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**1. Description of construction**

- In-line-two-cylinder-two-stroke engine
- Air-cooling
- mixture control via two diaphragm carburetors
- CDI ignition
- Crankshaft mounted propeller
- No engine starter
- Crank-case-pressure operated fuel pump

**2. Technical data**

Engine displacement	430 ccm, cyl. bore 70 mm, stroke 56 mm
Compression ratio	10 : 1
Ignition unit	Magneto SOLO, ignition coil Ducati
Spark plugs	BOSCH W 5 AC heat range 225 or Champion L82 C, Gap 0,5 mm Thread M 14X1,25 mm. In combination with spark-plug-cap (23 00 701, R=5kOhm)
Carburetor	Solo, metering-device WALBRO
Fuel pump	Bing
Direction of rotation	Counterclockwise, seen in direction of flight
Fuel	Two-stroke mix (gas/ oil), premium gas, AVGAS 100LL
Mixture	Ratio 1 : 40, 2-stroke oil Castrol Super TT, TTS, Go! 2T, RS 2T
Weight	Approx. 16,8 kg complete with muffler, without propeller

### 3. Operational data and limitations

	<b>Without muffler (d=22 mm)</b>	<b>With muffler (d=12 mm)</b>
Cruise power	19,6 kW at 5500 1/min	15,3 kW bei 5500 1/min
Max. RPM	6500 1/min	6500 1/min
Recommended RPM	5000 1/min	5000 1/min
Low idle RPM	Not available - no throttle control	Not available - no throttle control
Cylinder head temp.	275 °C max. measured at spark plug	275 °C max. measured at spark plug
Fuel consump. at cruise	Approx 2,24 US gal./hr (8,5 1/h)	Approx 2,24 US gal./hr (8,5 1/h)

### 4. Operating manual

In order to have best engine performance available, it is absolutely necessary to follow the following instructions:

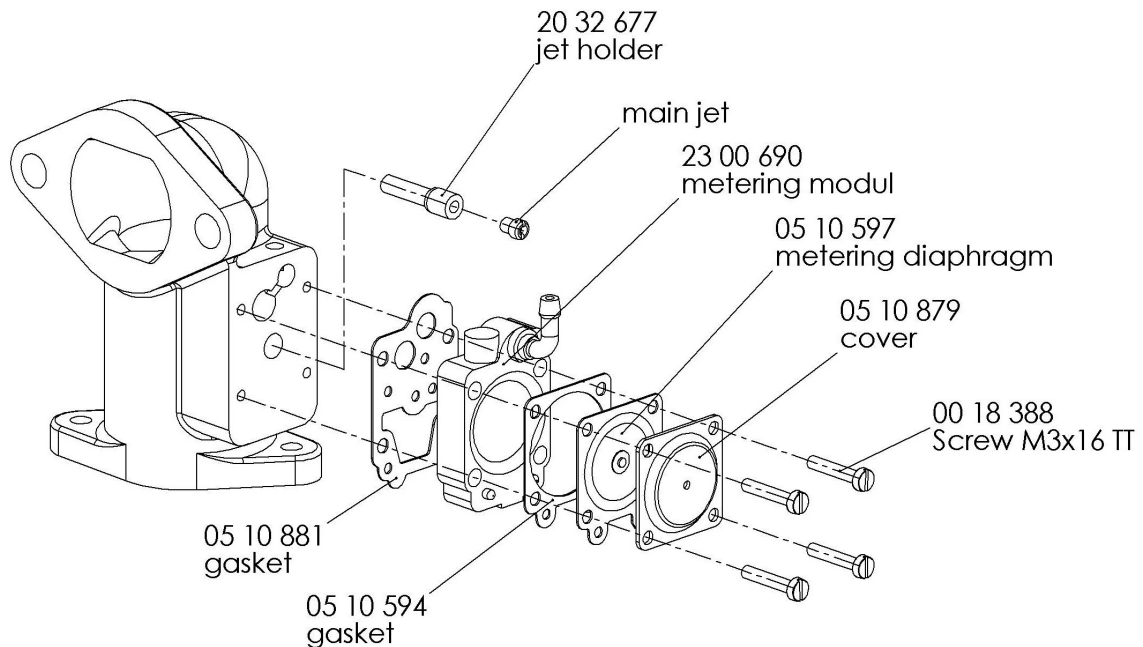
- Before starting the engine
  - Daily check done?
  - Check fuel level in tank
  - Airbleed fuel lines.  
Gently squeeze hand pump and at the same time press on carburetor diaphragm.  
To do this use a pin and push through the small hole in the carburetor chamber covers until fuel is injected. Listen if fuel is injected
  
- Start engine according to the instructions in the flight manual of the aircraft
  - Fuel Valve            OPEN
  - Ignition switch      ON
  - Decompression      OPEN, until engine Revs are stable.
  
- Stop engine according to the instructions in the flight manual of the aircraft
  - Ignition switch      OFF
  - Fuel Valve            CLOSED

## 5. Maintenance manual

- Before every flight check the following with ignition in “Off” position :  
With compression release valves in open position engine should crank over by hand very easily and without any internal mechanical noise, with valves closed engine turn over should be difficult.
- Every 12 months or 25 operating hours, whatever comes first, check the following points in addition to the daily checks:
  - fuel lines
  - All wiring, exhaust system and spark plugs
  - Clean engine
  - Disassemble, wash and check the decompression – valves
- Special examination after 5 years. This check can be carried out by the manufacturer or a certified maintenance organisation or a certified maintenance person.
- Special examination after 200 operating hours. This check has to be done by the manufacturer.
- Special examination after shock - loading. This check has to be carried out by the manufacturer or an approved maintenance facility.
- Conservation and storage:  
If an engine is not used for 2 months or more, the following work must be done:
  - Empty fuel system
  - Inject approx. 5 ccm of 2-stroke oil into each inlet manifold. Turn the engine over by hand 10 times. Make sure, ignition is in “Off” position and compression release valves are open.
  - Cover intake and exhaust openings.
- Torque values
 

Spark plug		20 Nm	14,5 ft. lbs.
Compression release valves		20 Nm	14,5 ft. lbs.
Hub (on crankshaft) M12 x 1 <b>left hand</b>		50 Nm	36 ft. lbs.
Cylinder head nut (SW9)	M6	12 Nm	8,5 ft. lbs.
Cylinder head nut (SW12)	M8	20 Nm	14,5 ft. lbs.
Hex. Head bolts and allen	M4	3 Nm	2 ft. lbs.
head bolts or nuts or same	M6	10 Nm	7 ft. lbs.
	M8	23 Nm	16,5 ft. lbs.
Slotted screws and nuts	M3	0,9 Nm	0,6 ft. lbs.
Slotted screws	M4	2 Nm	1,5 ft. lbs.
	M5	4 Nm	3 ft. lbs.
Cylinderbase screws (Elongation Screw)	M8	13 Nm	9,5 ft. lbs.

- Fuel/ Air Mixure control  
The fuel delivery to the engine is controlled by a jet each and was optimized by the manufacturer. Changes or corrections of jets should be approved by the manufacturer.
- Main fuel jets (muffler without reduction, diameter 22 mm)
  - Front HD 112 1. Cylinder in cooling air
  - Rear HD 114 2. Cylinder in cooling air
- Main fuel jets (muffler with reduction, diameter 12 mm)
  - Front HD 110 1. Cylinder in cooling air
  - Rear HD 112 2. Cylinder in cooling air
- Changing of the main fuel jets.



## 6. Engine trouble shooting

- Engine will not start :
  - Wrong timing of ignition      Spark plug cables can be mixed up
  - No fuel.                              Check the fuel lines to the carburetors and the fuel pump.
  - No spark                              Short-cut of wiring to ground – check wires
  - Connection to ground is poor - check wires
  - No spark on one.  
  of the spark plugs                      Defective spark plug.
- Engine flooded :
  - Open decompressor valve and turn engine over several times.  
  Make sure, that ignition is in „OFF“ position.
- Engine overheated :
  - Not enough fuel.
  - Cooling air is to hot.
  - Engine very dirty.
  - Defective spark plugs.
- Engine does not reach max. RPM :
  - Not enough fuel.                      Check the fuel lines, fuel pump and fuel filter.
  - Defective spark plugs.                Replace spark plugs
  - Decompressor valves  
  are leaking.                              Clean valves
  - Pulse hose to fuel pump  
  is blocked.                                Check or replace
  - Defective carburetor unit.              Change diaphragm and control module.

## 7. Installation instructions

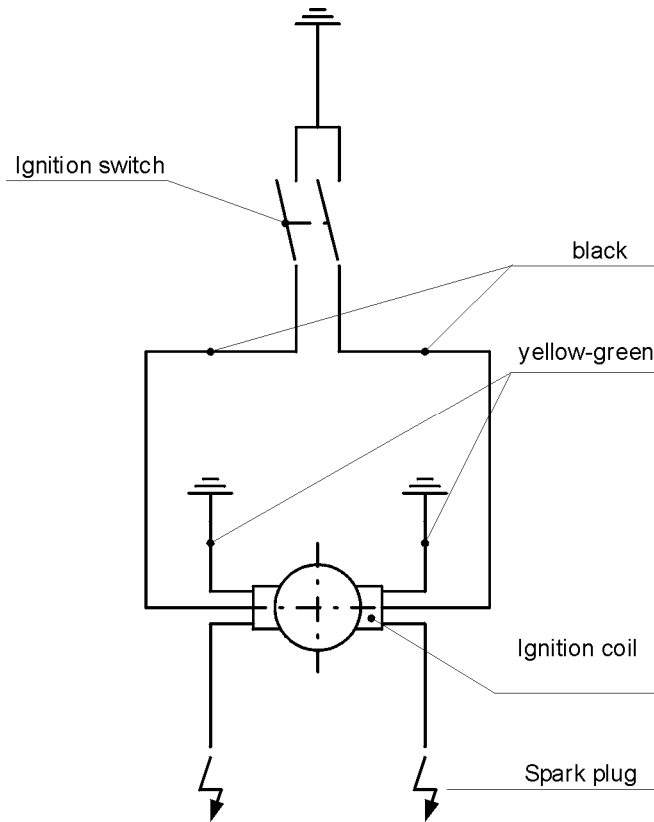
Mount the propeller to the hub of the engine. Tighten all M6 nuts with 10 Nm.

Mount engine on the 3 mounting points in accordance with the manual of the aircraft.

The fuel lines are connected in accordance with the manual of the aircraft.

The electrical connection has to be made in accordance with the manual of the aircraft.

**8. Wiring diagram**



**9. Power curve**

