



**AN**

# USER'S MANUAL ENGINE

**N80**



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## INTRODUCTION

Thank you for choosing our engine the CORS-AIR N80. We invite you to spend some time reading this manual, which will let you discover all the features of your engine. Advices on maintenance and operation will help you to have a reliable engine and to preserve your investment.

Furthermore, we invite you to deliver this manual together with the engine if you sell it, so it can be useful for the next owner as well. The manufacturer and the resellers are ready to answer your questions and, if necessary, to solve every problem, because **YOUR AND THE OTHER PEOPLE'S SAFETY IS THE MOST IMPORTANT THING FOR US.**

## IDENTIFICATION OF THE OWNER

Owner

Address

Serial number

Reseller

Address

Owner's signature

Reseller's signature and stamp

Date of sale



# N80

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CYCLE	TWO STROKE
TOTAL DISPLACEMENT	78 c.c.
BORE	47,5 mm.
STROKE	44 mm.
COMPRESSION RATIO	11:1
COOLING	BY AIR
PEAK RPM max.	9900 RPM
PISTON	WITH TWO PISTON RINGS
CYLINDER KIT	MALOSSI MHR REPLICA WITH CUSTOMIZED SPECIFICATIONS FOR CORS-AIR MOTORS
CRANKCASE	CASTED IN ALLOY G-AL-SI 9 UNI 3051 / TREATED AND ANODIZED
CONNECTING ROD	IN COPPER PLATED STEEL 18 Ni Cr Mo5 JOINED TO THE DRIVE SHAFT THROUGH VERY PRECISE HIGH SPEED SILVER-PLATED ROLLER BEARINGS
CARBURATOR	MEMBRANE WALBRO WB46
FEEDING	SIX BLADE REED-VALVE SYSTEM CONNECTED TO THE CRANKCASE
SPARK PLUG	NGK BR9ES OR SIMILAR
SYSTEM	SIX PORT DISTRIBUTION
CYLINDER	IN ALLOY WITH NIKASIL COATING
REDUCTION	WITH POLY V BELT 12 GROOVES REDUCTION 1:3,75
CYLINDER HEAD TEMPERATURE	MAX TEMPERATURE 230°C MEASURED UNDER SPARK PLUG EXHAUST GAS TEMPERATURE NOT EXCEEDING 590 C°

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# N80

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ENGINE MOUNTING	BY 4 SHOCK ABSORBING RUBBER MOUNTS
ROTATION	COUNTERCLOCKWISE
DRIVE SHAFT	IN 18 Ni Cr Mo5 WITH 5 THERMIC TREATMENTS ON EVERY COMPONENT
ROLLER BEARINGS	FIT FOR HIGH SPEED CLASS C3
SEAL RING	IN VITON WITH VERY HIGH RESISTANCE AND LONG DURATION
OIL	TOP QUALITY OIL 100/100 SYNTHETIC AT 2,2%
ENGINE WEIGHT	<b>HAND START WITH CLUTCH KG 10,5</b> <ul style="list-style-type: none"><li>• COMPLETE WITH AIRBOX, EXHAUST, AND FOUR RUBBER MOUNTS</li></ul>

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# MAIN TORQUES

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MAIN TORQUES	Kg. m	(Nm)
NUTS TO FIX THE HEAD	1,6	16
NUTS TO FIX HALF-CRANKCASE	1,6	16
NUTS TO FIX THE CLUTCH	3,5	35
NUTS TO FIX BACK PART OF DRIVE SHAFT TO IGNITION HANDWHEEL	2,5	25
GAP BETWEEN COIL AND HANDWHEEL	0,4 mm	

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## **ASSEMBLY:**

You can install the engine on the frame by using 4 rubber mounts of 30X30 mm, 55 sh.

To attach the propeller use only bolts of class 10/8 (100 Kg) and make sure that their length is enough to exit from the reductor-pulley. Tighten the 6 bolts M6 in a cross, at 1.6 Kg.m. (16 Nm). Re-check the torque of the bolts after the first hour of engine's working.

For the connection between the carburetor and the fuel tank use a proper hose of the right diameter. The length of the fuel line must not be more than 80 cm.



### **IMPORTANT NOTES**

DO NOT try to start the engine without the propeller.

DO NOT start the engine with loose bolts or parts, since this can cause the detaching of the propeller, alteration of the propeller hub, damage to the rubber mounts.

### **IMPORTANT!**

**BEFORE FLYING CHECK ALWAYS EVERY PART OF YOUR CRAFT, FROM ENGINE TO FRAME.**

Verify that there are no damaged electric wires, that there are no leaks from hoses, tank, carburetor or engine's crankcase, that the propeller is not damaged or loose, that the springs of the exhaust-pipe are in good conditions, that the frame is not bent or broken because of falls, that rubber mounts are not cracked, that the reduction belt is not loose and every bolt is tight. Once you start the engine, leave it warm up for a couple of minutes. After the start, leave the engine at idle for 20/30 seconds, then accelerate and decelerate at medium rpm for one/two minutes.

## FUEL

Use for the mixture only premium gas 98 octane or higher, together with good-quality, synthetic oil for mixtures at a quantity of 2,2%.

When you prepare the mixture, make sure that the can has not dirt or water in it, put always the oil first and mix thoroughly.

Never run the engine without the air-filter, because dirt and dust raised by the propeller can damage it.

## ADJUSTMENT OF THE CARBURETTOR

The N80 is equipped with WB46, following the correct carburetor settings:

WB46 SETTINGS	N80 engine
H screw	1 hour + 20 minutes
L screw	1 hour + 15/20 minutes

This is the standard carb. set up we suggest, as engine manufacturer, of course any carburetor should be adjusted in base of weather conditions and flight altitudes.

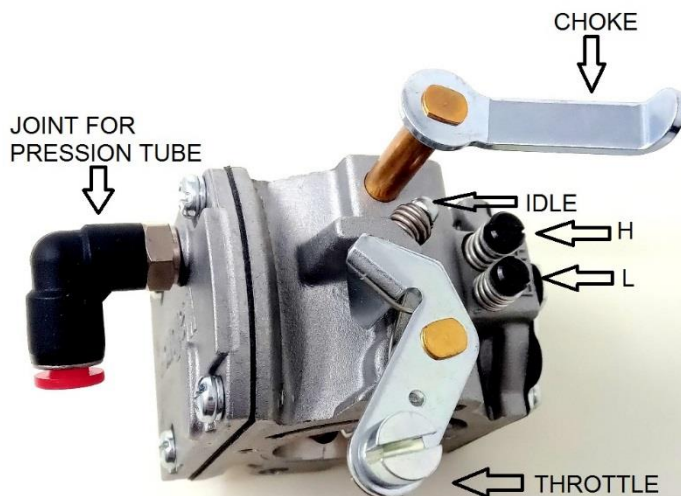
**WARNING: THE FOLLOWING OPERATION HAS TO BE DONE WHEN THE ENGINE IS HOT.**

The L screw sets the carburation of the low rpm and the factory settings go from 1 turn and 30 minutes to 1 turn and 40 minutes. The H screw sets the carburation of max rpm and the factory settings are 1 turn.

The lever **IDLE** is used for adjusting the mechanical idle, that we suggest to set up at 2500/2600 RPM.

The lever **CHOKE** should be kept open when the engine is running.

The engines are tested at test bench before delivery, to make the quality check and set the carburetor. To complete the running in is enough to make 2/3 flights of max 20/30 minutes, leaving cool down the engine between one flight and the other.





# MAINTENANCE

**AFTER THE FIRST HOUR OF RUNNING, CHECK THE BELT TENSIONING AND IN CASE RE-TENSION IT AT 380Hz.**



- AFTER THE FIRST 2 HOURS, TIGHTEN HEAD NUTS (IN CROSS ORDER) WITH A TORQUE WRENCH AT 1,6 Kg.m (16Nm).
- AFTER THE FIRST 3 HOURS OF ENGINE RUNNING MAKE A NEW BELT CHECK UP AND IN CASE RETENSIONING IT AT 380 HRZ

**- Every 20 hours:**

- Check the condition and gap (0.7 mm) of the spark plug
- Clean the air-filter, the carburetor filter placed at the end of the fuel pipe and the filter of the fuel tank
- Check the torque of every bolt
- Check the tension and condition of the reduction belt
- Check fuel lines and wiring
- Check that the cord of the starter has no abrasions

**- Every 50 hours**

- Same controls of the 20 hours and furthermore:
- Check the torque of the engine's crankcase nuts
- Change spark plugs
- Change the petals of the reed valve
- Check the reduction belt and the play of pulley bearings, change them in case of need
- Once a year (independently from flight hours) change the diaphragm of the carburetor.
- N.B. It is advisable to keep records of all maintenance in a log book for the engine.
- It is also advisable to install an instrument (CHT) to control the head temperature at sight.

# TENSION OF THE REDUCTION BELT DRIVE - USE CAUTION



Attention: a belt which is “over tensioned” can do permanent damage to bearings of pulley and drive shaft.

Therefore we strongly suggest for you to follow carefully these instructions.

Before adjusting the belt take a felt pen or marker and make a small sign on the cam shaft and on the front of the reduction plate.

This is your Zero or start point and from here you will be able to clearly see how much you move the eccentric tensioning cam in relation to the reduction plate.

Remember “these are Fine adjustments” and we suggest not to rotate the cam any more than 1 mm per adjustment. After each adjustment you can try to start the engine and check the result.

Consider that if the belt slips a little, but the engine still starts fine, then the tension is correct. Belt tension always increases automatically when the engine is running because of thermal expansion in the pulleys.

Once you have found the correct tension , do not adjust it any more. In case of doubts please contact your paramotor dealer – or CORS-AIR.

## To adjust the belt do the following:

- Loosen the cam of pulley: once this is loosened then you can turn the cam with a n.27 mm size wrench - careful to observe the 1 mm increments.
- Once you have finished turning the cam remember to re-tighten the safety bolts at 2,5 kg. ( 25 Nm) and put the seeger behind.

## **IGNITION**

In case the coil and/or the handwheel must be changed, it is compulsory to turn to your dealer or to trained personnel, even if this operation can appear simple at the first sight, since the timing of the engine, if wrong, can change the performance and cause damage to the engine. The distance between the coil and the flywheel magnet is 0,4-0,5 mm.

# WARRANTY

**CORS-AIR engines are manufactured with top-quality material, therefore warranty is valid also for their accessories.**

**Warranty includes spare parts and labor, transport excluded.**

**For any defective part, please contact your reference authorized dealer or Cors-Air directly, so that you can get proper indications about how to handle it.**

## **DURATION OF WARRANTY**

**1 YEAR beginning from the date of sell or exit from CORS-AIR**

## **WARRANTY IS VOID IN THE FOLLOWING SITUATIONS:**

- Alterations to the engine not approved by Cors-Air.
- Wear & tear of components of the engine due to the instructions within the product manual not being adhered to.
- Accidental falls or dropping of the engine or its components.
- Overheating and seizure of the engine due to prolonged high speed running of the engine, running with excessive loads, running with inadequate loads, running with insufficient oil in the petrol (for a wrong tuning of the carburetor) or running with petrol only (oil mixture omitted).
- The presence of dirt, sand or foreign bodies in the carburetor of the engine.
- Corrosion through bad storage of the engine or inadequate preparation for storage of the engine.
- Running the engine without an air-filter fitted to the carburetor.
- Miss-assembly of engine parts or components not assembled by Cors-Air but by the manufacturer of the paramotor or by the end user, supplied disassembled for packing and transport purposes, included all electrical or electronic components.
- Corrosion of the engine or components emanating from stone chips or any other impact or abnormal stress damage.
- Work other than the maintenance set out in the product manual having been carried out on the engine by anyone other than Cors-Air or official dealers.
- Incidental or consequential loss or damage.
- Service bulletins from Cors-Air not having been adhered to.

**CORS-AIR AND ITS RESELLERS REMAIN AT YOUR DISPOSAL FOR EVERY INFORMATION AND ADVICE ABOUT THE USE OF THE ENGINE.**



# TROUBLE SHOOTING

## THE ENGINE DOES NOT START

Please check:

- switch on-off
- cable of the spark plug
- correct spark plug gap
- all the connections of the electric plant
- that fuel arrives correctly from the tank to the carburetor

## FLOODED ENGINE

- Dismantle the spark plug
- dry it well
- before re-assembling it, let the propeller turn slowly 2/3 times.

## THE ENGINE DOES NOT HOLD IDLE SPEED OR HAS AN IRREGULAR SPEED

- Clean and adjust the carburettor.
- Check the reed valve petals are closing completely.
- Hold the reed up to a light and you should not see any light past the petal seating area.

## THE ENGINE CANNOT REACH MAXIMUM SPEED

- Check cable pulling throttle fully open.
- Check that there is no dirt in the carburettor or tank-filter nor restrictions in the fuel pipe, due to too tight curves, or air bubbles.
- Check the spark plug; is it's worn, change it with one of the same brand and same heat range.
- In case the head is dismantled to be decarboned, change both the head gasket and the cylinder gasket.

## **SOME FINAL IMPORTANT ADVICE**

NEVER switch on the engine with people near propeller, or to sides.

The BREAKAGE of a propeller can cause very severe hurts even several meters away.

DO NOT keep engine at peak rpm after the take off, except for the absolutely necessary time and for emergencies (obstacles or sudden wind).

In addition, dismantle the propeller at regular intervals and check that it is perfectly balanced, since an unbalanced propeller, even slightly, creates micro-vibrations which are not felt by the pilot, but can damage seriously parts of the engine with consequent breakages.

Please do NOT forget that the propeller has mass and a considerable inertial moment, so it's advisable not to vary suddenly the RPM of the engine, both in flight and on the ground.

These sharp and violent stresses could cause damages to the reduction, to the engine, to the belt and also possible deformations to the fixing holes of the propeller.

Once you have found the perfect carburation, DO NOT modify it unless you change flying place going to much higher or lower altitudes or unless climate and temperature are very different from the ones where you fly usually.

**DO NOT FLY in bad weather conditions, you'll fly the day after.**

**REMEMBER: FLIGHT IS FOR FUN, NOT FOR RISKING YOUR LIFE! HAVE A GOOD FLIGHT AND ENJOY YOURSELF.**



# HELIX PROPELLER QUICK RELEASE SYSTEM

central bolt  
M12x30  
(QRH1)



pins 47 mm.  
(QRH3)



safety clip  
(QRH2)



propeller disk  
(QRH4)



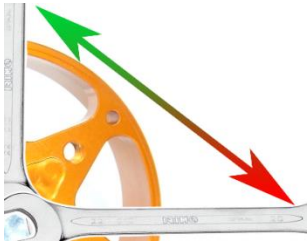
aluminium disk  
(QRH5)

Instructions for assembly: (QRH5)

1. Put some light or medium Loctite on the 6 pins and tighten them completely at 1,2 kg
2. Always use the aluminum disk between the pulley and the prop
3. Insert the propeller
4. Insert the propeller disk
5. **Insert the central bolt and tighten it at about 1,5 Kg (15Nm), checking that the clip can be inserted**
6. Insert the safety clip

# PROPELLER QUICK RELEASE SYSTEM

1. With an allen key screw the central bolt until you feel a little bit of resistance.
2. Then turn the allen key from 10 to 15 minutes max. for tensioning central bolt.



Max. 15  
minutes

Remove central bolt of quick release when propeller is not installed.

Should you try to start the engine or turn the pulley by hand, with the central bolt in position without the propeller, you may risk to damage the pulley set.

# HOW TO START THE ENGINE

We wish to remind you that a correct priming is the key for starting any 2 stroke engines.

Please follow the following instructions:

1. Lightly press pin on WB46 cover metering diaphragm for priming the carburetor.
2. Stop priming the engine once fuel gets inside the WB46. Remember that less fuel gets in and less you risk to overflow your engine, which will make you even difficult to start the engine.
1. Quickly pull the rope, without reaching end run.

In winter time, or in cold weather, you may help the engine start by closing the choke.

Pull the rope 2-3 times, until you hear the blow in engine combustion chamber, then open again the choke, and start the engine.



