

# FEMA



## Electronic on-board starter

*Unique  
in the world!*

We supply electronic on-board starters for all OS-Max, Saito and Titan/Zenoah standard combustion engines.



# FEMA MODELLTECHNIK

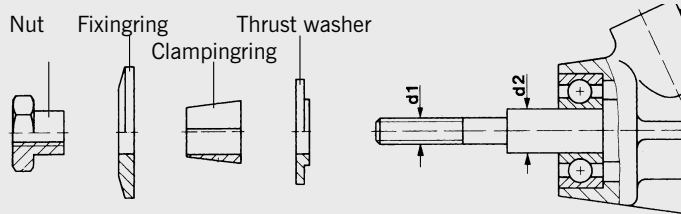
Böhler GmbH · Obere Rebbergstr.11 · D-77709 Wolfach · Tel.07834/303 · Fax 07834/47735

[www.fema-modelltechnik.de](http://www.fema-modelltechnik.de)

Stock number	Item	Price in EURO/piece
<b>Universal on-board starting systems for aviation engines</b>		
9500	Basic kit for 7.5-13.5cc engines* (adapter necessary) .....	186,50
9512	Basic kit for 15-35cc engines* (adapter necessary) .....	198,50

### Technical information on-board starter

In addition to the basic kit, an adapter is necessary for each engine type, Adapters can be combined individually for internal combustion engines that are not listed above, Please state with your order thread = **d1** and diameter = **d2**



### Adapters for 7,5-35 cc aviation engines

9532	OS-Max -FS60/61, 70, 80, 90/91 (4-stroke engine), OS Max 61/91 FX (2-stroke engine).....	20,00
9537	Saito FA 40, FA 45, FA 50, FA 65, FA 80 (4-stroke engine).....	20,00
9540	OS-Max-FS 120, FS 200S (4-stroke engine), OS-Max-90/91, 104RX, 140 RX (2-stroke engine) .....	20,00
9541	Saito FA 90/91, 100, 120, 150, 180, 220 (4-stroke engine).....	20,00
9543	OS-Max FS 52 (4-stroke engine), Laser-70 (2-stroke engine) .....	20,00

### Compact on board starting systems for helicopter-/car-engines

9420A	Compact on board starter for Zenoah G 230/260 PU, G 231/260 PUH.....	242,00
	ZG-23/26 Flugmotoren, ZG 231/26 Heliengines, ZG-26 EI	
9421A	Compact on board starter for Zenoah G 200, Titan ZG-20.....	228,50

### Compact on-board starting systems for naval aviation engines

9613A	Compact on-board starter for Titan ZG-23/26 SLM ( Zenoah G-230/260 PUM).....	208,00
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### Compact on-board starting systems for aviation engines

9713A	Compact on-board starter for Zenoah G 230/260 PU / ZG-23/26 SL, ZG-26 EI.....	192,00
9714	Compact on-board starter for Zenoah G 380 PU / ZG-38 SL.....	192,00
9715A	Compact on-board starter for Zenoah G 200 PU / ZG-20 SL.....	192,00
9724	Compact on-board starter for Zenoah G 620 PU / ZG-62 SL.....	239,50
9725	Compact on-board starter for Zenoah G 450 PU / ZG-45 SL .....	239,50
9730A	Compact on-board starter for Zenoah G 800 PU / ZG -80 SL.....	338,00
9732	Compact on-board starter for Saito FG-57T (does not fit the »TS-Version«) .....	424,00

### Delivery :

We deliver our products to specialist shops or directly to your address. For direct delivery we charge for carriage:

**Germany: 6,50 Euro for up to 5 kg.**

**EU: 17,00 Euro for up to 5 kg.**

For a higher weight or deliveries outside the EU we charge postage and package individually.

### Bank account :

Sparkasse Wolfach · Bahnhofstr. 4 · D-77709 Wolfach  
account number: 00-019449

sort code: 664 527 76

IBAN-DE 49 6645 2776 0000 019449

BIC-Code: SOLADES1WOF

The prices contain the legal tax of the Federal Republic of Germany.

stock number	Item	price in Euro
9400/04	starter motor speed 480 with bevel, 12 teeth	42,50
9400/07	small parts kit	8,50
9400/08	fan wheel with reconditioning	62,50
9400/10	Coupling	52,50
9400/11	thrust washer	6,50
9400/12	free wheeling gear 76 teeth, m=0,8 mm, HFL 1226	68,50
9400/15	engine holder plate	18,50
9400/16	gearbox support with bevel 10 teeth, m=0,8 and aluminium gear 76 teeth, m=0,5	68,50
9410/12	free wheeling gear 76 teeth, m=0,8 mm, HFL 1226	62,50
9420/04	starter motor speed 480 with bevel, 12 teeth	39,50
9420/07	small parts kit	8,50
9420/08	engine support plate	32,50
9420/12	free wheeling gear 76 teeth, m=0,8 mm HFL 1226	62,50
9420/15	engine holder plate	18,50
9420/16	gearbox support with bevel 10 teeth, m=0,8 mm and al-gear 76 teeth, m=0,5 mm	68,50
9421/07	small parts kit	8,50
9500/01	support, 2 units	22,50
9500/02	plate for bevel bearing	20,00
9500/03	bearing	14,50
9500/05	free wheeling gear 60 teeth, m=0,8 mm, HF 1616	39,50
9500/06	bevel, 10 teeth, m=0,8 (pinion)	18,50
9500/07	coupling, SW 25 mm	39,50
9500/12	small parts kit	8,50
9512/01	support, 2 units	24,50
9512/02	plate for bevel bearing	24,00
9512/05	free wheeling gear 76 teeth, m=0,8 mm, HF 1616	48,50
9512/12	small parts kit	8,50
9514/01	plate for bevel bearing	32,00
9514/12	small parts kit	8,50
9515/07	cardan shaft, 5/6 mm	32,50
9518/03	plate for bevel bearing	38,50
9518/05	bolt 58/61,5 mm, 2 units	28,50
9518/07	coupling, SW 32 mm	46,00
9520/01	engine support plate	38,50
9520/02	nut M8x1 left	4,00
9524/04	free wheeling gear 76 teeth, m=0,8 mm, HF 2016	52,50
9530/02	nut M7x22 mm	6,50
9530/03	nut M8x22 mm	6,50
9530/04	nut 1/4« UNF-28x22 mm	6,50
9530/05	nut 5/16« UNF-24x22 mm	6,50
9530/07	nut 3/8« UNF-24x22 mm	9,50
9530/11	holder disc 24 mm for engines tu 13,5 ccm	5,00
9530/12	holder disc 30 mm for engines from 15 ccm	6,50
9530/21	clamping ring, 7 mm drill-hole	6,50
9530/22	ctamping ring, 8 mm drill-hole	6,50
9530/23	ctamping ring, 9,5 mm drill-hole	6,50
9530/24	clamping ring, 10 mm drill-hole	6,50
9530/26	ctamping ring, 12 mm drill-hole	9,50
9530/31	thrust washer, 7 mm drill-hole	6,50
9530/32	thrust washer, 8 mm drill-hole	6,50
9530/33	thrust washer, 9,5 mm drill-hole	6,50
9530/34	thrust washer, 10 mm drill-hole	6,50
9530/35	thrust washer, 12 mm drill-hole	9,50

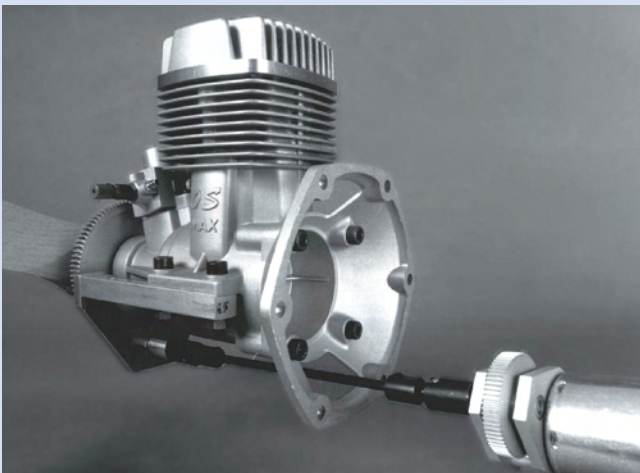
<b>stock number</b>	<b>Item</b>	<b>price in Euro</b>
9560/04	micro switch, 16A	4,00
9560/07	board switch, 16A	4,00
9570/01	starter motor Speed 500 with gearbox, 1=5,5	68,50
9570/02	gearbox single, 1=5,5	36,00
9570/03	bevel, 12 teeth, m=0,5 mm, suitable to all gearboxes	6,50
9570/04	al-gear with output shaft, 66 teeth, m=0,5 mm	24,50
9575/03	starter engine Speed 600 with bevel, 12 teeth, m=0,5 mm	36,50
9580/01	starter motor speed 480 with gearbox, 1=6,33	68,50
9580/02	gearbox single, i=6,33	36,00
9580/04	Al-gear with output shaft, 76 teeth, m=0,5 mm	24,50
9580/05	starter motor speed 480 with bevel, 12 teeth, m=0,5 mm	42,50
9613/12	small parts kit	8,50
9710/01	engine support plate (replaces the engine support plate for OS-Max No.1060)	42,50
9710/12	small parts kit	8,50
9711/01	plate for bevel bearing	34,50
9711/12	small parts kit	8,50
9712/07	coupling, SW 38mm	52,50
9713/02	gearbox support with bevel 10 teeth, m=0,8 mm and al-gear 66 teeth, m=0,5 mm	68,50
9713/04	carrier for electric motor	12,50
9713/12	small parts kit	8,50
9714/02	gearbox support with bevel 10 teeth, m=0,8 mm and al-gear 66 teeth, m=0,5 mm	68,50
9714/04	carrier for electric motor	12,50
9714/12	small parts kit	8,50
9715/02	gearbox support with bevel 10 teeth, m=0,8 mm and al-gear 66 teeth, m=0,5 mm	68,50
9715/04	carrier for electric motor	12,50
9715/12	small parts kit	8,50
9724/01	engine support plate	38,50
9724/03	nut M 10x1	14,50
9724/04	bevel support plate	34,50
9724/05	bevel bearing	18,50
9724/06	Coupling	54,50
9724/07	carrier for electric motor	18,50
9724/09	al-gear with 90 teeth, m=0,8 mm	24,50
9724/12	small parts kit	10,50
9725/03	nut M 8x1	9,50
9725/06	Coupling	54,50
9725/12	small parts kit	10,50
9730/01	engine support	82,50
9730/03	nut M 10x1	16,50
9730/04	bevel support plate	52,00
9730/05A	free wheeling gear, 76 teeth, m=0,8 mm, HF1826	78,50
9730/06A	Coupling	62,50

With the FEMA on-board starting system a dream of many innovative model makers has come true.

## Functional description:

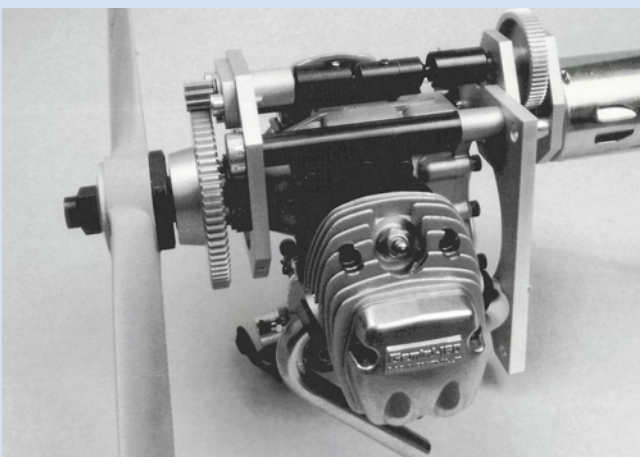
With the FEMA on-board starting systems all common internal combustion engines can be started safely by radio control on ground as well as in the air. For the universal use there are two different variations of on-board starting systems:

### Universal on-board starting system



For this model, only the starting device is attached directly to the internal combustion engine. The starter engine is placed separately from the internal combustion engine inside the fuselage (depending on balance point or space requirements). The power from the starter engine to the starting device at the internal combustion engine is transmitted via a cardan shaft with variable length.

### Compact on-board starting system



Different to the universal on-board starting system, the starting device and the starter engine of the compact on-board starter are attached directly to the internal combustion engine. Thus the internal combustion engine and the on-board starter form a compact unit.

The on-board starting systems can basically be deployed in two operation modes:

### Starting of the internal combustion engine via the radio control

With this operation mode, the internal combustion engine can be started on the ground as well as in the air via the radio control. In this case the NC-storage battery is placed inside the model.

### Safe starting of the internal combustion engine is only possible on ground

This operating mode only requires the attachment of the starting device and the starter engine inside the model. The starter storage battery (glow plug engines additionally require a plug heater) is placed in a starting box. The on-board starter is manually switched on and off via micro switches.

### Control of electric on-board starting systems

The electric on-board starter is controlled via micro switches operated from an IC-servo. For the secure starting of the internal combustion engine it is necessary that the starter engine starts at the activation of the engine immediately with full power to prevent the kick-back of the combustion engine. (Please do not use electric controllers)

For glow plug engines you also need a plug warmer, which is switched on and off directly by the receiver via a channel or mixer.

Current supply of the electric on-board starter

The current supply of the starter engine and of the heater plug only requires a starter storage battery to which also the electric plug warmer is connected.

### Recommendation for starting storage batteries

For starting storage battery you have to use high-amperage (16 A) NC, NiMh or LiPo batteries that are also deployed in electric flying model aircrafts. Every kit contains detailed assembly instructions and a manual for the trouble-free assembly of your electric on-board starting system.

We hope you will enjoy your hobby with our on-board starting systems!

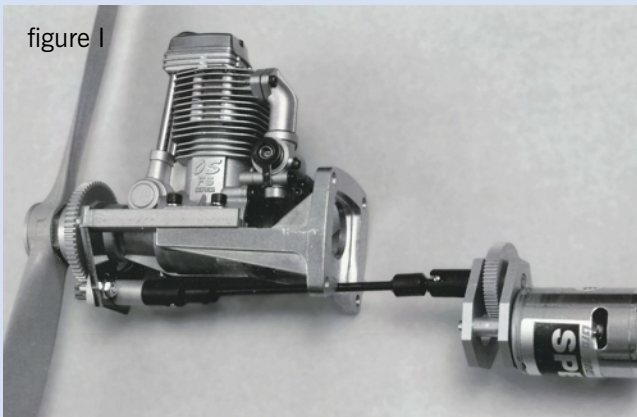


figure I

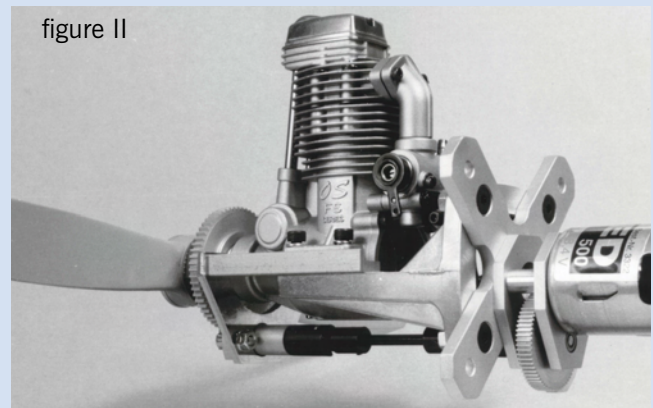


figure II

**Stock number 9500 Basic kit for 7.5-14 ccm engines**  
**Stock number 9512 Basic kit for 15-35 ccm engines**  
**Stock number 9514 Complete kit for OS-Max BGX-1, OS-Max 160 FX, Moki-25, Magnum XL180AR, Laser 200, MVVS-35 (Glow)**

The universal on-board starting system of figure I for aircraft engines can be attached to all common single cylinder glow plug engines. In addition to the basic kit each motor type requires an adapter kit. The complete set contains the adapter set for the respective motor type.

For the operation of the glow plug you also need the plug warmer (stock number 9593B) which is not included in the kit.

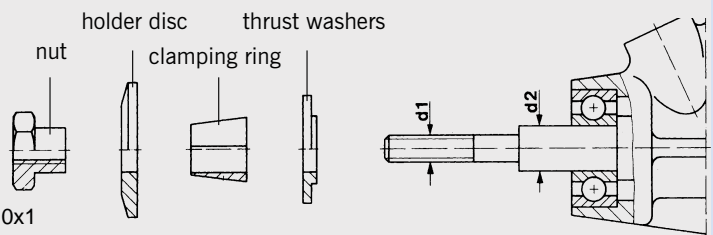
If you use the plug warmer you only require one storage battery for the operation of the on-board starter from which the starter engine and the glow plug are fed. The basic kit and the complete kit include all mechanical and electric components that are necessary for the operation of the on-board starter. The universal on-board starting system can also be attached as a compact version (see figure II). The holder plate is not included in the delivery, you can build it on your own.

## Adapters for 7.5 - 35cc aircraft and naval engines\*

In addition to the basic kit, an adapter is necessary for each engine type. Adapters can be combined individually for internal combustion engines that are not listed above. Please specify with your order thread = d1 and diameter = d2

**Available clamping rings and thrust washers:**  
d2: 6.0, 7.0, 8.0, 9.5, 10, 12(mm)

**Available nuts:**  
d1: M6, M7, M8, 1/4-28UNF, 5/16-24UNF, 3/8-24UNF, M8x1, M10x1



<b>9532</b>	OS-Max-FS60/61, 70, 80, 90/91 (4-Stroke) – OS-Max 61/91 FX (2-Stroke).....	5/16"UNF-24	.....	9,5 mm
<b>9537</b>	Saito, FA 45, FA 50, FA 56, FA 65, FA 72, FA 80 (4-Stroke).....	M6	.....	8,0 mm
<b>9539</b>	Enya 60-4C, 80-4C (4-Stroke).....	M7	.....	7/9,5 mm
<b>9540</b>	OS-Max-FS120 (4-Stroke), – OS-Max-90/91, 104RX, 140 RX (2-Stroke) .....	5/16"UNF-24	.....	10,0 mm
	Magnum XL-70AR, XL-80AR, XL-90/91AR, XL-120AR, XL-180AR (4-Stroke)			
<b>9541</b>	Webra-Speed 91, 120 Aero (2-Stroke) – Saito FA 90/91, 100, 120, 150, 180, 220 (4-Stroke) .....	M8	.....	10,0 mm
<b>9543</b>	OS-Max FS 40, FS 48, FS 52 Laser 70 (4-Stroke) .....	1/4"UNF-28	.....	8/6,3 mm
<b>9545</b>	Enya 46-4C, 53-4C (4-Stroke).....	1/4"UNF-28	.....	6,3/8,0 mm
<b>9546</b>	Enya 90-4C (4-Stroke).....	M7/28	.....	7,0/9,5 mm
<b>9548</b>	Magnum XL108A, XL120A, OS-Max 108 FSR (2-Stroke) .....	3/8"UNF-24	.....	10,0 mm
<b>9549</b>	Enya 120-4C (4Stroke).....	M8 x 1	.....	8,0/12 mm
<b>9550</b>	MVVS-26 (Glow).....	M10 x 1	.....	10,0 mm

The engines: Magnum, ASP and SC are identical.

## Additionally required parts that are not included in the kit:

- 1 plug heater, stock number 9592B
- 1 starter storage battery 9.6 Volt, min 1.0 Ah for engines up to 18 cc
- 1 starter storage battery 10.8-12 Volt, min 1.0 Ah for engines over 18cc

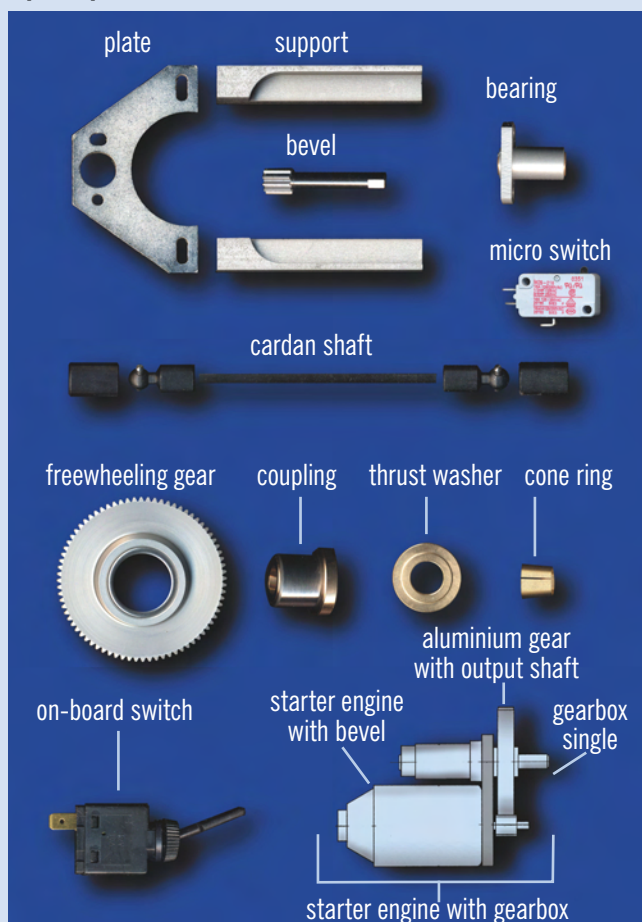
# Universal on-board starter

# FEMA

Spare parts for	9500	9512	9514
Support, 2 units	9500/01	9512/01	9512/01
Plate	9500/02	9512/02	9514/01
Bearing	9500/03	9500/03	9500/03
Freewheeling gear, 60/76/92 teeth, m=0.8	9500/05	9512/05	9712/04
Bevel, 10 teeth, m=0.8	9500/06	9500/06	9500/06
Coupling	9500/07	9518/07	9712/07
Cardan shaft	9515/07	9515/07	9515/07
Starter engine with gearbox	9580/01*	9570/01*	9572/01*
Gearbox, single	9580/02	9570/02	9570/02
Starter engine with bevel, 12 teeth, m = 0.5	9580/05	9570/05	9575/03
Aluminium gear with output shaft	9580/04	9570/04	9570/04
Bevel for starter engine, 12 teeth, m = 0.5	9570/03	9570/03	9570/03
Micro switch, single	9560/04	9560/04	9560/04
Board switch, 16A	9560/07	9560/07	9560/07
Small parts kit (not shown)	9500/12	9512/12	9514/12
Thrust washer			9530/35
Clamping ring			9530/26

\* Dimensional drawings see page 14

## Spare parts for 9500, 9512, 9514



## Dimensional drawing: basic kit, stock number 9500/ 9512/ 9514

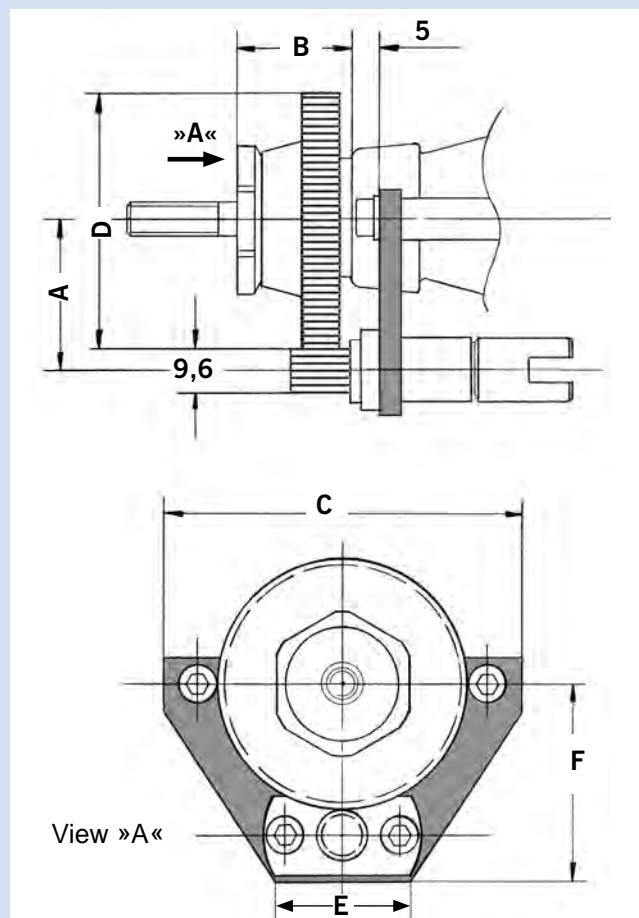
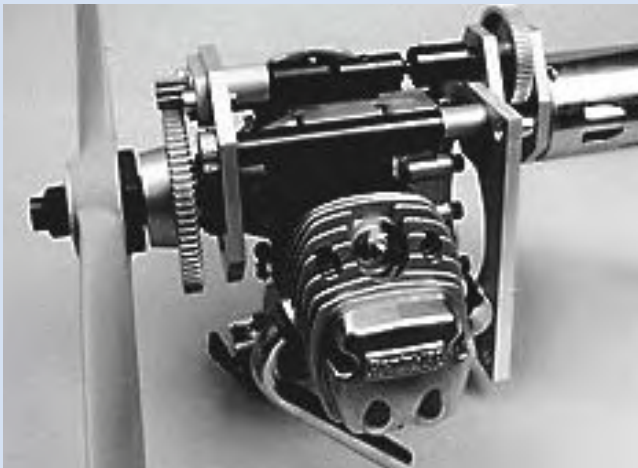


Table with dimensions (dimensions in mm ) / weight (without starter storage battery)

type	A	B	C	D	E	F	weight
9500	29,0	24,0	68,0	48,0	25,0	37,0	320 gr.
9512	35,0	24,0	76,0	60,8	25,0	40,0	380 gr.
9514	42,0	26,0	90,0	73,6	30,0	50,0	440 gr.

# Universal on-board starter

# FEMA



**Stock number 9710 Compact on-board starter for OS-Max FT 120/160**

**Stock number 9711 Compact on-board starter for OS-Max FF 320 »Pegasus«**

**Stock number 9732 Compact on-board starter for Saito FG-57T**

The on-board starters for flat engines are designed as compact on-board starters. The kit contains all mechanical components as well as the starter engine with all-metal gearbox and all electric components that are necessary for the assembly of the on-board starter in the model.

For the operation of the glows plug you need an additional »Glow Control« which is not included in the kit.

**Stock number 9593B for OS-Max FT-120/160 Gemini**

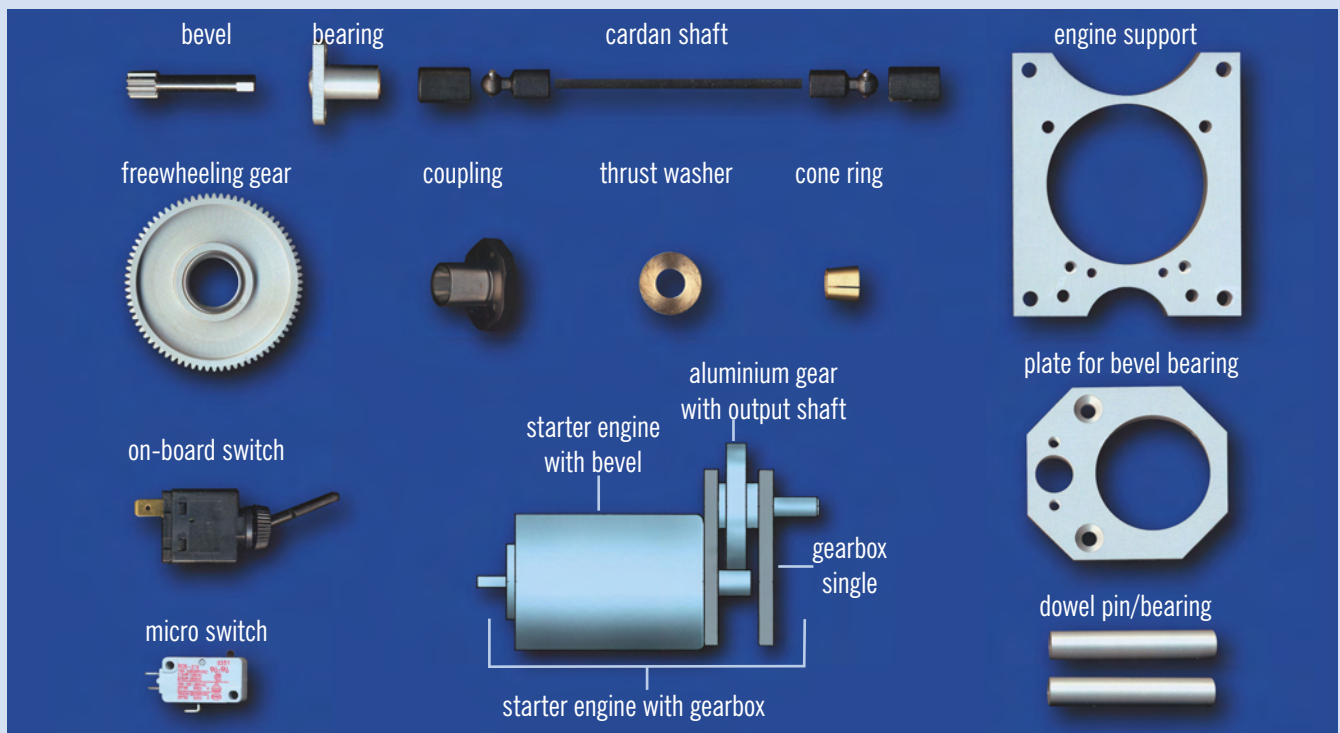
**Stock number 9594B for OS Max FF-320 Pegasus**

If you use the »**Glow Control**« you only require one storage battery for the operation of the on-board starter from which the starter engine and the glow plug are fed. Saito FG-57 comes standard with an ignition system.

**Additionally required products that are not included in the kit:**

1 starter storage battery 9.6 – 12 Volt, min. 1.0 Ah for stock numbers 9710, 9711

1 starter storage battery 10.8 – 12 Volt, min. 1.0 Ah for stock number 9732





# Universal on-board starter

# FEMA

Spare parts for	9710	9711	9732
Thrust washer/signal transmitter with magnet	9530/33	9530/33	9732/07
Clamping ring	9530/23	9530/23	9730/27
Plate for bevel bearing/bevel support plate	9518/03	9711/01	9732/02
Engine support plate	9710/01	9710/01	9732/01
Dowel pin / support, 2 units	9518/05		9732/03
Freewheeling gear, 76/92 teeth, m=0.8	9512/05	9512/05	9732/10
Adapter, SW 32 mm/SW 38 mm	9518/07	9518/07	9712/07
Bevel bearing	9500/03	9500/03	9500/03
Gear, 10 teeth, m=0.8	9500/06	9500/06	9500/06
Cardan shaft	9515/07	9515/07	9515/07
Starter engine with gearbox	9580/01*	9572/01*	9732/11
Starter engine with gear, 12 teeth, m = 0.5	9580/05	9575/03	9575/03
Aluminium gear with output shaft	9580/04	9570/04	9570/04
Fastening nut for propeller			9732/04
Holder disc for propeller			9732/05
Micro switch, single	9560/04	9560/04	9560/04
Board switch, 16A	9560/07	9560/07	9560/07
Small parts kit (not shown)	9710/12	9711/12	9732/12
Propeller-attachment-material			9732/04

\*Dimensional drawings see page 14.

Dimensional drawings: 9710 / 9711 / 9732

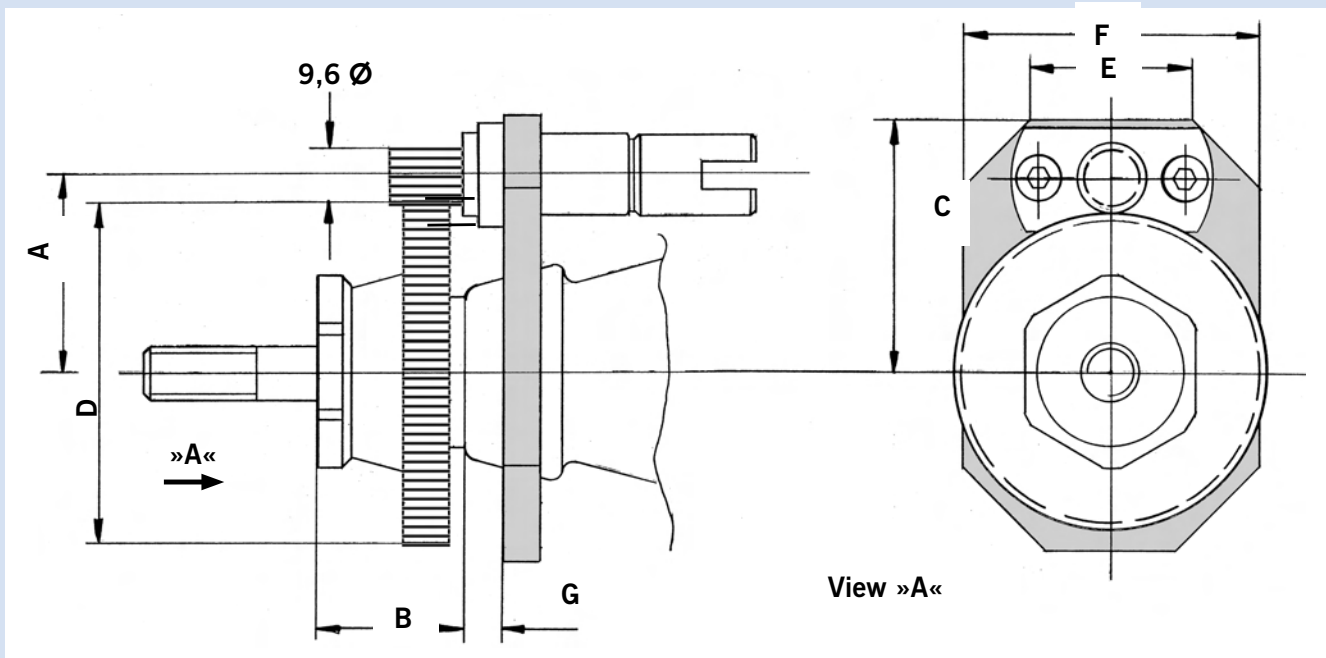


Table with dimensions (dimensions in mm) / weight (without starter storage battery)

Type	A	B	C	D	E	F	G	Weight
9710	35,0	24,0	44,0	60,8	28,0	60,0	8,0	400 gr.
9711	35,0	24,0	44,0	60,8	28,0	60,0	8,0	450 gr.
9732	42,0	26,0		73,6			8,0	750 gr.

# Compact on-board starter

# FEMA



**Stock number 9400A Compact on-board starter for: Zenoah G 230/260/270 RC**

These on-board starters were developed especially for the use in ZENOAH engines with a cubic capacity of 20-29 cm<sup>3</sup> and are universally suitable for park-flyers, helicopter, car and ship models.

The on-board starters are designed as compact on-board starters, i.e. the starting device and the starter engine are mounted directly to the internal combustion engine. Thus the internal combustion engine and the on-board starter form a very compact unit.

The complete driving unit can also be easily attached to vibration absorbing elements in the model. The choice for the best suited on-board starter for your model simply depends on your combustion engine and the available space in your model.

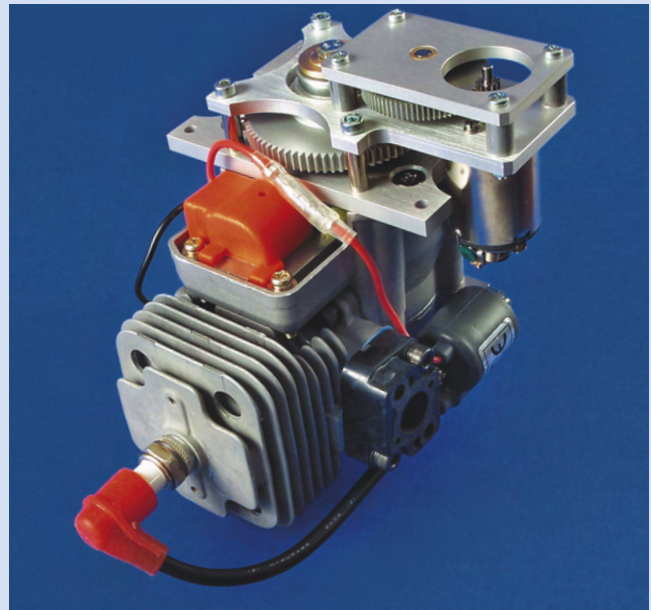
● **Stock number 9400A** Fits in all helicopters produced by Vario and AeroTec as well as for all helicopter and car models if there is enough space in your model.

● **Stock numbers 9420A, 9421A, 9713A, 9714 and 9715A** Designed for the universal usage in park-flyers, helicopter and car models.

● **Stock number 9613A** A special design for the use in ship models.

### Functionality:

The mechanical construction of the on-board starters is similar for all models. The power is transmitted from the starter engine to the crank shaft of the internal combustion engine via the gear reduction with integrated free-wheel. When the internal combustion engine is running



**Stock number 9420A Compact on board starter for: Titan ZG 23/26, ZG 231/260, Zenoah G 230/260 PU, G 231/260 PUH**

the free-wheel separates the combustion engine from the on-board starter.

### Assembly kits:

The kits contain all mechanical components as well as the starter engine with metal gearbox and all electric components required for the integration of the on-board starter into the model.

**The starter storage battery is not included in the kit.**



**Stock number 9412A Compact on-board starter for: Titan ZG 20, Zenoah G 200 PU**

# Compact on-board starter

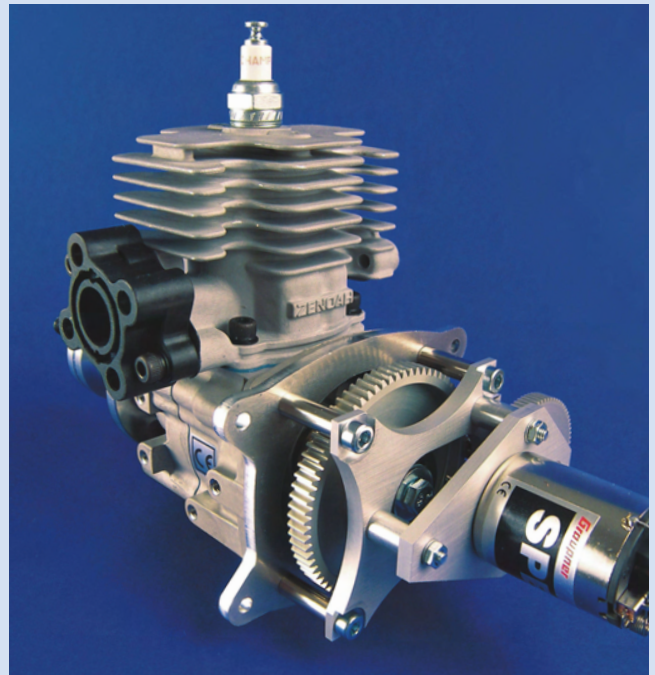
# FEMA



**Stock number 9713A Compact on-board starter for:**  
Titan ZG 23/26, ZG 231/260 Heli,  
Zenoah G 230/260 PU, G 231/260 PUH

#### Note:

The compact on-board starters with stock number 9400A, 9421A, 9713A, 9715A and 9613A can be attached directly to the standard engine support plate of the engine. The engine support plate contains all threads that are required for the assembly. If you use a combustion engine without engine support plate you can order it here (see spare parts list).



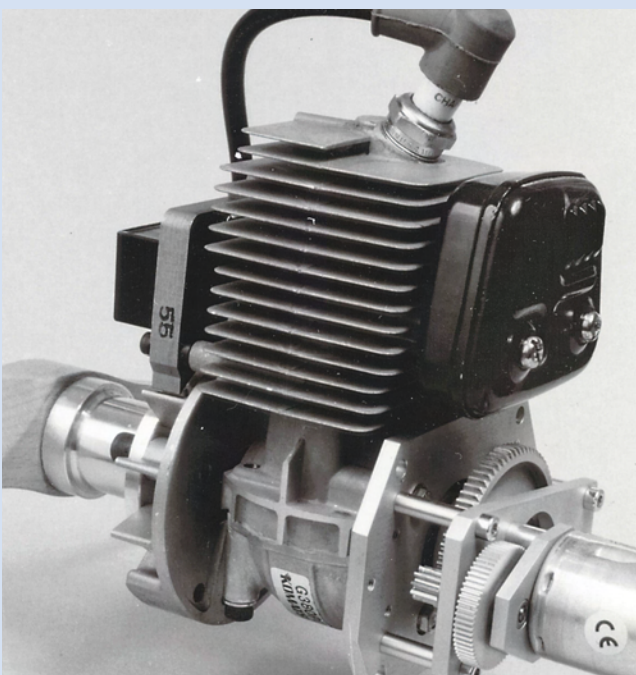
**Stock number 9715A Compact on-board starter for:**  
Titan ZG 20,  
Zenoah G 200 PU

The engine support plate is included in the kit for the compact on-board starters with stock number 9420A and 9714.

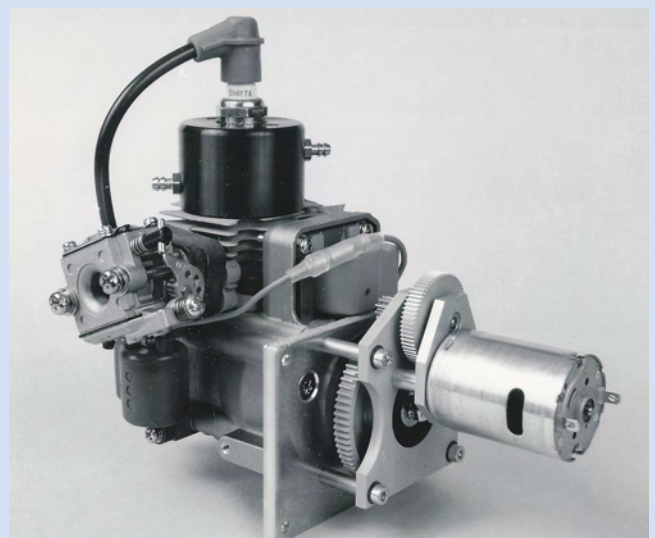
#### Additionally required parts that are not included in the kit:

1 starter storage battery, 9.6-10.8 Volt, min. 1.0 Ah for: 9400A, 9420A, 9421A, 9713A, 9715A.

1 starter storage battery, 10.8-15 Volt, min. 1.0 Ah for: 9613A and 9714



**Stock number 9714 Compact on-board starter for:**  
Titan ZG 38,  
Zenoah G 380 PU



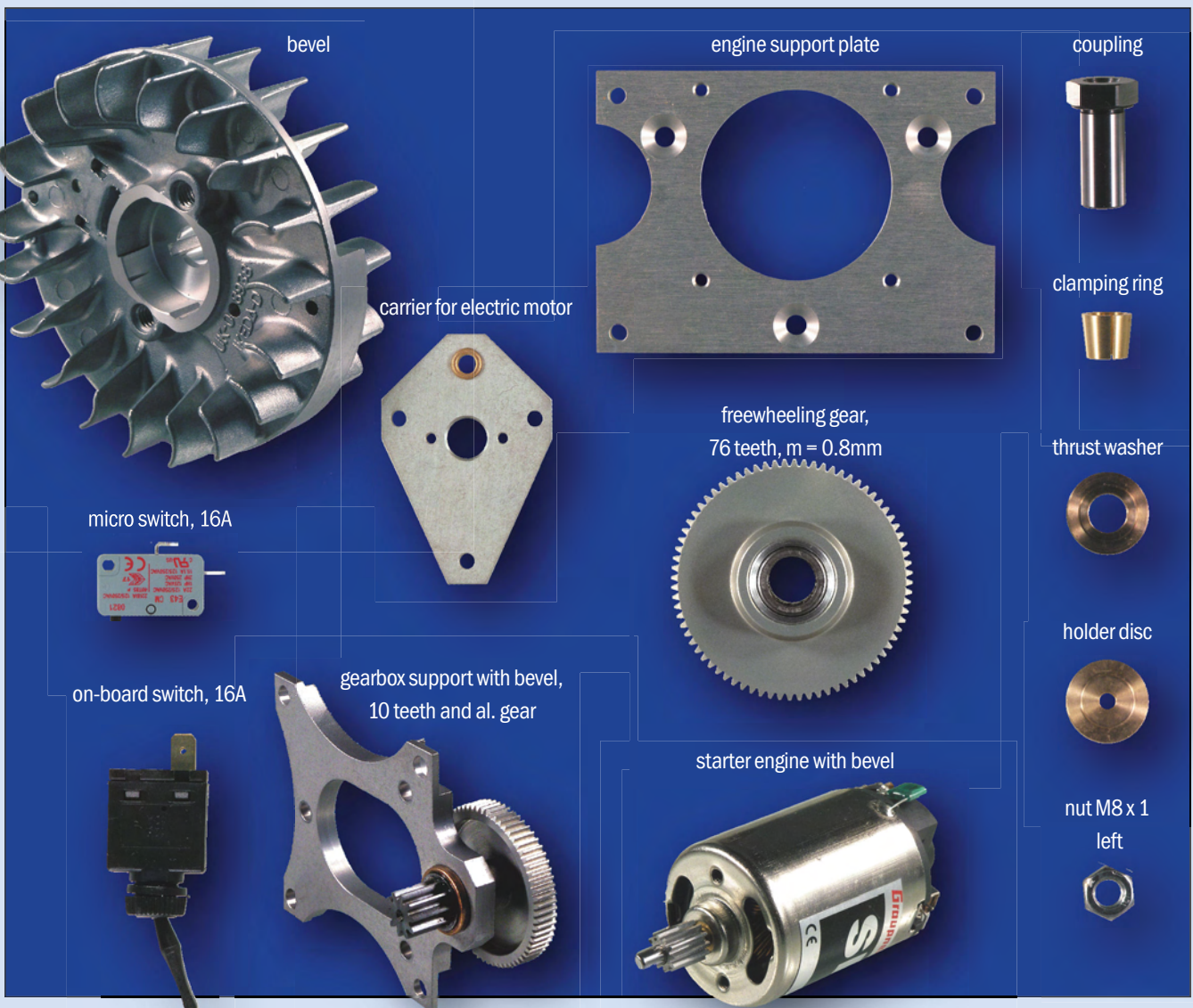
**Stock number 9613A Compact on-board starter for:**  
Titan ZG 23/26 Marine,  
Zenoah G 230/260 PUM

# Compact on-board starter

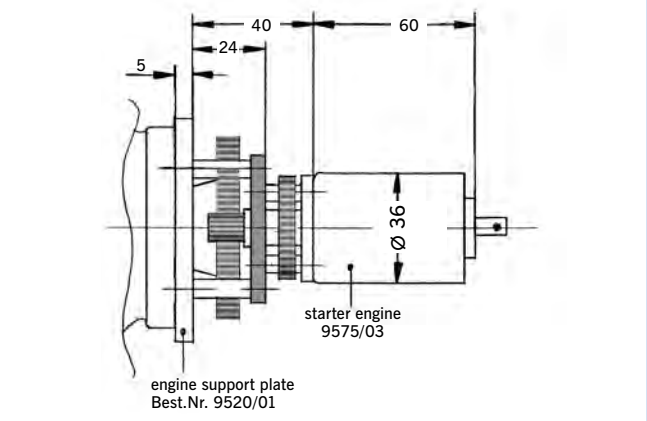
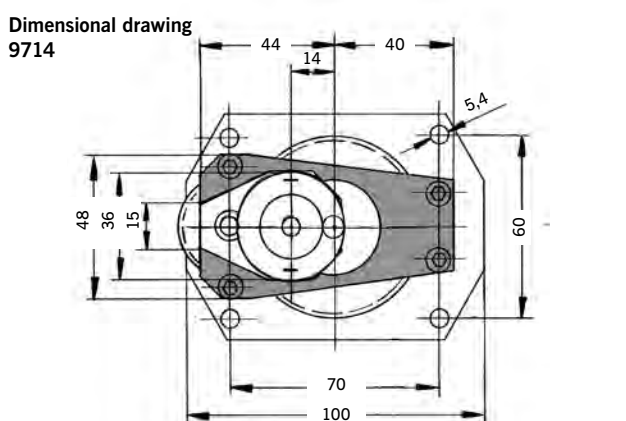
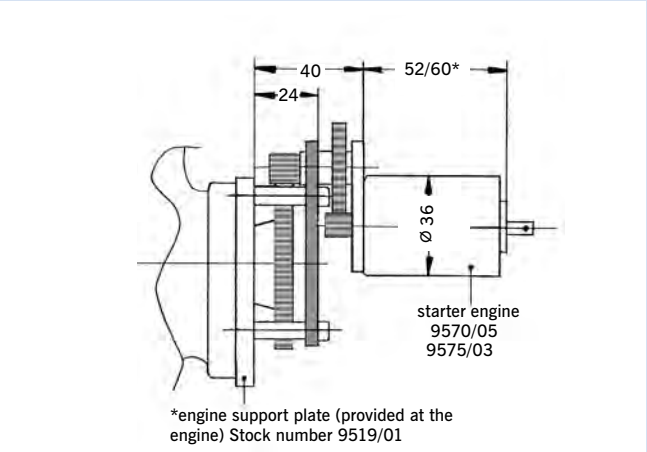
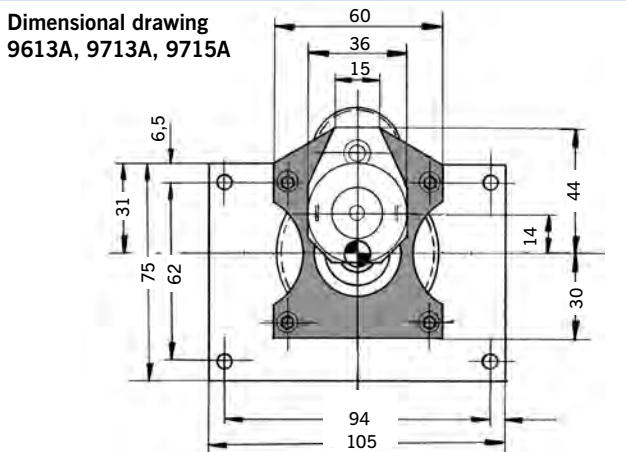
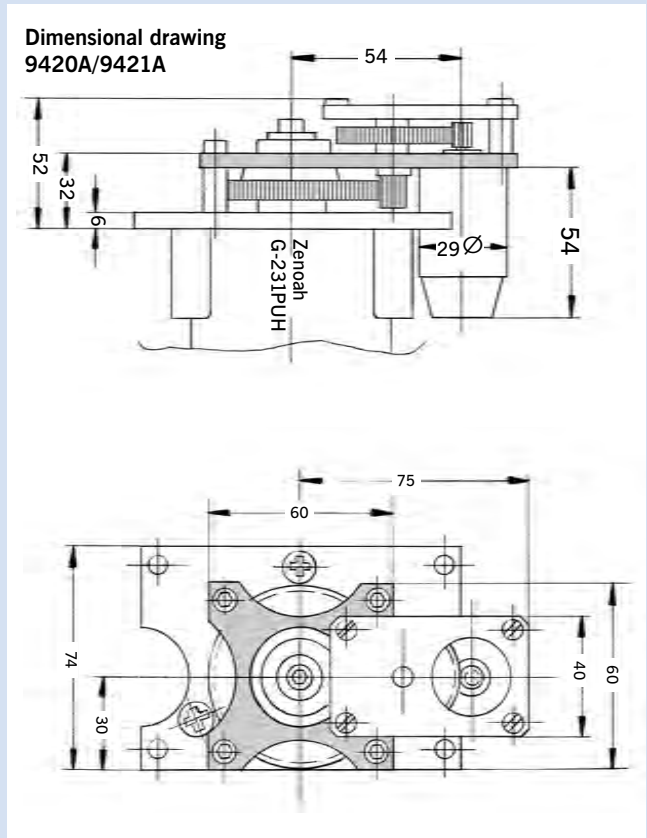
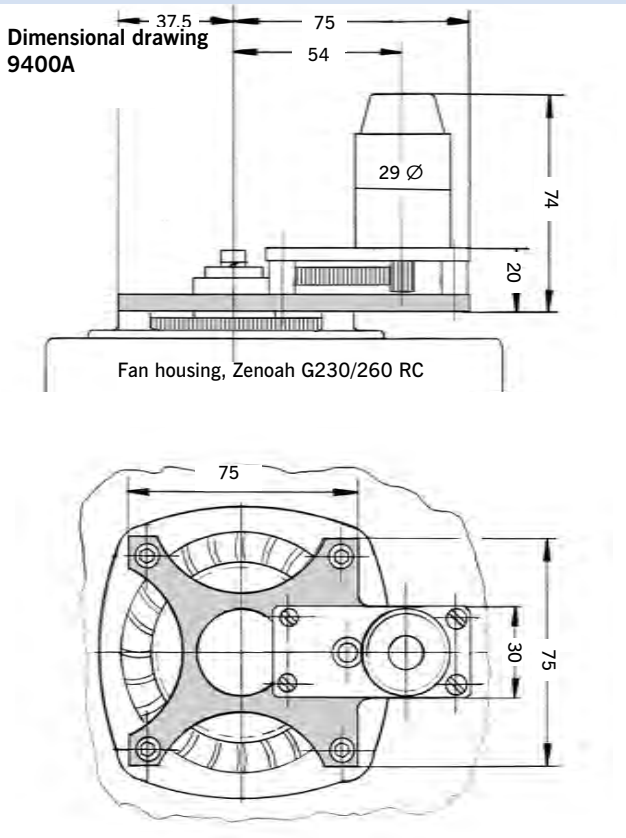
# FEMA

Spare parts for	9400A	9420A	9421A	9613A	9713A	9714	9715A
Engine support plate		9420/08	9715/08*	9420/08*	9420/08*	9520/01	9715/08*
Thrust washer			9530/32			9530/33	9530/32
Holder disc	9400/10	9400/10	9400/10	9400/10	9400/10	9500/07	9400/10
Coupling	9400/11	9400/11	9400/11	9400/11	9400/11		9400/11
Freewheeling gear, 76 teeth, m = 0.8mm	9400/12	9420/12	9420/12	9410/12	9410/12	9512/05	9410/12
Gearbox support with bevel, 10 teeth and aluminium gear	9400/16	9420/16	9420/16	9713/02	9715/02	9714/02	9715/02
Carrier for electric motor	9400/15	9420/15	9420/15	9713/04	9715/04	9714/04	9715/04
Starter engine with bevel	9400/04	9420/04	9420/04	9575/03	9580/05	9575/03	9580/05
Small parts kit	9400/07	9420/07	9421/07	9613/12	9713/12	9714/07	9715/07
Fan wheel with reconditioning	9400/08						
Nut M8x1 left						9520/02	
Clamping ring						9530/24	
Micro switch, 16A	9560/04 suitable for all on-board starters						
On-board switch, 16A	9560/07 suitable for all on-board starters						
2 core cable 1.6 mm	9560/08 suitable for all on-board starters						
Weight without starter storage battery in g.	375	375	375	450	375	450	375

\*not included in the kit



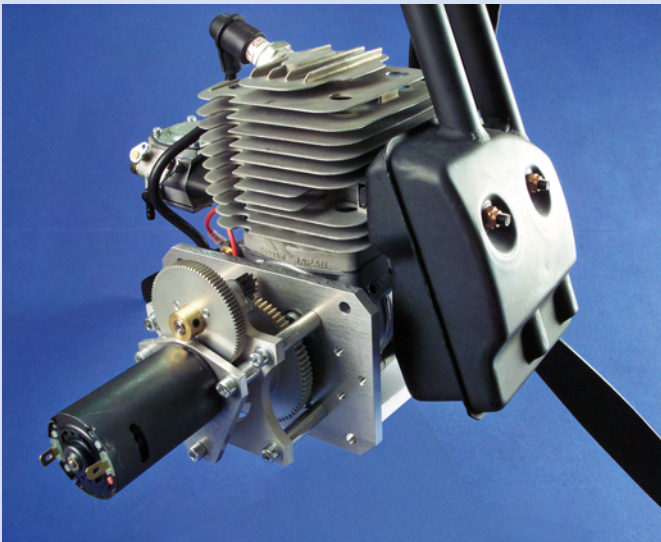
# Compact on-board starter



**NEW!**

# Compact on-board starter

# FEMA



**Stock number 9724**

**Compact on-board starter for Titan ZG-62, Zenoah G62**

**Stock number 9725**

**Compact on-board starter for Titan ZG-45, Zenoah G45**

**Stock number 9730A**

**Compact on-board starter for Zenoah/Titan ZG-74/80**

These on-board starters are designed as compact on-board starters, i.e. the starting device and the starter engine are mounted directly to the internal combustion engine. Thus the internal combustion engine and the on-board starter form a compact unit. The kit contains all mechanical components as well as the starter engine with metal gearbox and all electric components required for the integration of the on-board starter into the model. The FEMA engine support plate for ZG 45/62 and the engine support for ZG-74/80 are also included in the kit.

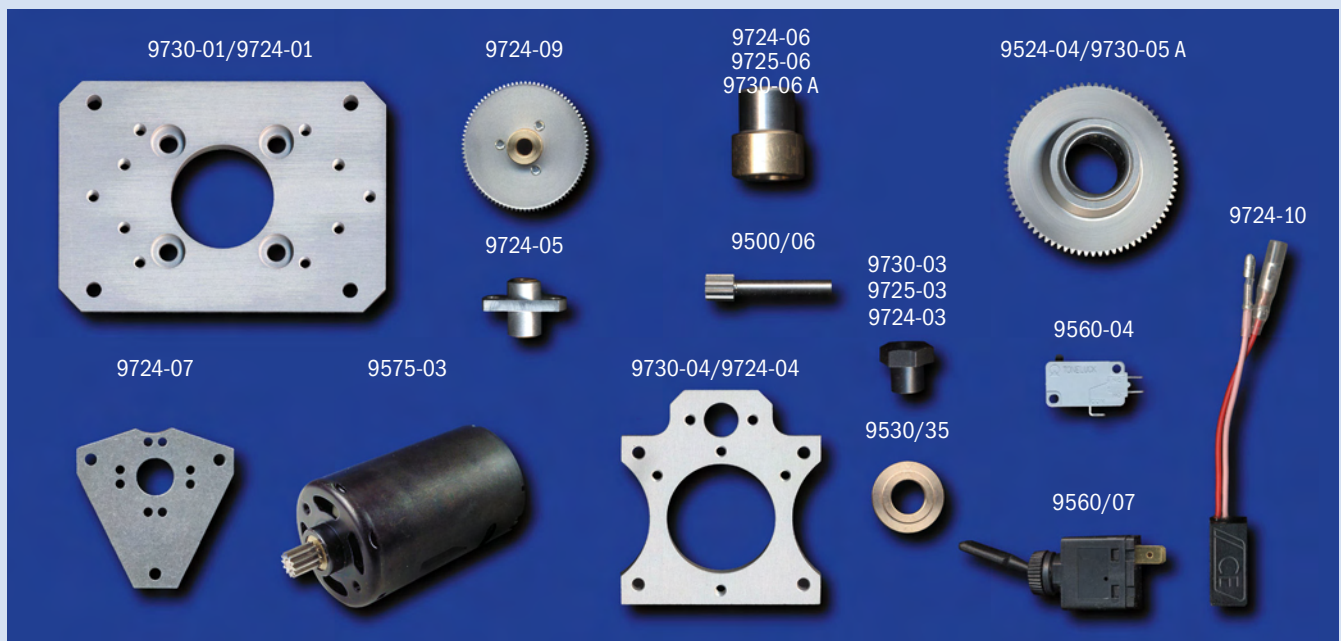
The engine support for ZG-74/80 has the same dimensions and fixing holes as the standard engine support made from sheet steel.

It is also possible to assemble the ZG-62/45 in connection with the »Hydro-Mount-System Pitts« of the company Toni Clark. You can order the engine support plate with stock number 9724-02 directly from us.

**To eliminate the risk of kickback for the engines of type Titan and Zenoah with magneto ignition we recommend to equip the engines with a micro processor ignition unit PCI of the company »www.toni-clark.com«.**

**This modification is mandatory for the operation of Titan/Zenoah ZG-74/80.**

## Spare parts 9724, 9725, 9730A

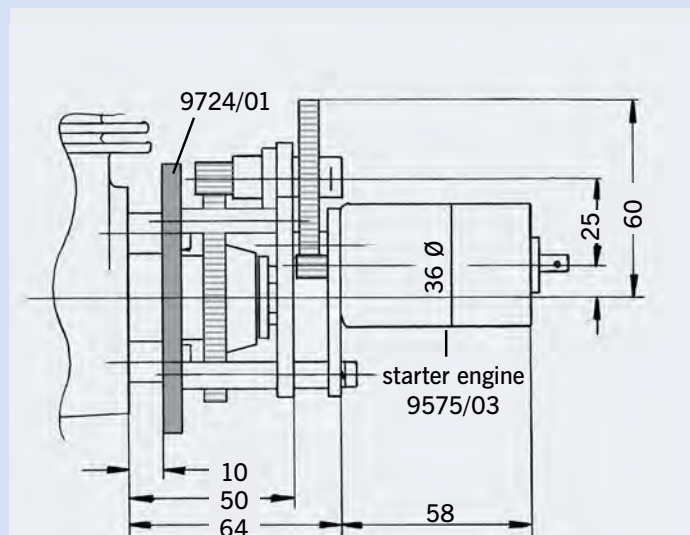
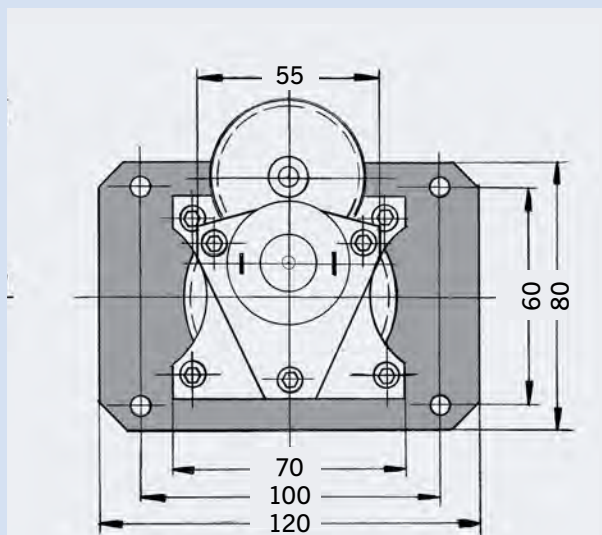


# Compact on-board starter

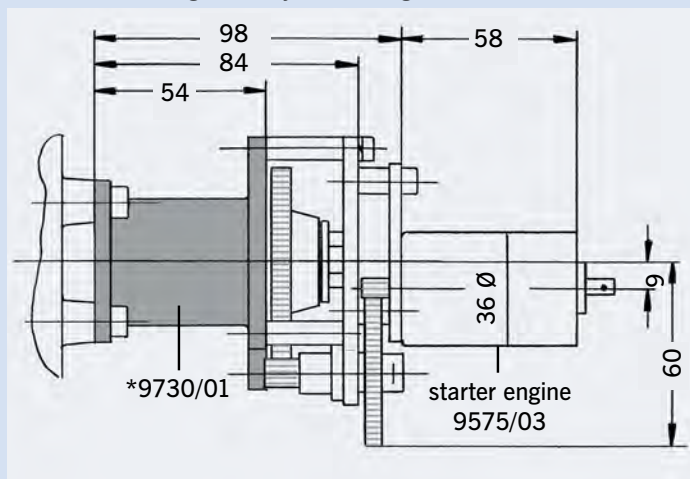
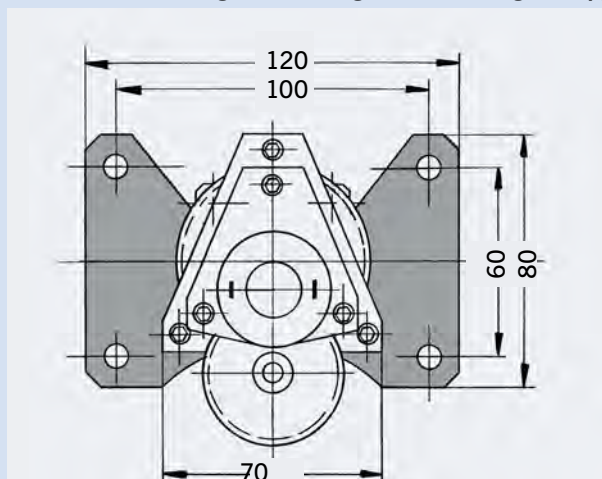
# FEMA

Spare parts for	9724	9725	9730 A
Engine support plate/support*	9724/01	9724/01	9730/01*
Engine support »Hydro-Mount-System Pitts«	9724-02	9724-02	-
Coupling	9724/06	9725/06	9730/06 A
Freewheeling gear, 76 teeth, m = 0.8	9524/04	9524/04	9730/05 A
Thrust washer	9530-35	9530-35	9530-35
Nut M10x1 / M8x1	9724/03	9725/03	9730/03
Bevel support plate	9724/04	9724/04	9730/04
Bevel bearing	9724/05	9724/05	9724/05
Bevel 10 teeth	9500/06	9500/06	9500/06
Aluminium gear with 90 teeth, m = 0.5	9724/09	9724/09	9724/09
Carrier for electric motor	9724/07	9724/07	9724/07
Starter engine Speed 600, with bevel 12 teeth	9575/03	9575/03	9575/03
Micro switch, 16A	9560/04	9560/04	9560/04
On-board switch, 16A	9560/07	9560/07	9560/07
Electronics	9724/10	9724/10	9724/10
Small parts kit (not shown)	9724/12	9725/12	9730-12

**Dimensional drawing 9724, 9725 / weight (without engine support and starter storage battery) ca. 500 gr.**



**Dimensional drawing 9730 / weight (without engine support and starter storage battery) ca. 500 gr.**



**Additionally required parts that are not included in the kit: 1 starter storage battery 10.8-15 Volt, min 1.0 Ah.**