The Serpent 966 is the next evolution of Serpent’s hugely-successful 960 lineage, combining ultimate performance into a single package. The Serpent 966 was designed to be a world champion, while still being easy to use, assemble, and set up. You are now part of the worldwide network of Serpent drivers, which gives you superior technical support and access to many benefits that only Serpent drivers can enjoy.

The Serpent 966 offers many of the same specifications and features that made the Serpent 950/950R into top-competition racecars. Continuously pushing the performance envelope, Serpent’s engineers have added many new and innovative features that can help take your Serpent 966 into the winner’s circle: stronger reinforced components, easier roll-centre adjustment, redesigned braking system, improved rear suspension design, adjustable rear anti-roll bar, optional throttle servo positioning (laydown or upright), new improved shock absorbers, and new receiver pack configuration.

INSTRUCTIONS
Serpent’s long tradition of excellence extends to their instruction manuals, and this instruction manual is no exception. The easy-to-follow layout is richly illustrated with 3D-rendered full-color images to make your building experience quick and easy. Following the instructions will result in a well-built, high-performance racecar that will soon be able to unleash its full potential at the racetrack.

This instruction manual has been divided into sections that will logically lead you through the assembly process of your Serpent 966. Follow the assembly steps in the order presented to ensure that no problems occur during assembly. Each step indicates all the fasteners and small parts used. Bag numbers identify the kit bag(s) that contains the appropriate parts.

EXPLODED VIEWS AND PARTS LIST
The exploded views and parts lists for the Serpent 966 are included in the back of this manual. The exploded views show all the parts of a particular assembly step along with the Serpent part number. The parts lists indicate the part number and name of each part for easy reference when ordering.

SAFETY
Included with your Serpent 966 kit is a document entitled “Read This First” that covers safety precautions for the assembly and use of this product. We strongly recommend that you thoroughly read and understand that document, and follow all the precautions.

CONTENTS
FRONT ASSEMBLY 4
REAR ASSEMBLY 9
RADIO PLATE ASSEMBLY 15
GEARBOX ASSEMBLY 22
CENTAX ASSEMBLY 24
FINAL ASSEMBLY 27
REFERENCE GUIDE 32
USING THE MANUAL

Each step contains a variety of numbers, lines, and symbols. The numbers represent the order in which the parts should be assembled. The lines and symbols are described below.

1. Step number; the order in which you should assemble the indicated parts
2. Length after assembly
3. Assembly path of one item into another
4. Group of items (within lines) should be assembled first
5. Direction the item should be moved
6. Glue one item to another
7. Press/Insert one item into another
8. Connect one item to another
9. Gap between two items

Apply graphite grease (GR), threadlock (TL), CA glue (CA) or One-way Lube (OW). (Items not included.)

SERPENT.COM

The printed instruction manual included with your Serpent 966 kit is very complete, though due to continuous product development, more up-to-date information may be provided at our Serpent.com website.

All information about the Serpent 966 is accessible from the Serpent 966 product page which can be found on Serpent.com and can be accessed by simply typing serpent.com/903009 into your web browsers address bar.

From the Serpent 966 product page you will find the very latest information about your Serpent 966: reports by team drivers and other experts, tips and tricks, setups, image gallery and downloadable files including the latest version of the instruction manual will be made available as downloadable PDF-files.
Change the position of BOTH eccentric hubs to adjust front belt tension. Both hubs should have the same position.
Completed assembly - hole mounted to outside

- Insert setting
- M4x12
- M4x8
- M4x4
- 7mm
- 5mm
Press anti-roll bars into mounts far enough so the bars do not bind when the suspension is compressed.
Assemble L & R steering rods:

1. 87.5mm
Assemble both rear hubs using the indicated steps.
In case you plan to use the connectors, then mount the M3x8 RH.
Assemble L & R linkages

50mm
Note the orientation of the servo mounting screw blocks. Reverse the default orientation to mount a smaller servo.

Use the following servo arms with these brands of servos.
23 - Sanwa / KO / JR
24 - Hitec
25 - Futaba

Laydown Throttle Servo

THROTTLE SERVO
Servo output shaft must be towards REAR of the car.

Note the orientation of the servo mounting screw blocks. Reverse the default orientation to mount a smaller servo.

OPTION 1
Laydown Throttle Servo

STEERING SERVO
Servo output shaft must be towards FRONT of the car.
RACING TIP: To protect the receiver against fuel and moisture, seal the wired receiver into a rubber balloon before mounting it.

OPTION 1: Laydown Throttle Servo

Securelyattach receiver to mounting plate.

Use the following servo arms with these brands of servos.
23 - Sanwa / KO / JR
24 - Hitec
25 - Futaba

Laydown Throttle Servo

OPTION 1

C

4

Page 16
Securely attach receiver to mounting plate.

**RACING TIP:** To protect the receiver against fuel and moisture, seal the wired receiver into a rubber balloon before mounting it.

**OPTION 2:** Upright Throttle Servo

**FUEL CAP FITTING PLACEMENT**
- **CW tracks:** Fitting on **RIGHT** side.
- **CCW tracks:** Fitting on **LEFT** side.
Unscrew the bottom half of the pre-assembled shock absorbers.

**FILLING**

Fill the shock body with the supplied shock absorber oil.

**BLEEDING**

Let the oil settle and allow the air to escape. Slowly move the piston up and down to release any trapped air bubbles. Repeat as necessary until no bubbles appear.
With the shock body filled with oil, slowly screw the bottom half of the pre-assembled shock back onto the shock body.

**IMPORTANT!** Do not cross thread!

Oil will overflow through the built-in bleed channel in the threads.

Front shock: 68mm

Rear shock: 73mm

Pink Spring

Note the lower shock mount holes used.
Note the middle shock mount holes used.

Purple Spring
Start with screw head flush with bottom edge of hole. Both screws must be set equally.
ADJUSTING THE 2-SPEED SHOE GAP

Loosed the two gap-setting set screws to allow the shoes to rest on the drive adaptor.

Install the 2-speed shoes in the 2nd gear drum, but do NOT install the 1st gear.

There should be equal but minimal spacing between the 2-speed shoes and the 2nd gear drum. Tighten BOTH gap setting set screws until the shoes touch the inside surface of the aluminum 2nd gear drum, then loosen BOTH set screws by 1/2 turn each. The 2nd gear should spin freely.

Install the first gear.
IMPORTANT! Use the cone that comes with your engine
1.2mm

Initial clutch spring tension

Note inside shoulders

A
Large inner dia.

B
Small inner dia.

5.2mm

5.0mm

IMPORTANT! Install thrust bearing plates as shown
Install only the clutchbell and the thrustbearing assembly on the engine crankshaft. Push the clutchbell onto the clutch shoe, and then measure the distance A as indicated.

Pull the clutchbell away from the clutch shoe, and then measure the distance B as indicated.

The clutch gap is A – B; the correct gap is 0.7mm. If the clutch gap is greater than 0.7mm, you can easily calculate the thickness of shims required to set the correct gap:

Thickness of shims required (in mm) = A – B – 0.7

For example, using the values A=1.3mm, B=0.3mm
Shim thickness = 1.3 – 0.3 – 0.7 = 0.3mm

Place shims between the outer thrustbearing plate and the rim of the thrustbearing carrier as shown.

Place small shims to remove all but a small amount of end play.
FINAL ASSEMBLY

Orientation of belt tensioner bearings

1. M3x16
2. M3x16
3. M5x12
4. M4x16
5. M4x10
6. M3x16

Bag 15

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OPTION 1: Laydown Throttle Servo

Use the following servo arms with these brands of servos.
23 - Sanwa / KO / JR
24 - Hitec
25 - Futaba

OPTION 2: Upright Throttle Servo
OPTION 2: Upright Throttle Servo

Completed throttle/brake linkage

Side belt tension adjustment

Looser

Tighter

Completed throttle/brake linkage

Side belt tension adjustment
Securely attach battery pack to mounting plate.
SHOCK ASSEMBLY

#903332 - Revision-set RCC shocks
#903334 - RCC Shock-set short 2009 (2)
#903335 - RCC Shock-set long 2009 (2)

* - Optional
FINAL ASSEMBLY
### SERPENT 966 PARTS LIST

**903009 SERPENT 966 1/8 4WD KIT**

**ART No.** DESCRIPTION

<table>
<thead>
<tr>
<th>ART No.</th>
<th>DESCRIPTION</th>
</tr>
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<tbody>
<tr>
<td>903327</td>
<td>Manual 966</td>
</tr>
<tr>
<td>903328</td>
<td>Reference guide 966</td>
</tr>
<tr>
<td>903329</td>
<td>Decal sheet 966 (2)</td>
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</table>

### RADIO INSTALLATION / BATTERY

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1070</td>
<td>Grommet rubber soft (4)</td>
</tr>
<tr>
<td>1296</td>
<td>Washer nylon M3x7x0.5 (4)</td>
</tr>
<tr>
<td>1611</td>
<td>Servo lever 23T, double arm (2)</td>
</tr>
<tr>
<td>1612</td>
<td>Servo lever 25T, double arm (2)</td>
</tr>
<tr>
<td>1613</td>
<td>Servo lever 24T, double arm (2)</td>
</tr>
<tr>
<td>1619</td>
<td>Wire-guide nylon</td>
</tr>
<tr>
<td>1636</td>
<td>Throttle linkage set</td>
</tr>
<tr>
<td>1638</td>
<td>Brake-linkage set</td>
</tr>
<tr>
<td>1639</td>
<td>Collar alu 2.1 + setscrew (4)</td>
</tr>
<tr>
<td>1650</td>
<td>Balls 6mm/setscrews hex (4)</td>
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<tr>
<td>1654</td>
<td>Spring small (4)</td>
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</table>

### FUEL TANK AND PARTS

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
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<tbody>
<tr>
<td>600117</td>
<td>Fuel Cap seal silicone (2)</td>
</tr>
<tr>
<td>1438</td>
<td>Fuel cap with shaped seal</td>
</tr>
<tr>
<td>1493</td>
<td>Pressure nipple</td>
</tr>
<tr>
<td>1602</td>
<td>Tank-clips small (10)</td>
</tr>
<tr>
<td>902115</td>
<td>Mounting-pin tank + rubber cap (2)</td>
</tr>
<tr>
<td>902116</td>
<td>Cap rubber for mounting pin tank (2)</td>
</tr>
<tr>
<td>903136</td>
<td>Shim 3.1x8x5 nylon</td>
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<tr>
<td>903278</td>
<td>Fueltank 125cc AFL cap / shaped seal</td>
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### SHOCK SPRINGS

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
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<tbody>
<tr>
<td>160300</td>
<td>Spring white L23 (2.3/13) (2)</td>
</tr>
<tr>
<td>160301</td>
<td>Spring yellow L23 (2.8/16) (2)</td>
</tr>
<tr>
<td>160302</td>
<td>Spring orange L23 (3.4/19.5) (2)</td>
</tr>
<tr>
<td>160303</td>
<td>Spring red L23 (4.1/23.5) (2)</td>
</tr>
<tr>
<td>160304</td>
<td>Spring pink L23 (4.0/28) (2)</td>
</tr>
<tr>
<td>160305</td>
<td>Spring blue L23 (5.8/33) (2)</td>
</tr>
<tr>
<td>160306</td>
<td>Spring purple L23 (6.8/39) (2)</td>
</tr>
<tr>
<td>160307</td>
<td>Spring green L23 (8/45.5) (2)</td>
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<tr>
<td>160308</td>
<td>Spring grey L23 (9/51.5) (2)</td>
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<tr>
<td>160309</td>
<td>Spring black L23 (10/57) (2)</td>
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<tr>
<td>160310</td>
<td>Spring-set short (5x2)</td>
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<tr>
<td>160320</td>
<td>Spring white L27 (2.3/13) (2)</td>
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<tr>
<td>160321</td>
<td>Spring yellow L27 (2.8/16) (2)</td>
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<tr>
<td>160322</td>
<td>Spring orange L27 (3.4/19.5) (2)</td>
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<tr>
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<td>Spring red L27 (4.1/23.5) (2)</td>
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<tr>
<td>160324</td>
<td>Spring pink L27 (4.0/28) (2)</td>
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<td>160325</td>
<td>Spring blue L27 (5.8/33) (2)</td>
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<tr>
<td>160326</td>
<td>Spring purple L27 (6.8/39) (2)</td>
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<td>Spring green L27 (8/45.5) (2)</td>
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<tr>
<td>160328</td>
<td>Spring grey L27 (9/51.5) (2)</td>
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<tr>
<td>160329</td>
<td>Spring black L27 (10/57) (2)</td>
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<td>160330</td>
<td>Spring black L27 set (5x2)</td>
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### CHASSIS / RADIO PLATE

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<th>Part No.</th>
<th>Description</th>
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<tbody>
<tr>
<td>902155</td>
<td>Radio plate bracket</td>
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<tr>
<td>902157</td>
<td>Roll-bar chrome</td>
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<tr>
<td>903102</td>
<td>Radio plate S960</td>
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<tr>
<td>903133</td>
<td>Sideplate R carbon</td>
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<tr>
<td>903277</td>
<td>Washer alu conical M4 (4)</td>
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<tr>
<td>903322</td>
<td>Sideplate bushing 966</td>
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<tr>
<td>903323</td>
<td>Chassis 966 LCG</td>
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<tr>
<td>903331</td>
<td>Sideplate L 966 carbon</td>
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### BODYMOUNTS FR and RR

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
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<tbody>
<tr>
<td>1601</td>
<td>Body clips (10)</td>
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<tr>
<td>808144</td>
<td>Body mount universal</td>
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<tr>
<td>808152</td>
<td>Centering bushing threaded</td>
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<tr>
<td>903111</td>
<td>Body plate FR</td>
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<tr>
<td>903130</td>
<td>Bodymount RR</td>
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<tr>
<td>903260</td>
<td>Arms body-mount long RR (2)</td>
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<tr>
<td>909344</td>
<td>Pivot pins body mount upper (2)</td>
</tr>
<tr>
<td>909345</td>
<td>Pivot bushings rear body mount (4)</td>
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<tr>
<td>909366</td>
<td>T-bracket rear body support</td>
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### FRONT SECTION

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
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<tr>
<td>1065</td>
<td>O-ring for alu front axle (10)</td>
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<tr>
<td>1089</td>
<td>Shim nylon adaptor FR 6.1x11x1 (4)</td>
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<tr>
<td>903296</td>
<td>Belt 60S3M201 Orange</td>
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<tr>
<td>803198</td>
<td>Adjustable Nut Nylon (10)</td>
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<tr>
<td>803204</td>
<td>Anti-roll bar blades set FR soft</td>
</tr>
<tr>
<td>808214</td>
<td>Caster spacer set (2)</td>
</tr>
<tr>
<td>808346</td>
<td>Pivot balls steel 8.5mm (2)</td>
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<tr>
<td>902105</td>
<td>Bumper</td>
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</table>
902271 Springs quick-change short (4)
902272 Wheel-nut alu + O-ring (4)
902281 Driveshaft FR cv-set (2)
902282 Insert alu CV (2)
903106 Wishbone FR upper L
903107 Wishbone FR upper R
903118 Eccentric nylon (2)
903161 Sus slot bracket FR upper L + R
903233 Steering block WOS (1+2)
903261 Wishbone front lower (2)
903262 Anti-roll bar lever/downstop front
903264 Bearing block front left 08
903265 Bearing block front right 08
903266 Wheel-axles front CV set OS2
903267 Lever alu /spring/pin FR OS2 (2)
903272 Pivot pin 3x82mm (2)
903290 Shim wheel axle OS2 18x12x1mm (4)
903143 Roll center carbon spacer 1mm
903291 Shock-support carbon FR v3
903302 Cvd-shaft FR OS2 set (2)
909224 Shim 12x18x0.3mm (2)
909225 Front axle alu. with OWB
909264 Pivot pins front upper (2)
9212 Inner driveshaft adaptors (2)
9213 Pulley / flange 2AT
930187 Eccenters support fr up (4)
909396 Bearing eccenter (2)

MIDDLE SECTION
903295 Belt 60S3M432 Orange
808251 Middle shaft bracket alu
901255 Belt-tensioner shaft and nut
902252 Middle shaft steel
909236 Pulley / flange 16T
909238 Pulley / flange 18T
909242 Pulley / flange 22T
909245 Pulley / flange 25T
909250 Pulley adaptor alu. (2)

REAR SECTION
802328 Pivot pin rear upper (2)
803198 Adjustable Nut Nylon (10)
804217 Bearingblock 2sp R 733/966 V2
804218 Bearingblock 2sp L 733/966 V2
902272 Wheel-nut alu + O-ring (4)
903118 Eccentric Nylon (2)
903121 Pivot insert nylon (4+4+4)
903154 Nylon inserts wheel-axles (2)
903156 Driveshaft rear 62mm (2)
903201 Engine monoblock M21
903229 Pulley solid axle 51T V2
903250 Pivot-balls 8.5mm 27.7mm (2)
903257 Upright 960 OS2 (2)
903258 Wishbone rear upper (2)
903259 Wishbone rear lower (2)
903263 Track rod with hole 25mm (2)
903268 Wheelaxle RR OS2 (2)
903269 Lever alu/spring/pin RR OS2 (2)
903273 Ball 6.8mm steel (2)
903279 Solid axle RR / clip
903290 Shim wheel axle OS2 18x12x1mm (4)
903306 Shim 3.5x8x1 orange (12)
903307 Pivot pin 3.5x66.5 Rear low (2)
903309 Suspension Bracket rear FR
903356 Bearing block 966 V2
804220 Bushings bearingblock l+r 733 / 966 V2 (2)
804221 Bushings arb bearingblock l+r 733/966 V2 (2)
903311 Eccenter 960 (2)
903312 Suspension Bracket rear rr
903313 Shocktower 966 rear
903314 Uppersuspension bracket FR 966
903315 Uppersuspension bracket rr 966
903322 Sideplate bushing 966
903294 Belt 80S3M210 Orange
909224 Shim 12x18x0.3mm (2)
9619 Pulley adapter alu 19T
903339 Antirollbar 966 RR 2,5mm
903344 Antirollbar spacer 2.5mm (2)
903342 Antirollbar ball 2,5mm (2)

BRAKE SYSTEM
903281 Brake pulley 22T V2
903282 Brake pulley adaptor V2
903318 Brake cam 966
903319 Brake bushing (2)
903321 Brake pully retainer 966
903324 Brake spring (2)
903330 Brakeplate/pad set premounted
909356 Brake-cam / spring-set
903352 Brake disk onepiece

2-SPEED GEARBOX
6626 Springs / screws 2-speed
902410 2-speed gearbox LC (no shaft incl)
902411 Drive-flange alu with OWB LC
902412 Adaptor 2-speed LC
902413 Clutch bell alu LC
902416 2-speed clutch shoes set LC
902444 2-speed gear 44T (2nd) LC
902445 2-speed gear 45T (2nd) LC
902446 2-speed gear 46T (2nd) LC
902447 2-speed gear 47T (1st) LC
902448 2-speed gear 48T (1st) LC
902449 2-speed gear 49T (1st) LC
903308 2 speed shaft 966
903320 2sp shaft bushing 966

CLUTCH SYSTEM
1377 Centax II thrust-bearing 5x10
6503 Flywheel cone (3)
6579 Centax flywheel 38mm
6582 Centax clutch-nut
6583 Centax pre-load adjusting nut
6584 Centax spring cup
6585 Centax thrust washer
6599 Centax shim-set 7x13 (10)
903212 Centax support-disk alu
903222 Centax II revision-set
903223 Spur gear-set 1/8 (7)
903224 Gear pinion set Centax II
903239 Centax-2 clutch-shoe red
909510 Centax II clutch-set (excl. Flywheel)
909512 Centax II clutch-housing universal
909514 Centax II bearing spacer 5x7
909515 Centax II centrifugal shoes (3)
909516 Centax II spacer thrustbearing
909518 Centax II coastspin 1.8
909519 Centax 5x10 shim-set 0.1 (2) 0.3 (1)
909555 Centax gear-pinion alu. 15T
909556 Centax gear-pinion alu. 16T
909557 Centax gear-pinion alu. 17T
909558 Centax gear-pinion alu. 18T
909559 Centax gear-pinion alu. 19T
909560 Centax gear-pinion alu. 20T

ENGINE MOUNTS
1021 Screw flanged allen M5x8 (4)
1595 Mount alu exhaust wire
1599 Exhaust mounting wire
903201 Engine monoblock M21
BALL-BEARINGS
1311 Ball-bearing 5x8 HS
1312 Ball-bearing 5x8 flanged HS
1315 Ball-bearing 5x10 HS
1320 Ball-bearing 6x10 flanged HS
1321 Ball-bearing 6x10x3 HS (2)
1340 Ball-bearing 6x10 HS (2)
1341 Ball-bearing 6x13 HS (2)
1377 Thrustbearing 5x10

BODIES AND WINGS
1601 Body clips (10)

Optionals
1434 Pressure Nippleset tank 90’
1666 Transpondermount carbon
6123A Body clips (10)
6587N Centax clutch shoe Yellow
90219 Turnbuckle 65mm titanium (2)
902156 Radioplate support 950/960 alu
903202 Tool RCC shocks
903210 Tool nut-driver 12x100mm SPP
909590 Gear pinion wrench
909597 Centax gap-tool alu

MERCHANDISING
1872 Rucksack Serpent (35x45cm) black
1873 Banner Serpent S-logo 2x1m nylon

FASTENING MATERIALS
110100 Screw allen countersunk m3x10 (10)
110101 Screw allen countersunk m4x8 (10)
110102 Screw allen countersunk m4x10 (10)
110103 Screw allen countersunk m4x16 (10)
110104 Screw allen countersunk m4x10 (10)
110105 Screw allen countersunk m4x12 (10)
110106 Screw allen fl. roundhead m5x12 (10)
110107 Screw allen countersunk m3x16 (10)
110108 Screw allen roundhead m3x6 (10)
110109 Screw allen roundhead m3x10 (10)
110110 Screw allen roundhead m3x16 (10)
110111 Screw allen roundhead m3x14 (10)
110112 Screw allen roundhead m3x12 (10)
110113 Screw allen roundhead m4x8 (10)
110114 Setscrew allen m3x8 (10)
110115 Setscrew allen m3x4 (10)
110116 Setscrew allen m3x3 (10)
110117 Setscrew allen m3x12 (10)
110118 Setscrew allen m4x4 (10)
110119 Setscrew allen m4x6 (10)
110120 Setscrew allen m4x10 (10)
110121 Setscrew allen m5x6 (10)
110122 Setscrew allen m3x6 (10)
110123 Screw ph roundhead 3.5x13 (10)
110200 Pin 2,5x8 (10)
110201 Pin 3x12 (10)
110202 Pin 5x5 (10)
110203 Pin 3x14 (10)
110204 Pin 3x20 (10)
110205 Pin 3x22 (10)
110206 Pin 2.5x22 (10)
110207 Pin 2.5x12 (10)
110300 E-clip 2.3 (10)
110301 E-clip 3.2 (10)
110302 E-clip 5.0 (10)
110303 E-clip 4.0 (10)
110304 E-clip 7.0 (10)
110305 Seger clip 12x1.0 (10)
110400 Washer 6.0x10 (10)
110401 Washer 3.2x7 (10)
110402 Nut nylock M3 (10)
110403 Nut nylock M4 (10)
1646 Steel balls 6mm M3 (4)
1647 Steel balls 6mm (4)
1650 Balls 6mm/setscrews hex (4)
903325 Screw set 966 (178)

The above list may change without prior notice

NEWS / NOTES