B Both Start	0°	-	-	-	-	-	On	-	
	60°	-	-	-	-	-	-	On	
	120°	On	-	On	-	-	-	On	
	180°	On	On	On	-	-	-	On	
	240°	-	On	-	On	-	-	On	
	300°	On	On	On	-	-	-	On	
	330°	On	On	On	-	On	-	On	

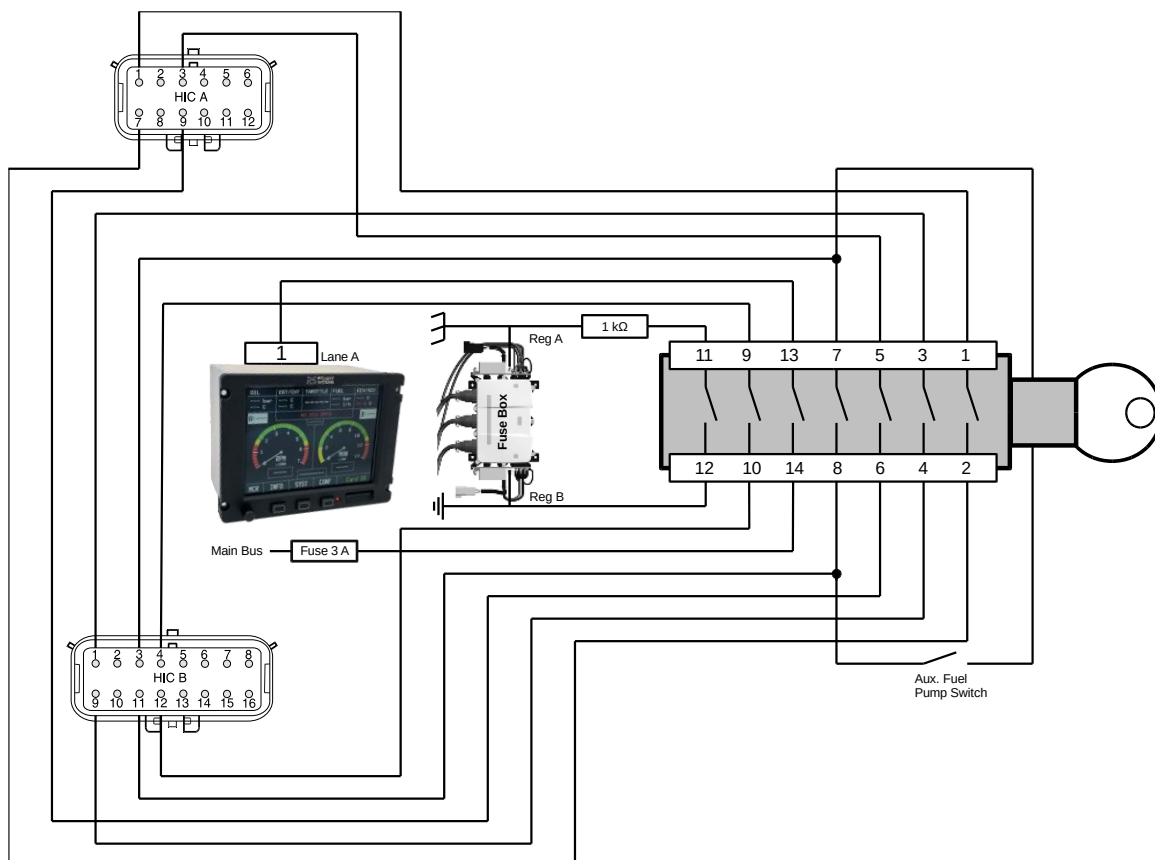
**Table 3-2: Start Key Switch 9iS switching arrangement**

## 4. Electrical Installation

The Start Key Switch 9iS is connected to the Rotax HIC connectors A and B. The detailed pinout is listed in Table 4-1 and shown in the sketch in Figure 4-1.

Pin Start Key Switch	Connector	Pin	Signal Name	Signal Description	Current / Wire Size
1	HIC A	1	LANE_SEL_SW_A_1	Lane A Supply	7,5 A
2	HIC A	7	LANE_SEL_SW_A_2	Lane A GND	7,5 A
3	HIC B	1	LANE_SEL_SW_B_1	Lane B Supply	7,5 A
4	HIC B	9	LANE_SEL_SW_B_2	Lane B GND	7,5 A
5	HIC A	3	SIG_FUEL_PUMP_1	Fuel Pump Main Supply	10 A
6	HIC A	9	GND_FUEL_PUMP_1	Fuel Pump Main GND	10 A
7	HIC B	3	SIG_FUEL_PUMP_2	Fuel Pump AUX Supply	10 A
8	HIC B	11	GND_FUEL_PUMP_2	Fuel Pump 2 GND	10 A
9	HIC B	4	CONN_STARTER_REL_SW	Starter GND	5 A
10	HIC B	12	SUPP_START_SWITCH	Starter Supply	5 A
11	-	-	GND	EMS GND	AWG 22
12	-	-	GND	Aircraft GND	AWG 22
13	EMU / SCU Lane A	1	PWR	Switched DC Power Supply	3 A AWG 22
14	-	-	Main Bus	DC Power Supply (9-36 VDC)	3 A AWG 22
15	-	-	Reserved	Do not connect	-
16	-	-	Reserved	Do not connect	-

**Table 4-1: Start Key Switch 9iS pinout**



**Figure 4-1: Start Key Switch 9iS wiring diagram**



## 5. Operation

This chapter describes operational procedures for the Start Key Switch 9iS.

- In “Off” position, both grounds “Aircraft” and “EMS” are shorted in order to avoid different potentials during refueling and ground handling.
- In “EMU / SCU” position, the EMU / SCU is powered. 1 sec later, the EMU / SCU activates the Start Power Relay and supplies the ECU with power.
- In “Lane A” position, the ECU LANE A is activated, and the Main Fuel Pump is supplied with power.
- In “Switch” position, the ECU LANE A and B are activated, and the Main Fuel Pump is supplied with power. Hold this position for at least 1 sec. every time you pass it.
- In “Lane B” position, the ECU LANE B is activated, and the Auxiliary Fuel Pump is supplied with power.
- In “Both” position, the ECU LANE A and B are activated, and the Main Fuel Pump is supplied with power.
- In “Start” position, the starter of the engine is activated. The “Start” position is spring loaded. After starting the engine, maintain in position “Both”. The Start Power Relay is automatically switched off by the EMU / SCU 3 sec. after the engine has reached 1500 rpm.

Regarding the Lane check please refer to the Operators Manual by Rotax.

## 6. Accessories

### 6.1 Front Plate for EMU

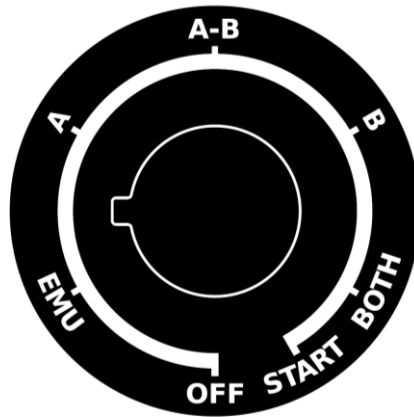


Figure 6-1: Front Plate for EMU

The optional front plate with indications for the switching positions is shown in Figure 6-1.





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