

# SERVICE BULLETIN

## CHECKING AND REPLACEMENT OF STATOR ASSY.

SB-912 026 /E

SB-914 014 /E

### 1) Planning information

#### 1.1) Engines affected

All versions of the engine type:

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##### **group A\*)**

- || \*\*- 912 ULS (Series) from S/N 4,425.001 to S/N 4,425.013
- 912 ULS (Series) from S/N 4,425.014 to S/N 4,425.029
- 912 ULS (pre production)

##### **group B\*)**

- 912 A (Series) from S/N 4,076.071 to S/N 4,410.366
- 912 F (Series) from S/N 4,412.502 to S/N 4,412.791
- 912 UL (Series) from S/N 4,152.112 to S/N 4,403.282
- 914 F (Series) from S/N 4,420.002 to S/N 4,420.157
- 914 UL (Series) from S/N 4,417.503 to S/N 4,417.783
- V 914 (pre-production)

##### **group C\*)**

- 912 A (Series) from S/N 3,792.556 to S/N 4,076.063
- 912 UL (Series) from S/N 3,792.556 to S/N 4,005.299

##### **group D\*)**

- 912 A (Series) from S/N 3,792.541 to S/N 3,792.555
- 912 UL (Series) from S/N 3,792.501 to S/N 3,792.555
- V 912 (pre-production)

##### **group E\*)**

- 912 A (Series) from S/N 4,076.064 to S/N 4,076.070
- 912 UL (Series) from S/N 4,005.300 to S/N 4,152.111

\*) Because of the different versions of the stator and the associated varying instructions a subdivision into the above groups is imperative.

This subdivision will follow through further chapters and procedures.

- || \*\*\*) for SMD-Modul with 3 wiring harness.

# SERVICE BULLETIN

## 1.2) Concurrent SB/SI und SL

- none

## 1.3) Reason

- Unfavourable influence of chemical reactions, improper maintenance or unsuitable installation could cause damage on insulation material of the stator cables.

## 1.4) Subject

- || - Checking of the ignition unit and replacement of stator assy.

## 1.5) Compliance

- MANDATORY
- at the next 100<sup>h</sup>-check but at the latest by 01.08.1999: Replace the stator assy. as per the following instructions
- before the next flight: check the stator and inspect the cable insulation for damage as per the following instructions

## 1.6) Approval\*

- Specified compliance of this Service Bulletin has been approved by ACG on \_\_\_\_\_.\_\_\_\_\_.

|| \* This approval from the national authority applies only to certified engines of type 912 A (TW 8/89), 912 F / S (TW9-ACG) and 914 F (TW10-ACG).

## 1.7) Manpower

- estimated man-hours:  
engine installed in the aircraft - - - 2,0 h per unit.

## 1.8) Mass data

- change of weight - - - none
- moment of inertia - - - unaffected

## 1.9) Electrical load data

- no change

# SERVICE BULLETIN

## 1.10) Software accomplishment summary

- no change

## 1.11) References

In addition to this technical information refer to

- current issue of the Operator's Manual (OM)
- engine data sheet
- power, torque and fuel consumption curves
- current issue of the Illustrated Parts Catalog (IPC)
- Installation Manual (IM) and Check List
- all relevant Service Information
- all relevant Technical Bulletins
- Collective Manual (CM)
- Repair Manual (RM)
- Maintenance Manual (MM)

## 1.12) Other publications affected

- none

## 1.13) Interchangeability of parts

- All parts are interchangeable
- at exchange take care of the following

The stator assemblies have to be installed in accordance with the group subdivision in the following instruction.

- || - all redundant parts which cannot be used must be returned at the user's cost to an authorized Rotax Distributor or Service Center.

# SERVICE BULLETIN

## 2) Material Information

### 2.1) Material - cost and availability

- cost and availability will be supplied on request by our authorized distributors

### 2.2) Company support information

- || - This exchange program and cost sharing is valid until 31.07.2000. Up to this date an application for reimbursement of the parts cost may be submitted.
- Shipping cost, down time, loss of income, telephone costs etc. or cost of conversion to other engine versions or additional work, as for instance simultaneous engine overhaul is not covered in this scope and will not be born or reimbursed by ROTAX®

### 2.3) Material volume per engine

- parts volume:

#### Group A

For replacement of the stator assy. the following new parts are required:

item no.	New part no.	Qty.	Description	Old part no.	remarks
(1)	888.670	1	stator assy.		ROTAX 912 ULS
(2)	851.250	1	cable clamp 15/M5		ignition housing
(3)	240.186	4	Allen screw M5x25		stator
(33)	840.511	1	Allen screw M5x16		ignition housing
(34)	940.881	1	Allen screw M5x30		ignition housing

# SERVICE BULLETIN

(4) 945.750 6 lock washer A5 stator

### Group B

For replacement of the stator assy. the following new parts are required:

item no.	New part no.	Qty.	Description	Old part no.	remarks
(1)	996.539	1	stator assy.		ROTAX 912/914
(2)	851.250	1	cable clamp15/M5		ignition housing
(3)	240.186	4	Allen screw M5x25		stator
(4)	945.750	6	lock washer A5		stator
(33)	840.511	1	Allen screw M5x16		ignition housing
(34)	940.881	1	Allen screw M5x30		ignition housing

### Group C

For replacement of the stator assy. the following new parts are required:

item no.	New part no.	Qty.	Description	Old part no.	remarks
(1)	996.534	1	stator assy.		ROTAX 912 Serie
(2)	851.250	1	cable clamp15/M5		ignition housing
(3)	240.186	4	Allen screw M5x25		stator
(4)	945.750	6	lock washer A5		stator
(35)	840.880	1	Allen screw M6x30		grounding cable
(36)	945.751	1	lock washer A6		grounding cable
(33)	840.511	1	Allen screw M5x16		ignition housing
(34)	940.881	1	Allen screw M5x30		ignition housing

# SERVICE BULLETIN

## Group D

For replacement of the stator assy. the following new parts are required:

item no.	New part no.	Qty.	Description	Old part no.	remarks
(1)	888.705	1	stator assy.		ROTAX 912 Serie
(2)	851.250	1	cable clamp15/M5		ignition housing
(3)	240.186	4	Allen screw M5x25		stator
(4)	945.750	6	lock washer		stator
(35)	840.880	1	Allen screw M6x30		grounding cable
(36)	945.751	1	lock washer		grounding cable
(33)	840.511	1	Allen screw M5x16		ignition housing
(34)	940.881	1	Allen screw M5x30		ignition housing

## Group E

For replacement of the stator assy. the following new parts are required:

item no.	New part no.	Qty.	Description	Old part no.	remarks
(1)	888.707	1	stator assy.		ROTAX 912 Serie
(2)	851.250	1	cable clamp15/M5		ignition housing
(3)	240.186	4	Allen screw M5x25		stator
(4)	945.750	6	lock washer		stator
(33)	840.511	1	Allen screw M5x16		ignition housing
(34)	940.881	1	Allen screw M5x30		ignition housing

# SERVICE BULLETIN

**2.4) Material volume per spare part**

- none

**2.5) Rework of parts**

- none

**2.6) Special tooling - Price and availability**

- Price and availability will be supplied on request by our Authorized Distributors or their Service Center.

- parts volume:

item no.	New part no.	Qty.	Description	Old part no.	remarks
(5)	240.880	1	thread bolt		crankshaft locking
(6)	877.410	1	protection piece		crankshaft
(7)	877.375	1*)	puller assy.		magneto hub
(8)	877.377	1*)	puller assy.		magneto hub

\*) Depending on the installation situation 2 variations of the puller assy. of different length are available:

Puller assy. (part no. 877.375) of 105 mm (4,1339 in.)

Puller assy. (part no. 877.377) of 38 mm (1,4961 in.)

# SERVICE BULLETIN

## 3) Accomplishment / Instructions (applicable for all groups)

### General note

Repeating symbols:

Please, pay attention to the following symbols throughout the Service Bulletin emphasizing particular information.

- ▲ **WARNING:** Identifies an instruction, which if not followed, may cause serious injury or even death.
- **ATTENTION:** Denotes an instruction which if not followed, may severely damage the engine or could lead to suspension of warranty.
- ◆ **NOTE:** Information useful for better handling.

### Accomplishment

All the measures must be taken and confirmed by the following persons or facilities:

- ROTAX<sup>®</sup>-Distributors or their Service Center
- Persons with the respective Aviation Authority permission.
- Persons with type-specific training (applicable only for non-certified engines)

▲ **WARNING:** Proceed with this work only in a non-smoking area and not near open flames. Switch off ignition and secure engine against unintentional operation.

- Secure aircraft against unintentional operation.
- Disconnect negative pole of aircraft battery.

### 3.1) Check the ignition unit for mechanical, thermal and chemical damage

See fig. 2 and 5.

- Check all cable connectors, all ground connections, charging and shorting cables and grounding cables for tight fit, good contact, corrosion and security, repair as required.
- Verify shielding of cable assemblies for damage, for ground contact and security.
- Inspect all 8 ignition cables to spark plug connector for damage and tight fit. Check resistor plug connector for tight fit on spark plug. Repair or replace as necessary.

▲ **WARNING:** Repair of stator assy. (1) exclusively by the manufacturer! The stator has to be replaced according to the following instructions and returned to an authorized ROTAX-distributor.

# SERVICE BULLETIN

## 3.2) Stator removal or installation (applicable for all groups)

### 3.2.1) Remove ignition cover (if fitted)

See fig. 5.

- Remove 3x Allen screw (14) M6x16.
- Remove ignition cover (15).

### 3.2.2) Locking of the crankshaft

See fig. 3 and 4.

- To lock the crankshaft remove the plug screw (1) M8x20 and sealing ring from the crankcase half (cyl. 2/4) (9). Turn crankshaft until the pistons of cyl. no. 1 and no. 2 are in T.D.C. and lock crankshaft in this position with the crankshaft locking screw (5) (part no. 240.880).

◆ NOTE: The crankshaft locking screw is part of the standard tool kit supplied with each engine.

- For easy location finding of the correct crankshaft position, turn crankshaft so that the impressed 4-digit number (10) on the flywheel hub (11) aligns with the edge (12) of the ignition housing.
- The required crankshaft recess position (13) can be additionally verified with a flashlight through the hole in the crankcase (9).
- Turn-in crankshaft locking screw and rotate crankshaft slightly to-and-fro until the screw engages noticeably in the recess (13) of the crankshaft and tighten locking screw to 10 Nm (90 in.lb).

### 3.2.3) Removal of magneto hub

See fig. 1 und 5.

- Remove hex. screw M16x1,5 x 40 (16) together with washer (17) and shim (18).
- Apply some grease on protection piece (part no. 877.410) and place it onto the crankshaft, screw puller (part no. 877.375)(7) or screw puller (part no. 877.377) (8) fully home on thread (19) and pull off flywheel assy. (20).
- Lay flywheel assy. aside so that no particles can collect on the magnets.

◆ NOTE: To remove the stator there is no need to remove the ignition housing.

# SERVICE BULLETIN

## 3.2.4) Removal of stator assy.

See fig. 5, 8, 9 and 11.

- Remove the 4 Allen screws M5x25 (3) along with lock washer.
- **Group A/B and E:** To detach the cable harness (21) remove the Allen screw (33) M5x16 and Allen screw (34) M5x30 along with lock washer. Remove the cable clamp (part no. 851.110) (24) and cable clamp (part no. 851.250) (2). Mark the plug connections (63) for convenience at reassembly, disconnect plug and detach plastic clamps (62) and cable clamp (64).
- **Group C and D:** To detach the cable harness (21) and grounding cable (72) remove the Allen screw (22) M5x20 and Allen screw (35) M6x30 along with lock washer. Remove both cable clamps (part no. 851.110) (24). Open the screening box (49) and mark the plug (50) of charging cable for convenience at reassembly and disconnect the plug. Detach clip plate and remove the cable harness from the clip plate (51).
- Remove the stator ass'y (1) from the centering (25) of the ignition housing.

## 3.2.5) General procedure prior to installation of the components

- Inspect all components of the ignition unit for damage and wear.
- Check the complete wiring and connections for damage.
- Check all electrical connections for security and evidence of corrosion. Repair or replace as required.
- Before re-assembly clean all contact surfaces (grounding contact) of the removed screws and apply Lithium grease to assure lasting contact.
- ▲ **WARNING:** At damage renew the affected components without fail.
- Clean crankshaft taper (30) and magneto hub (31), remove all traces of LOCTITE and degrease these parts.

# SERVICE BULLETIN

## 3.2.6) Installation of the new stator assy.

See fig. 5, 8, 9 and 11.

- The contact faces **(26)** between stator and ignition housing must be clean to assure good ground connection.
- At replacement or re-installation of the stator take care for correct routing of cable assembly and not to damage the stator.
- **ATTENTION:** Make sure not to squeeze the cable harness.
- At installation apply Lithium grease to the contact faces **(27)** of the stator and the screw heads.
- Install stator ass'y on the centering of ignition housing. Fit the 4 Allen screws **(3)** M5x25 and tighten to 6 Nm (53 in.lb).
- **ATTENTION:** One each charging coil grounding cable **(28)** has to be connected with stator attachment screw.
- **Group A/B and E:** To install the cable harness **(21)** fit the cable clamp (part no. 851.250) **(24)** with Allen screw **(33)** M5x16 and cable clamp (part no. 851.250) **(2)** with Allen screw **(34)** M5x30 and lock washer. Attach cable harness with cable clamp **(64)**. Re-establish plug connection corresponding with marking. Secure with plastic clamps.
- **Group C and D:** Attach grounding cables **(72)** with Allen screw **(35)** M6x30 and lock washer. To attach the cable harness **(21)** use the cable clamp (part no. 851.250) **(24)** and Allen screw **(33)**. Fit cable harness on clip plate **(51)** and attach. Reconnect plug **(50)** corresponding to marking. Close the screening box **(49)**, secure cables with new plastic clamps.

# SERVICE BULLETIN

## 3.2.7) Installation of flywheel assy.

See fig. 5, 6, 7 and 10.

- Inspect magneto inner side (32) for any foreign particles and the taper surface (31). Under normal circumstances it is not necessary to take the flywheel apart.
  - Check Woodruff key (29) in crankshaft for tight fit and degrease taper of crankshaft (30) and flywheel hub (31). Apply LOCTITE 221 sparingly, but well spread into the taper of magneto hub.
  - Fit flywheel hub ass'y, washer 17/36/5 (18), lock washer (17) and hex. screw M16x1,5 x 40 (16) and tighten to 120 Nm (1060 in.lb).
- ▲ **WARNING:** Make sure that the Woodruff key remains in the keyway.

## 3.2.8) Release locking of crankshaft

See fig. 3.

- Remove crankshaft locking screw (part no. 240 880)
- Install the plug screw M8x20 and shim on crankcase half (2/4). Tightening torque 22 Nm (195 in.lb.).
- Check or adjust the air gap of the external triggers with feeler gauge to dimension ①.

## 3.2.9) Installation of ignition cover (if existing)

See fig. 5.

- Fix ignition cover (15) with 3x Allen Screw (14) M6x16 using LOCTITE 221.

- Connect negative pole of battery.

## 3.3) Test run:

- Start the engine. Conduct testrun inclusive magneto check and leakage test in accordance with the current Maintenance Manual of the engine type .

▲ **WARNING: Non-compliance with these recommendations could result in engine damage, personal injury or death.**

Approval of translation to best knowledge and judgement - in any case the original text in German language and the metric units (SI-system) are authoritative.

# SERVICE BULLETIN

## 4) Appendix

- the following drawings / wiring diagrams / tables \* should convey additional information:

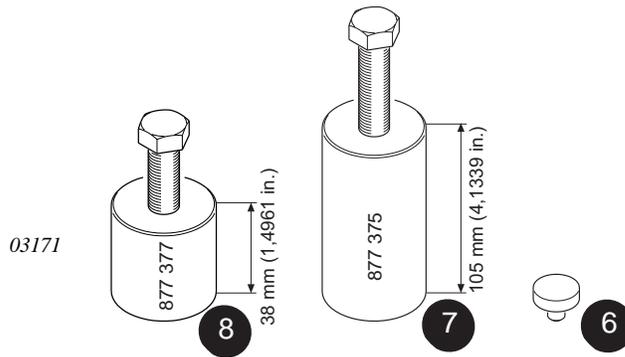
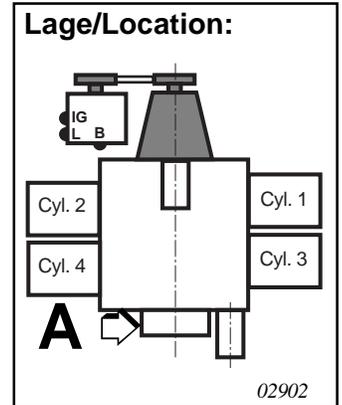


Bild / Fig. 1



**A**

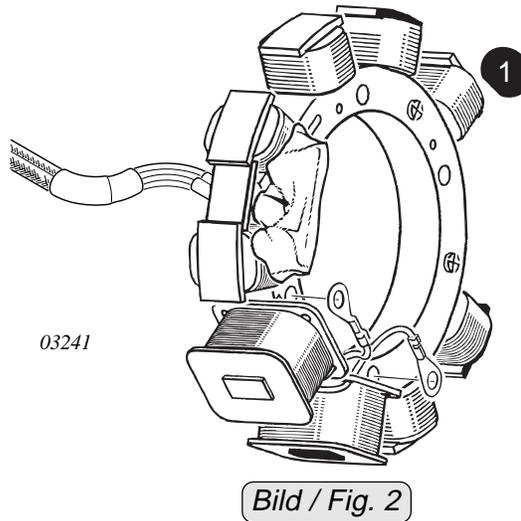


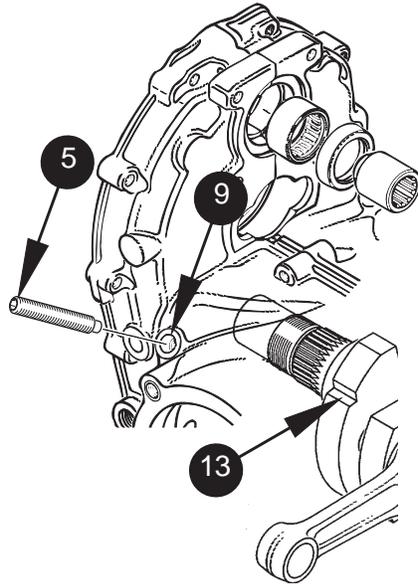
Bild / Fig. 2

View: **puller assy. / new stator**

Fig.: **1 and 2**

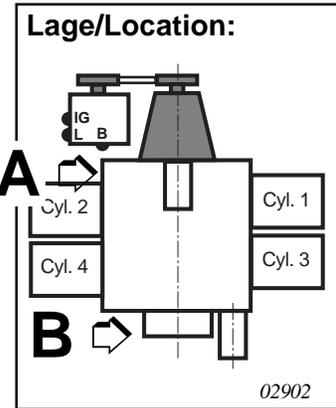
# SERVICE BULLETIN

**A**

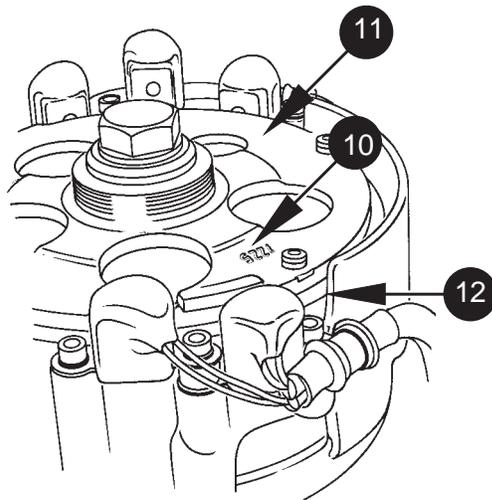


00375

Bild / Fig. 3



**B**



00344

Bild / Fig. 4

View: **crankshaft locking / flywheel position**

Fig.: **3 and 4**

# SERVICE BULLETIN

**A**

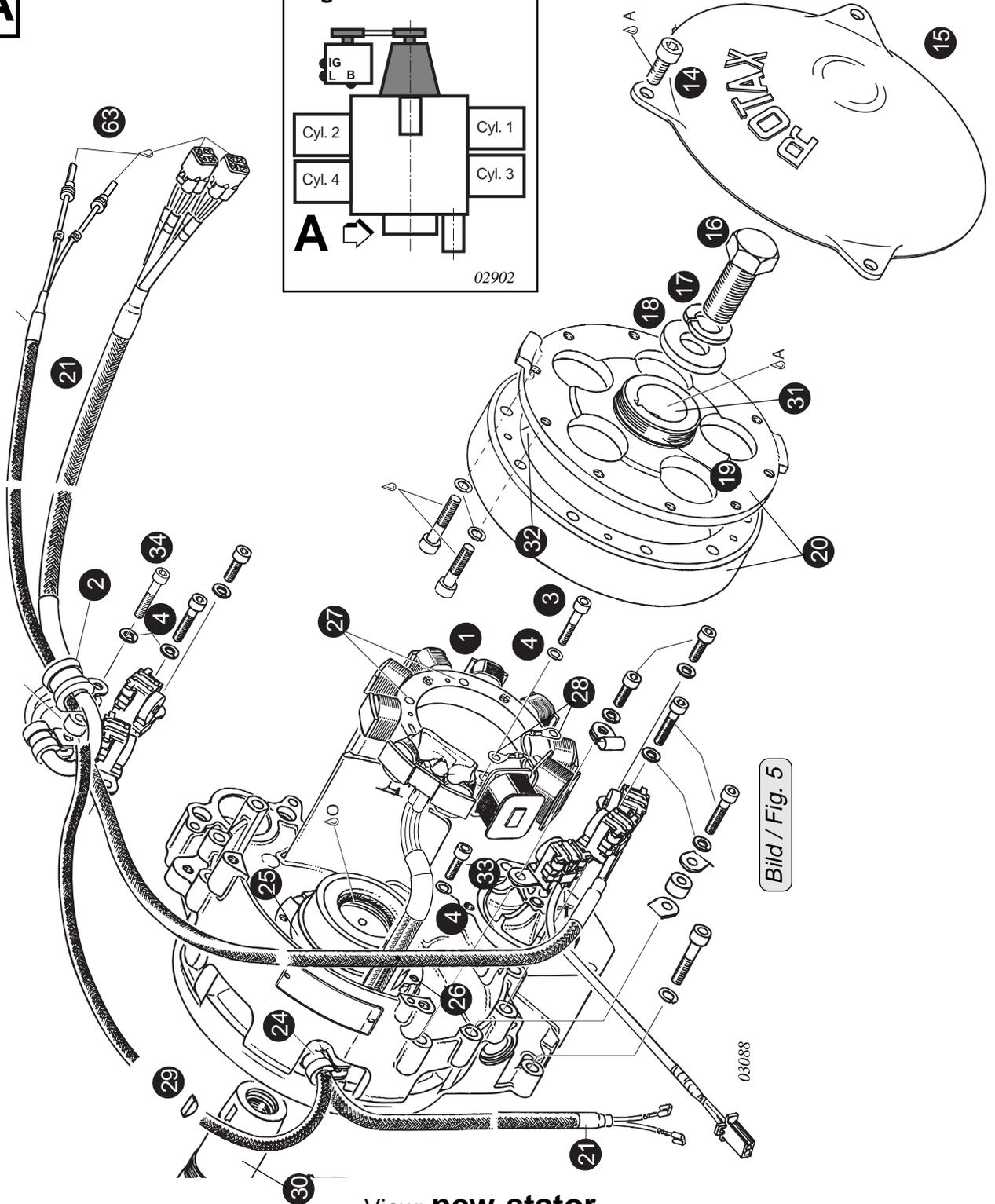
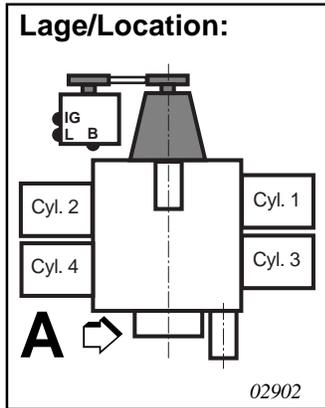


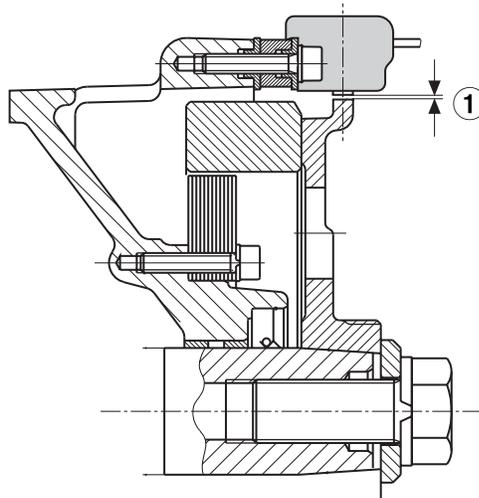
Bild / Fig. 5

View: **new stator**

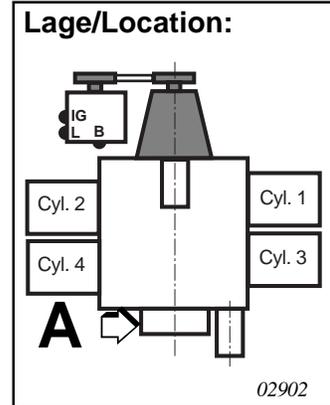
Fig.: **5**

# SERVICE BULLETIN

**A**



00089

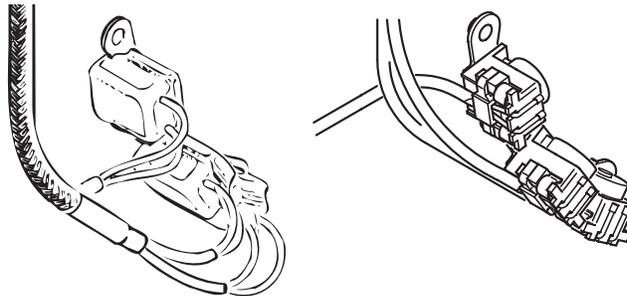


*Bild / Fig. 6*

Maße/Dimensions	Neu/New	Verschleißgrenze/Wear limit
Geberspalt für "alte" Geber gap for "old type" trigger coil	0,4 ÷ 0,5 mm (0,016 ÷ 0,020 in.)	0,5 mm (0,020 in.)
Geberspalt für Geber mit Klammern gap for trigger coil with clamps	0,3 ÷ 0,4 mm (0,012 , 0,016 in.)	0,4 mm (0,016 in.)

03173

*Bild / Fig. 7*



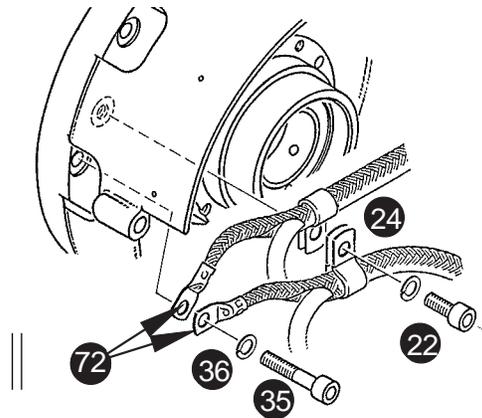
03175

Alt (old)

Neu (new)

*Bild / Fig. 10*

03173



*Bild / Fig. 8*

View: **pick-up / grounding cable**

Fig.: **6, 7, 10 and 8**

# SERVICE BULLETIN

**A**

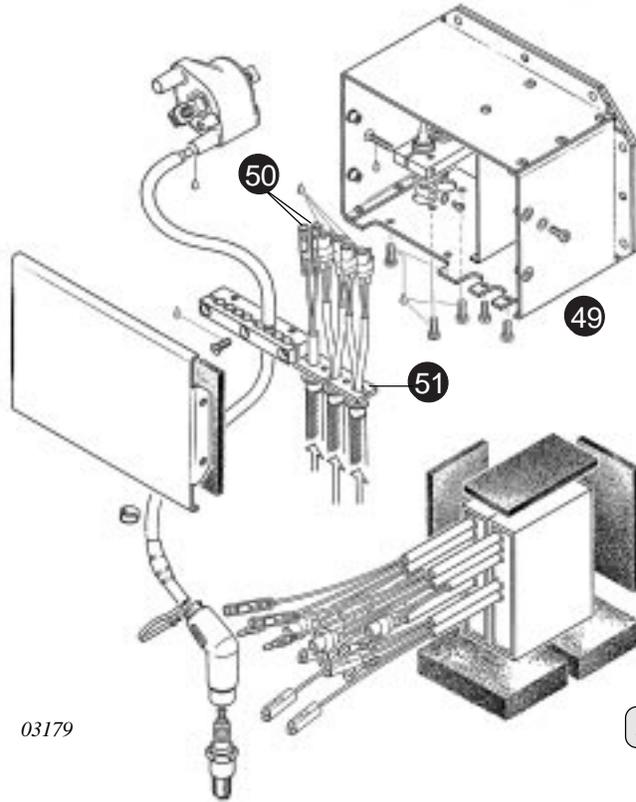


Bild / Fig. 9

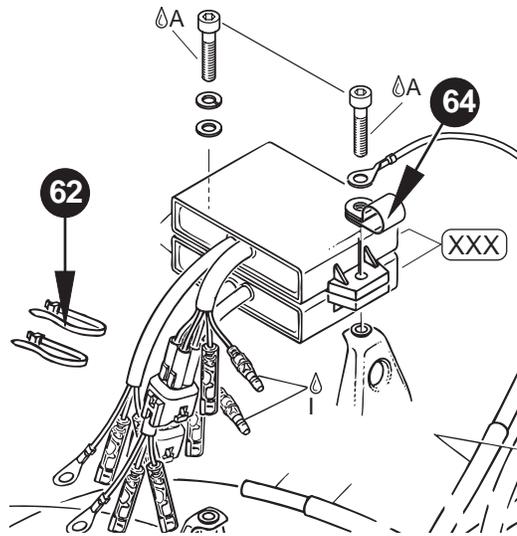
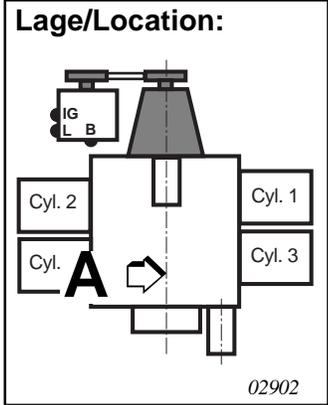


Bild / Fig. 11

View: **screening box / electronic module**

Fig.: **9 and 11**